

Roofing Project Specifications

Hinsdale High School Re-Roofing Project

Hinsdale School District
SAU # 92
49 School Street
Hinsdale, NH 03451

Roof Areas: J, I, and F

Date of Issue: April 2, 2014

Mandatory Pre-Bid: April 2, 2014 at 1:00 PM EST

Bid Due: April 9, 2014, at 3:00 PM EST

THIS DOCUMENT MUST REMAIN INTACT

March 25, 2014

March 25, 2014

SECTION 002113 - INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Related Sections include, General Requirements, bidding documents and drawings.

1.2 MANDATORY PRE-BID

- A. Contractors must attend designated pre-bid meeting as part of qualifying as a competent bidder. Only one pre-bid meeting will be held **Wednesday, April 2, 2014, at 3:00 PM**, at **49 School Street, Hinsdale, NH**. Bidding Contractors each must have an employee present as a competent representative to receive direction, present questions, address concerns, and provide information pertinent to the success of proposed project.

1.3 SEALED BIDS

- A. Sealed bids will be received until: **Wednesday, April 9, 2014, at 3:00 PM** for general construction on Roof Areas: **J, I & F**.
- B. Address envelopes to: **Hinsdale School District, SAU # 92, Dr. David Crisafulli, Ed. D.; 49 School Street, Hinsdale, NH 03451-0027**.
- C. Write in the lower left corner: Attention: Sealed Roof Bid **ROOF CONSTRUCTION AREAS: J, I & F**.

1.4 PLANS AND SPECIFICATIONS

- A. Additional copies of specifications and any further information relating to this project may be obtained at office of **Mr. Tom O'Connor, Business Administrator, Hinsdale School District, SAU # 92, , 49 School Street, Hinsdale, NH 03451**.

1.5 DEFINITION OF TERMS

- A. Whenever "Owner" occurs in Specifications or other documents, it shall mean **Hinsdale School District**.
- B. Whenever "Contractor" occurs in Specifications or other documents, it shall mean a person, firm or corporation contracting with Owner to supply labor, equipment, and materials specified herein for successful completion of this contract.

1.6 PRE-QUALIFICATION OF BIDDERS

- A. Contractors planning to bid will be required to file, prior to the time of award of contract, a confidential financial statement and experience questionnaire, which may be a complete report of the financial resources and liabilities, equipment, past record, and personnel.

1.7 SUBSTITUTIONS OF MATERIALS OR METHODS

- A. When materials are identified herein, such materials shall be regarded as a "basis of design". Any other make of material submitted for acceptance as comparably equal to that specified in formulation, quality, workmanship, economy in operation, and suitability for the purpose intended must be presented within twenty-four (24) hours of the mandatory pre-bid.
- B. A bidder offering "equal" materials will be responsible to building owner as to chemical content and performance under laboratory tests of materials he/she intends to use. Materials must comply with standards set forth in PART 2 of each section of this specification. Reports must be submitted to the Specifier for approval not less than Six days prior to Bid Date and show direct comparisons between specified and proposed materials. If testing was done, date, or dates, of testing also must be shown, and tests must have been performed by an independent laboratory for qualitative and quantitative analysis, at no expense to Owner. If approved by Specifier, all Bidders will be notified by Addendum that proposed materials are accepted as equal for purpose of bidding.
- C. If substitute materials are offered, Owner reserves rights to be final authority on their acceptance.
- D. During application of materials, contractor must have material suppliers representative present on the job site on at least three different days each week (Owner may require more if their evaluation of job progress deems it necessary) and material manufacturer's employed representative shall make out a written report upon each inspection and a summary report weekly and submit them no later than Tuesday of following week.
- E. Material supplier's representative must be a full-time employee of the material supplier.
- F. Upon job completion, a final inspection will be made by material manufacturer's representative, Specifier, and Contractor. No further payments will be authorized for work done until such inspection has been made, and all work that is visible is found to be performed in accordance with the specifications and to satisfaction of building owner.
- G. All bids shall be based upon use of type of materials specified herein. Any changes or substitutions require prior approval, in writing, from owner's representative.

1.8 ADDENDUM TO PROPOSAL

- A. Owner reserves rights to modify proposal within three (3) days of date for the opening of proposals. All addenda shall be in writing and sent to all bidders having received a bid document(s).

1.9 AWARDING OF CONTRACT

- A. Owner reserves right to award contract to lowest and best, and not necessarily to lowest bidder, or to reject any or all bids without informalities.

1.10 EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND SITE OF WORK

- A. Bidder is expected to examine carefully site of proposed work, proposal, plans, specifications, supplemental specifications, special provisions and contract forms, before submitting proposal. Submission of bid shall be considered evidence that bidder made such examination and is satisfied as to conditions to be encountered in performing work, and as to requirements of site conditions, plans, specifications, supplemental conditions, special provisions and contracts, and no allowance will be made for lack of knowledge concerning such conditions after contract is signed.

1.11 PREPARATION OF BID PROPOSAL

- A. Bidder shall submit his bid proposal upon forms furnished by Owner. All words and figures shall be in ink or typewritten.
- B. Bidder's proposal must be signed with ink by one or more members of partnership, or by one or more officers of a corporation, or by an agent of Contractor or legally qualified and acceptable to Owner. If bid proposal is made by an individual, his/her name and business address must be shown; by a partnership, name and business address of each partnership member must be shown; by a corporation, name of state under the laws of which the corporation is chartered and name and title of the officer or officers having authority under bylaws to sign contracts, name of corporation and business address of its corporate official must be shown.

1.12 DELIVERY OF BID PROPOSALS

- A. Bid Proposals shall be placed in a sealed envelope so marked as to indicate identity of project and name and address of bidder. Bid Proposals will be received until hour and date set for opening thereof, and must be in hands of the official indicated by such time. Bid Proposals received after time for opening will be returned to bidder unopened.

1.13 WITHDRAWAL OF PROPOSALS

- A. Bidder may withdraw his/her bid proposal, provided request in writing was received by official indicated in proposal by time set for opening bid proposals. When such bid proposal is reached, it will be returned to bidder unopened.

1.14 DISQUALIFICATION OF BIDDERS

- A. Any of the following reasons may be considered as being sufficient for disqualification of a bidder and rejection of his/her proposal or proposals:
 1. If bid is on a form other than that furnished by Owner or if form is altered or any part thereof is detached.
 2. If there are unauthorized additions, conditional or substitute bids, or irregularities of any kind which may tend to make bid incomplete, indefinite or ambiguous as to its meaning.
 3. If bidder adds any provisions reserving rights to accept or reject an award, or to enter into a contract pursuant to an award. This does not exclude a bid limiting

maximum gross amount of awards acceptable to any one bidder at any one bid letting, provided that any selection of awards will be made by the Owner.

4. More than one proposal for same work from an individual firm or corporation under same or different name.
5. Evidence of collusion among bidders. Participants in such collusion will receive no recognition as bidders for any future work of Owner until any such participant shall have been reinstated as a qualified bidder.
6. Bid prices which obviously are unbalanced.

1.15 BID PROPOSAL FORM

- A. Each bidder shall submit an individual Section 004113 Bid Form. Bid Form in these documents must be utilized, no alteration of form shall be made.

1.16 INSURANCE

- A. Successful bidder shall provide **Hinsdale School District** with appropriate insurance coverage, including automobile liability, general liability, property insurance, etc. and name **Hinsdale School District, SAU # 92**, an additional insured. Original sets of certificates shall be on file with **Hinsdale School District** before work commences. Each such certificate of insurance shall provide for payment of not less than \$500,000.00 for injury or death of one person and \$1,000,000.00 for any one accident, and \$500,000.00 for property damage for any one accident, and a total aggregate property damage limit of \$1,000,000.00. Successful bidder shall also agree to protect **Hinsdale School District** against all claims, demands, expenses, suits, or judgments arising because of, or resulting from operations of contractors, his/her agents, or his/her employees during execution of contract.
- B. Successful bidder shall present evidence of insurance coverage by presenting the following prior to signing of a contract:
 1. Authenticated copies of all insurance coverage.
 2. Authorization by the State of **New Hampshire** to do business in State of **New Hampshire**, if insurance company is not a corporation of the State of **New Hampshire**.
 3. Workmen's Compensation Certificate of State of **New Hampshire**.
- C. Insurance certificate shall be submitted with coverage as follows:
 1. Claim under Workers' or Workmen's Compensation, disability benefit of other similar employee benefit acts;
 2. Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;
 3. Claims for damages because of bodily injury, sickness of disease, or death of any person other than his/her employees;
 4. Claims for damages insured by usual personal injury liability coverage which are sustained by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or any other person;
 5. Claims for damages, other than to work itself, because of injury to or destruction of tangible property, including loss of use resulting therefore; and claims for

damages because of bodily injury or death of any person, or property damage arising out of ownership, maintenance, or use of any motor vehicle.

- D. Contractor shall provide Certificate of Insurance Coverage with coverage as noted in General Requirements.

1.17 OUT OF STATE BIDDERS

- A. If the successful bidder is a corporation not incorporated under the laws of the State of **New Hampshire**, a certificate from the Secretary of State of **New Hampshire**, showing the right of said bidder to do business in State of **New Hampshire**, shall be furnished.
- B. If the successful bidder is a partnership or individual, not a resident of State of **New Hampshire**, he shall furnish a Power of Attorney appointing the Secretary of the State of **New Hampshire** his/her agent for purpose of receiving service of summons.

1.18 EXPERIENCE OF CONTRACTOR

- A. In addition to requirements listed elsewhere, any contractor submitting a bid must have been in the business of installing roofing systems as specified a minimum of five (5) years. Bidders shall submit with their bid letter stating experience in application of systems like specified herein, or briefly stating their experiences with systems similar to one specified.

1.19 TAXES

- A. Successful bidder shall be required to comply with all federal, state and local requirements with regard to any and all taxes owed and/or required.

1.20 SCHEDULING OF WORK

- A. Contractors scheduling will have an influence on choosing lowest and best bid.

1.21 APPLICATION FOR PAYMENT

- A. Material payment will be processed upon delivery of materials to job site, issuance of invoice by Contractor and approval by Owner's Representative. All suppliers and subcontractors must be paid in full and Waiver of Lien by major suppliers and subcontractors issued prior to any subsequent payments being made to contractor.
- B. Once all work has been completed, and final inspection has been made, Contractor may invoice Owner for 100% of remaining labor and materials which were purchased by Contractor. Once all deficiencies have been corrected, Owner will make payment of 90% of remaining labor and materials, with adds and deducts, and will make payment of the remaining 10% once warranty has been issued.

SECTION 004113 - BID PROPOSAL FORM

DATE: _____

TO: **Hinsdale School District**
SAU # 92
Dr. David Crisafulli Ed. D.
Hinsdale, NH 03451

For: Roofing of Areas **J, I & F** for **Hinsdale School District**.

From: Name _____

Address _____

City _____

State _____

Zip _____

The undersigned hereby proposes to furnish labor and materials necessary for re-roofing in full compliance with these contract documents. The undersigned, as bidder, declares; that the parties in this contract proposal as principals are named herein; that this proposal is made without collusion with any other person, firm or corporation; that no officer or agent of the Owner is directly or indirectly interested in this proposal; that he has carefully examined the location of the proposed work, the annexed proposed form of contract, the contract drawings, the specifications and other Contract Documents therein referred to; and he proposes and agrees that if the proposal is accepted, he will contract with the Owner in the form of the Contract attached hereby to construct completely, in the manner and time prescribed, the items bid upon, including all work incidental to such items as well as those in all addenda issued prior to the date of opening of proposals, according to the contract drawings and specifications, and that he will accept in full payment therefore the following sum:

Proposed System, manufacturer and description:

The following information is essential for bid evaluation. Failure to attach any of the requested information will invalidate this proposal and bid will be considered as non-responsive.

Required bonds attached?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Manufacturer's Specimen Warranty that meets specifications attached?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Copy of Contractor's License Agreement with Manufacturer attached?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Statement of ALL Asbestos Litigation during the past five (5) years against Manufacturer pertaining to roofing systems attached?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Note: Bids shall be both written in words and shown in figures.

Roof Area:
J

	\$	
Words		Figures

Roof Area:
I

	\$	
--	----	--

Roof Area:
F

\$

Bid Bond:

\$

Performance & Payment Bond:

\$

ALL DESIGNATED ROOF AREAS AND BONDS: LUMP SUM UNDER ONE CONTRACT

\$

Words	Figures
Spot "Iso" Insulation Replacement 3"	\$ _____ / per square foot.
Spot Wood Blocking Removal and Replacement	\$ _____ / per lineal foot.
Wood Blocking Installed 1/2"	\$ _____ / per lineal foot.
Drain Bowl Replacement.....	\$ _____ / per drain bowl.
Metal Deck Replacement.....	\$ _____ / per square foot.

Contractor Owner / Officer (print name): _____
 Signature: _____
 Title: _____
 Address: _____
 City, State, Zip: _____
 Phone: _____
 Fax: _____

(AFFIX CORPORATE SEAL)

The bidder hereby acknowledges receipt of the following addenda:

Addendum No: _____	DATE: _____
Addendum No: _____	DATE: _____
Addendum No: _____	DATE: _____
Addendum No: _____	DATE: _____

END OF SECTION 004113

SECTION 011100 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 SUMMARY

- A. Furnish and install roof materials, insulation, flashings, and miscellaneous materials on the following designated roof areas:
- B. Work on **J, I & F** Includes:
 - 1. Tear off of existing roof membrane.
 - 2. Tear off of insulation in areas designated as “wet” by moisture survey.
 - 3. Bring to the attention of the building owner any and all questionable substrate conditions and repair or replace decking as designated by building owner’s representative at a cost in addition to the contracted amount based upon line item quoting on Bid Form.
 - 4. Install replacement “iso” insulation, as specified.
 - 5. Install second layer of insulation, as specified.
 - 6. Install tapered edge and saddles as required to keep water from standing at raised perimeter, upslope from curbs, and between drains and/or scuppers.
 - 7. Install PVC Elvaloy Membrane Roof System as specified.
 - 8. Install base sheet as specified.
 - 9. Install flashings as specified.
 - 10. Install new coping, drip edge, gravel stop, reglet, counter flashing, lead stack flashings, and other metal components as specified.
 - 11. Provide manufacturer’s warranty as specified.

1.3 INTENT OF THE SPECIFICATIONS

- A. The intent of these specifications is to describe the materials and methods of construction required for the performance of the work. In general, it is intended that the drawings shall delineate the detailed extent of the work. When there is a discrepancy between drawings, referenced specifications, and standards and this specification, this specification shall govern.

1.4 PROTECTION

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

- B. All existing facilities both above and below ground shall be protected and maintained free of damage. Existing facilities shall remain operating during the period of construction unless otherwise permitted. All access roadways must remain open to traffic unless otherwise permitted.
- C. Barricades shall be erected to fence off all construction areas from operations personnel.
- D. Safety Requirements
 - 1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
 - 2. Comply with federal, state, local and owner fire and safety requirements.
 - 3. Advise owner whenever work is expected to be hazardous to owner employees and/or operations.
 - 4. Maintain a crewman as a floor area guard whenever roof decking is being repaired or replaced.
 - 5. Maintain proper fire extinguisher within easy access whenever power tools, roofing kettles, and torches are being used.
 - 6. All safety requirements of the building owner must be followed. No exceptions will be permitted. Safety orientation meeting required prior to performing any work

1.5 HOUSEKEEPING

- A. Keep materials neat and orderly.
- B. Remove scrap, waste and debris from project area.
- C. Maintenance of clean conditions while work is in progress and cleanup when work is completed shall be in strict accordance with the "General Requirements" of this contract.

SECTION 011419 – USE OF SITE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 DESCRIPTION

- A. This Section applies to situations in which Contractor or his representatives including, but not necessarily limited to, suppliers, subcontractors, employees, and field engineers, enter upon Owner's property.

1.3 QUALITY ASSURANCE

- A. Promptly upon award of Contract, notify all pertinent personnel regarding requirements of this Section.
- B. Owner may require all personnel who will enter upon Owner's property certify their awareness of and familiarity with requirements of this Section.

1.4 TRANSPORTATION FACILITIES

- A. Provide adequate protection for curbs and sidewalks over which trucks and equipment pass to reach job site. If any damage occurs contractor is responsible for repairs
- B. Contractor's vehicles:
 - 1. Require Contractor's vehicles, vehicles belonging to employees of Contractor, and all other vehicles entering upon Owner's property in performance of Work of Contract, to use only Access Route approved in advance by Owner.
 - 2. Do not permit such vehicles to park on any street or other area of Owner's property except in area approved by Owner as "Contractor's Parking Area."

1.5 LANDSCAPING

- A. Provide adequate protection for trees, grass, shrubs and all other landscaping during set-up or construction. If any damage occurs contractor is responsible for repairs as designated by Owner
- B. Restrooms and other amenities of building will only be used with permission of Owner. If such authorization is given, Contractor is responsible for maintaining cleanliness and repairs as designated by Owner.

1.6 SECURITY

- A. Restrict access of all persons entering upon Owner's property to Access Route and to actual site of work/

1.7 Rest Room

- A. Contractor must provide job site portable toilet. Unit must be removed immediately upon completion of work.

SECTION 012300 – ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 DESCRIPTION

A. Work included:

- 1. Provide alternative bid proposals as described in this Section.

B. Procedures:

- 1. Provide alternative bids to be deducted from amount of Base Bid if corresponding change in scope is accepted by the Owner.
- 2. Include within alternative bid prices all costs, including materials, installations, overhead, profit and fees.
- 3. Show proposed alternate amounts opposite their proper description on Bid Form.

END OF SECTION 012300

SECTION 012663 – CHANGE ORDERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 DESCRIPTION

- A. Work included:
 - 1. Make such changes in Work, in Contract Sum, in Contract Time of Completion, or any combination thereof, as are described in written Change Orders signed by Owner and Designated Owner's representative and issued after execution of Contract, in accordance with provisions of this Section.

1.3 QUALITY ASSURANCE

- A. Include within Contractor's quality assurance program such measures as are needed to assure familiarity of Contractor's staff and employees with these procedures for processing Change Order data.

1.4 SUBMITTALS

- A. Make submittals directly to Designated Owner's representative at his normal place of business.
- B. Submit number of copies called for under various items listed in this Section.

1.5 PROCESSING CHANGES INITIATED BY THE OWNER

- A. Should Owner contemplate making a change in Work or a change in Contract Time of Completion, Designated Owner's representative will issue a "Bulletin" to Contractor.
 - 1. Bulletins will be dated and will be numbered in sequence.
 - 2. The Bulletin will describe contemplated change, and will carry one of following instructions to Contractor:
 - a. Make described change in Work at no change in Contract Sum and no change in Contract Time of Completion.
 - b. Promptly advise Designated Owner's representative as to credit or cost proposed for described change. This is not an authorization to proceed with change.

- B. If Contractor has been directed by Designated Owner's representative to promptly advise him as to credit or cost proposed for described change, Contractor shall:
 - 1. Analyze described change and its impact on costs and time.
 - 2. Secure required information and forward it to Designated Owner's representative for review.
 - 3. Meet with Designated Owner's representative as required to explain costs and, when appropriate, determine other acceptable ways to achieve desired objective.
 - 4. Alert pertinent personnel and subcontractors as to impending change and, to maximum extent possible, avoid such work as would increase Owner's cost for making change, advising Designated Owner's representative in writing when such avoidance no longer is practicable.

1.6 PROCESSING CHANGES INITIATED BY THE CONTRACTOR

- A. Should Contractor discover a discrepancy among Contract Documents or other cause for suggesting a change in Work, a change in Contract Sum, or a change in Contract Time of Completion, he shall notify Designated Owner's representative as required by pertinent provisions of Contract Documents.
- B. Upon agreement by Designated Owner's representative that there is reasonable cause to consider Contractor's proposed change, Designated Owner's representative will issue a Bulletin in accordance with provisions described in Article 1.6 above.

1.7 PROCESSING BULLETINS

- A. Make written reply to Designated Owner's representative in response to each Bulletin.
 - 1. State proposed change in Contract Sum, if any.
 - 2. State proposed change in Contract Time of Completion, if any.
 - 3. Clearly describe other changes in Work required by proposed change, or desirable therewith, if any.
 - 4. Include full backup data such as subcontractor's letter of proposal or similar information.
 - 5. Submit this response in single copy.
- B. When cost or credit for change has been agreed upon by Owner and Contractor Designated Owner's representative will issue a "Change Order" to Contractor.

1.8 PROCESSING CHANGE ORDERS

- A. Change Orders will be dated and will be numbered in sequence.
- B. Change Order will describe change or changes will refer to Bulletin or Bulletins involved, and will be signed by Owner and Designated Owner's representative.
- C. Designated Owner's representative will issue three copies of each Change Order to Contractor.

1. The Contractor promptly shall sign all three copies and return two copies to Designated Owner's representative.
 2. The Designated Owner's representative will retain one signed copy in his file and will forward one signed copy to Owner.
- D. Should Contractor disagree with stipulated change in Contract Sum or change in Contract Time of Completion, or both:
1. Contractor promptly shall return two copies of Change Order, unsigned by him, to Designated Owner's representative with a letter signed by Contractor and stating reason or reasons for Contractor's disagreement.
 2. Contractor's disagreement with Change Order shall not in any way relieve Contractor of his responsibility to proceed with change as ordered and to seek settlement of dispute under pertinent provisions of Contract Documents.

END OF SECTION 012663

SECTION 012900 – PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 DESCRIPTION

- A. Work included:
 - 1. Comply with procedures described in this Section when applying for progress payment and final payment under Contract.

1.3 QUALITY ASSURANCE

- A. Prior to start of construction, secure Designated Owner's representative's approval of schedule of values required to be submitted.
- B. During progress of Work, modify schedule of values as approved by Designated Owner's representative to reflect changes in Contract Sum due to Change Orders or other modifications of Contract.
- C. Base requests for payment on approved schedule of values.

1.4 SUBMITTALS

- A. Formal submittal: Unless otherwise directed by Designated Owner's representative:
 - 1. Make an informal submittal of request for payment by filling in, with erasable pencil, pertinent portions of AIA Document G702, "Application and Certificate for Payment," plus continuation sheet or sheets.
 - 2. Sign and notarize Application and Certificate for Payment.
 - 3. Submit original and three (3) copies of Application and Certificate for payment, plus four identical copies of continuation sheet or sheets, to Designated Owner's representative.
 - 4. Designated Owner's representative will compare formal submittal with approved informal submittal and, when approved, will sign Application and Certificate for Payment, will make required copies, and will distribute:
 - a. One copy to Contractor.
 - b. Two copies to Owner.
 - c. One copy to Designated Owner's representative's file.

1.5 MATERIAL PAYMENT PROCEDURE

- A. Material payment will be processed upon delivery of materials to job site, issuance of invoice by Contractor and approval by Owner's Representative. All suppliers and subcontractors must be paid in full and Waiver of Lien by major suppliers and subcontractors issued prior to any subsequent payments being made to contractor.
- B. In absence of a letter of credit, performance, payment or materials and labor bond a waiver of lien agreement conditioned upon payment by joint check shall be performed by contractor, owner and materials manufacture for this project.
- C. Once all work has been completed, and final inspection has been made, Contractor may invoice Owner for 90% of remaining labor and materials which were provided by Contractor. The owner will make payment of remaining 10% once warranty has been issued.

END OF SECTION 012900

SECTION 013119 – PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 PRE-CONSTRUCTION CONFERENCE

- A. Preconstruction Conference will be scheduled within 15 working days after Owner has issued Notice to Proceed, but prior to actual start of Work.
- B. Attendance: Representative of owner, roofing manufacturer/supplier, and contractor.
- C. Minimum agenda: Data will be distributed and discussed on:
 - 1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers, and Project Manager.
 - 2. Channels and procedures for communication.
 - 3. Review set-up area.
 - 4. Review all required permits.
 - 5. Review insurance requirements.
 - 6. Construction schedule, including sequence of critical work.
 - 7. Contract Documents, including distribution of required copies of Drawings and revisions.
 - 8. Processing of Shop Drawings and other data submitted to Project Manager for review.
 - 9. Processing of field decisions and Change Orders.
 - 10. Rules and regulations governing performance of work.
 - 11. Procedures for safety and first aid, security, quality control, housekeeping, and related matters.

1.3 PROGRESS MEETINGS

- A. Will be scheduled by owner's representative weekly or as described at pre-bid meeting.
- B. Attendance: Owner, Contractor, Job Superintendent, Roofing Material Manufacturer/Supplier, and Sub-Contractors, as appropriate.
- C. Minimum Agenda:
 - 1. Review of work progress.
 - 2. Field observations, problems, and decisions.
 - 3. Identification of problems which impede planned progress.
 - 4. Maintenance of progress schedule.

5. Corrective measures to regain projected schedules.
6. Planned progress during succeeding work period.
7. Coordination of projected progress.
8. Maintenance of quality and work standards.
9. Effect of proposed changes on progress, schedule, and coordination.
10. Other business relating to work.

1.4 PRE-FINAL INSPECTION

- A. Contractor must inform material supplier and building owner's representative prior to application of flood coat and gravel. Pre-final inspection will then be scheduled.
- B. Installations or details noted as deficient during inspection must be repaired and corrected by applicator.
- C. Once corrections have been made, contractor must inform material supplier and building owner's representative so a second inspection can be scheduled.
- D. Material supplier must approve roofing system prior to application of flood coat, surfacing application and/or gravel surfacing.

1.5 FINAL INSPECTION

- A. Scheduled by roofing material manufacturer upon job completion.
- B. Attendance: Owner or designated representative, contractor, roofing material manufacturer/supplier.
- C. Minimum Agenda.
- D. Walkover inspection.
- E. Identification of needed corrections to be completed by contractor with final approval from warrantor.

END OF SECTION 013119

SECTION 013219 – SUBMITTALS SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 SUBMITTAL PROCEDURES

- A. Coordination of submittals.

1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
2. Verify that each item and submittal for it conforms in all respects with specified requirements.
3. By affixing Contractor's signature or approval stamp to each submittal, he/she certifies that this coordination has been performed.

- B. Substitutions:

1. The Contract is based on standards of quality established in Contract Documents. To give all bidders equal opportunity, use of any materials or methods other than those specified will require proper submittal information and must be pre-approved in written addenda 10 days prior to bid due date.
2. Products requiring no further approval:
 - a. Minor products specified by reference to standard specification such as ASTM and similar standards.
 - b. Products specified by manufacturer's name and catalog model number.
3. Building owner reserves right to final authority on acceptance or rejection of any substitute.
4. Request for substitutions will be accepted from prime bidders only. Requests for substitutions from parties not bidding on project as a primary contractor will not be considered.

- C. "Or equal":

1. Specified materials are named to denote kind and quality required, whether or not words "or approved equal" are used. These materials shall serve as standards and all proposals shall be based upon same.
2. Where phrase "or equal," or "or equal as approved by Owner," occurs in Contract Documents, The material or method must be so approved for this Work by Owner prior to receipt of bids.
3. Owner's decision is final.

D. "Basis of Design":

1. Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for work of this specification. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified within this document.

1.3 SUBMITTAL DOCUMENTS

- A. A list of three (3) jobs of similar size where proposed materials have been used, under similar conditions as specified.
- B. Shop Drawings:
 1. Make Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of item and its method of connection to Work.
 2. Owner will review and comment on required changes. The Contractor may make and distribute corrected copies as are required for his purposes.
- C. Copy of roofing supplier's warranty which meets all requirements of specified warranty.
- D. Material supplier providing roofing warranty shall have an ISO 9001 certification.
- E. Letter from material supplier signed by a corporate officer, on company stationery, confirming that all bidding documents have been approved, that site has been inspected and meets requirements for suitability, and that specified warranty shall be provided upon satisfactory completion of project.
- F. Verify material supplier is a financially stable organization with ability to protect building Owner from both product liability and warranty claims relating to roofing that might arise during course of warranty period. It is intent of building Owner to establish requirements that will protect him, be fair to all suppliers and ensure that requirements are in line with exposure of supplier. The following information will be provided by material supplier that will issue warranty and will be submitted by prime bidder:
 1. A certificate of insurance for product liability with minimum limits in accordance with following formula:
 - a. Product Liability Insurance will be a minimum aggregate coverage, not less than 25% of total company sales, with coverage of not less than 25 million dollars per occurrence.
 - b. First dollar coverage (no self-insured retention or deductibles).
 - c. Coverage provided by an admitted company licensed to do business in **New Hampshire**, with an A.B. Best rating of A, or better.
 - d. An affidavit signed by a corporate officer stating that they are not currently, nor have been within last five (5) years, involved in litigation regarding asbestos content of their materials. Or provide a list of all pending asbestos related litigation, an estimate of dollar amount of all potential asbestos related liability and a summary of all asbestos related settlements over last five years.

- e. An affidavit signed by a corporate officer that cost of warranty claims has not exceeded 1% of that company's total roofing product sales in any of last five (5) years.
 - f. If material supplier has a parent company, a letter signed by a corporate officer of parent company stating that parent company will sign or issue warranty.
- G. Any proposed substitute materials or methods must also be accompanied by following documentation:
- 1. A detailed analysis of roofs being bid on.
 - 2. A complete specification of proposed substitute. If, after review, substitute is found to be acceptable, copies will be provided to each bidder who has picked up original specification.
 - 3. Written explanation of why substitutions should be considered is required.

1.4 BID DOCUMENTS

- A. Bid and Proposal Form shall contain quotes to be identified "BASE BID" for specified materials and methods. Quotes for approved substitutions or specified alternates shall be identified as 'DEDUCTION FROM BASE BID" for installation.
- B. Each bid shall be accompanied by a bid guarantee of 10% of bid amount. The bid guarantee may be in form of a bond or a certified check, cashier's check, or letter of credit.
- C. Certificate of insurance with limits specified in Section 002113.
- D. Evidence of experience as specified in Section 002113.

END OF SECTION 013219

SECTION 014110 – REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 TAXES

- A. Contractor shall pay all sales, consumer, use and other similar taxes required by law.

1.3 PERMITS AND FEES

- A. Contractor shall apply for and secure all incidental permits, governmental fees and licenses necessary for proper execution and completion of the Work.

1.4 GOVERNING CODES

- A. Work performed under this specification shall be in compliance with applicable codes, laws, and ordinances of municipal, state, and federal departments concerned. Materials and workmanship required by such regulations shall be provided by the Contractor whether or not specifically noted herein or shown on drawings

1.5 NOTICES

- A. Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and orders of any public authority bearing on performance of Work. If Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, without providing notice to building owner's representative, Contractor shall assume full responsibility and shall bear all costs.

1.6 REGULATORY REQUIRMENTS

- A. State and local building codes.

END OF SECTION 014110

SECTION 014200 – REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 REFERENCE STANDARDS

- A. Referenced specifications and standards published by national societies, associations, and institutes shall be considered as part of this specification. In all cases, referenced specification or standard shall be most recent publication date. Abbreviated identifications for particular organizations involved are as listed below:

1. AIA - The American Institute of Architects
2. ANSI – American National Standards Institute
3. ASCE - American Society of Civil Engineers
4. ASHRAE - The American Society of Heating, Refrigerating and Air-Conditioning Engineers
5. ASTM - American Society for Testing and Materials
6. AWPA - American Wood Preservers Association
7. AWPB - American Wood Preservers Bureau
8. FM - Factory Mutual Global
9. NRCA - National Roofing Contractors Association
10. OSHA - Occupational Safety and Health Administration
11. SMACNA - Sheet Metal and Air-conditioning Contractors National Association
12. UL - Underwriters Laboratory
13. WH - Warnock-Hersey.

END OF SECTION 014200

SECTION 014500 – QUALITY CONTROL

PART 1 - GENERAL

RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

QUALITY CONTROL

- B. Contractor shall:
 - 1. Be experienced in hot multi-ply roofing and modified bitumen roofing.
 - 2. Be acceptable by owner and roofing material Manufacturer/supplier.
- C. Roofing manufacturer shall:
 - 1. Be an Associate Member in good standing with National Roofing Contractors Association (NRCA).
 - 2. Be recognized in roofing, waterproofing and moisture survey industry.
 - 3. Be approved by owner.
 - 4. Material manufacturer/supplier must supply representative to perform periodic inspections throughout course of project. Written reports must be submitted to owner's representative and copies to contractor.
 - 5. Material supplier providing roofing warranty shall have an ISO 9001 certification.
- D. Any deficiencies noted during inspections must be corrected by contractor and approved in writing by material manufacturer/supplier's representative.

RANDOM SAMPLINGS

- E. During course of work, owner/owner's representative, may secure samples of materials being used from containers at job site and submit them to an independent laboratory for comparison to specified material.
- F. Materials shall be tested using ASTM D2829 - 07 (or most recent) Standard Practice for Sampling and Analysis of Existing Built-Up Roof Systems or other ASTM Standards for collecting, sampling and testing roof materials.
- G. If test results prove that a material is not functionally equal to specified material:
 - 1. Contractor shall pay for all testing.
 - 2. Owner will charge Contractor a penalty up to 20 percent of contract price when all work has been completed before test results become known.

3. Owner will charge Contractor a penalty in proportion to amount of work completed before test results become known. Remaining work shall be completed with specified materials.

PART 2 - PRODUCTS

GENERAL

- A. Comply with Quality Control, References, Specification, and Manufacturer's data. Where conflict may exist, more stringent requirements govern.
- B. Provide primary products, including each type of roofing sheet (felt), bitumen, base flashings, miscellaneous flashing materials, and sheet metal components from a single manufacturer, which has produced that type of product successfully for not less than three (3) years. Provide secondary products (insulation, mechanical fasteners, lumber, etc.) only as recommended by manufacturer of primary products for use with roofing system specified.

PART 3 - EXECUTION

SUBMITTALS

- A. Provide building owner's representative a letter from roof material manufacturer indicating that applicator is approved to install their products and will provide warranty for this installation.

END OF SECTION 014500

SECTION 014516 – FIELD QUALITY CONTROL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 DESCRIPTION

- A. Work included:
 - 1. Provide roofing inspection services as specified herein and as needed for a complete and proper installation.

1.3 SUBMITTALS

- A. Secure designated Owner's representative's advance approval of date and time for roof substrata inspection and pre-roofing meeting.
 - 1. Notify roofing inspection service, roofing contractor, and other interested parties, and secure their agreement to attend.
 - 2. At least three calendar days prior to preconstruction meeting, notify designated Owner's representative of names of persons expected to attend.
- B. Records:
 - 1. Maintain a complete and legible file, in chronological order, containing a copy of each report, certificate, and other communication received relative to work of this Section.
 - 2. Upon completion of work of this Section, deliver a copy of complete file to designated Owner's representative

PART 2 - PRODUCTS

2.1 ROOFING INSPECTION SERVICES

- A. For work of this Section, retain roofing inspection services of company approved in advance by designated Owner's representative.

PART 3 - EXECUTION

3.1 PRE-ROOFING MEETING

- A. Not less than three nor more than ten calendar days prior to scheduled start of roofing installation, conduct a roofing substrata inspection and pre-roofing meeting at job site.
 - 1. Designated Owner's representative will be chairperson of meeting, will take minutes of meeting, and will record all agreements reached as a result of inspection and meeting.
 - 2. Visually inspect all substrata upon which roofing is scheduled to be applied.
 - 3. Determine general acceptability, and determine areas requiring further preparation.
 - 4. Determine acceptable remedies for unacceptable areas.
 - 5. Discuss proposed schedule for installation of roofing, and reach agreement as to dates of start and finish of installation of roofing.
 - 6. Discuss proposed methods for installation of roofing, and equipment and personnel to be used.
 - 7. Discuss inspection methods to be used, reports to be issued by roofing inspector, responsibilities and limits of responsibilities of roofing inspector, and potential problems arising from use of methods not agreed to in pre-roofing meeting.

3.2 INSPECTION DURING ROOFING INSTALLATION

- A. Verify that materials delivered to job site are those approved by designated Owner's representative for use on this Work.
- B. Visually observe installation of roofing including, but not necessarily limited to:
 - 1. Verify use of installation procedures agreed upon in pre-roofing meeting.
 - 2. Call attention of contractor's representative on job to unacceptable methods and unacceptable results.
 - 3. Report to Contractor and to designated Owner's representative if contractor fails to correct unacceptable methods or unacceptable results.
- C. Make Final visual inspection of entire roofing installation.
 - 1. Compile a list of items required to be revised or replaced.
 - 2. Deliver a copy of list to contractor's representative on job and to others as appropriate.
 - 3. Verify proper revision or replacement of all items on list.

3.3 REPORTS

- A. Make daily written reports of roofing inspection activities, delivering copies to roofing contractor and others as agreed in pre-roofing meeting.

- B. Upon completion of roofing installation, compile a comprehensive report covering activities performed under this Section, and deliver a copy of report to:
1. Designated Owner's representative.
 2. Owner.
 3. Roofing contractor.
 4. Others as agreed in project meetings.

3.4 LIMITS OF ROOFING INSPECTOR'S RESPONSIBILITIES

- A. During progress of roofing installation, roofing inspector is required to:
1. Make visual observations and compile reports described in this Section;
 2. Advise roofing contractor's representative on job as to unacceptable methods and unacceptable results when so observed by roofing inspector.
- B. In connection with roofing installation, "unacceptable methods and unacceptable results" mean methods and results other than:
1. Those recommended by manufacturer of approved roofing system materials.
 2. Those required by pertinent regulations of governmental agencies having jurisdiction;
 3. Those required by these Specifications; and
 4. Those agreed upon in pre-roofing meeting.
- C. The roofing inspector is not empowered to:
1. Act for, or in lieu of, representatives of governmental agencies having jurisdiction;
 2. Give directions to Contractor or workmen on job;
 3. Revise any part of Contract Documents; or
 4. Approve any change in methods agreed upon in pre-roofing meeting.
- D. Failure of roofing inspector to observe unacceptable methods or unacceptable results during progress of Work will not absolve Contractor from his responsibility to complete Work in accordance with specified requirements and agreed methods

END OF SECTION 014516

SECTION 016600 – PRODUCT STORAGE AND HANDLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 DESCRIPTION

A. Delivery of Materials

1. Deliver materials to job-site in new, dry, unopened and well-marked containers showing product and manufacturer's name.
2. Deliver materials in sufficient quantity to allow continuity of work.

B. Storage of Materials

1. Store rolled goods, including membrane rolls, in dry area protected from water or extreme humidity.
2. Store coatings and adhesives in an area where the minimum temperature is 40°F. Protect from freezing.
3. Stack insulation on pallets.
4. Remove plastic packing shrouds. Cover all stored materials with canvas tarpaulin top to bottom. Secure tarpaulin.
5. Store formed edge metal in a dry area and protect from water. Remove metal immediately from wet packaging. Wet packaging may stain and corrode metal, especially mill finish aluminum.
6. Rooftop storage: Disperse material on roof to avoid overloading the structure.

C. Material Handling

1. Handle all materials on site to avoid bending, tearing, or other damage during transportation and installation.
2. Material handling equipment shall be selected and operated so as not to damage existing construction or applied roofing. Do not operate or situate material handling equipment in locations that will hinder smooth flow of vehicular or pedestrian traffic.
Environmental Requirements
3. Do not work in rain, snow or in presence of water

END OF SECTION 016600

SECTION 017700 – CLOSE OUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 DESCRIPTION

- A. Work Included:
 - 1. Provide an orderly and efficient transfer of completed Work to Owner.

1.3 QUALITY ASSURANCE

- A. Prior to requesting inspection by Project Manager, use adequate means to assure Work is completed in accordance with specified requirements and is ready for requested inspection.

1.4 PROCEDURES

- A. Substantial Completion:
 - 1. All roofing materials and components are in place and water tight according to specifications with alternates approved by Designated Owner's representative and Building Owner.
 - 2. Roofing Contractor will notify designated Owner's representative of substantial completion. Within a reasonable time after receipt of notification, designated Owner's representative will inspect to determine status of completion.
 - 3. If the designated Owner's representative determines Work is not substantially completed:
 - a. Designated Owner's representative will promptly notify Contractor, giving reasons therefore.
 - b. Roofing Contractor will remedy deficiencies and notify Designated Owner's representative when ready for re-inspection.
 - c. Designated Owner's representative will re-inspect Work.
- B. Final Completion:
 - 1. Designated Owner's representative will prepare and submit a written statement at final completion.
 - 2. Certify that:

- a. Contract Documents have been reviewed;
 - b. Work has been inspected for compliance with Contract Documents;
 - c. Work has been completed in accordance with Contract Documents;
 - d. Equipment and systems have been tested as required, and are operational;
 - e. Work is completed and ready for final inspection.
- 3. Designated Owner's representative will make an inspection to verify status of completion.
 - 4. If the Designated Owner's representative determines that Work is incomplete or defective:
 - a. Designated Owner's representative will promptly notify Contractor, in writing, listing incomplete or defective work.
 - b. Remedy deficiencies promptly, and notify Designated Owner's representative when ready for re-inspection.
 - 5. When Designated Owner's representative determines that Work is acceptable under Contract Documents, he will request Contractor to make close-out submittals.

C. Close-out submittals include, but are not necessarily limited to:

- 1. Project Record Documents described in Section 013219 SUBMITTALS SCHEDULE, if part of specification;
- 2. Operation and maintenance data for items so listed in pertinent other Sections of these Specifications, and for other items when so directed by Project Manager;
- 3. Warranties and bonds;
- 4. Evidence of payment and release of liens;
- 5. List of subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays.

D. Final adjustment of accounts:

- 1. Submit a final statement of accounting to Project Manager, showing all adjustments to Contract Sum.
- 2. If so required, Designated Owner's representative will prepare final Change Order showing adjustments to Contract Sum which were not made previously by Change Orders.

1.5 INSTRUCTION

- A. Instruct Owner's personnel in proper operation and maintenance of systems, equipment, and similar items which were provided as part of Work.

END OF SECTION 017700

SECTION 017836 – WARRANTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 GENERAL

- A. This specification section sets forth warranty requirements.

1.3 WARRANTY

- A. Quotations will include a price for a **20** year no dollar limit, non prorated warranty to be provided by the material supplier. If the supplier is a subsidiary company, the warranty must be issued by the parent company.
- B. The material supplier will issue the warranty to owner upon material supplier acceptance of project completion and full payment of all bills related to project.
- C. Warranty supplier shall, as part of the warranty, provide one (1) maintenance visit within the first two (2) years of the warranty period. Each maintenance visit will include Inspections, Housekeeping, Routine Maintenance and Preventive Maintenance as described below.

- 1. General

- a. All repairs will follow the manufacturer's written repair and maintenance guidelines or NRCA recommended repair procedure.

- 2. Debris

- a. A complete walkover of the existing roof areas to determine the immediate surface conditions of the roof.
 - b. Removal of all naturally occurring debris (i.e., leaves, branches, paper and similar items) from the roof membrane.
 - c. Service will include removal of surface debris from the roof drains, gutters, and scuppers, but not clogged piped or plumbing.
 - d. All debris will be disposed of at the owner's approved site location.

- 3. Terminations and Flashing

- a. Sealant voids in termination bars, counter flashings and parapet caps will be cleaned and resealed as required.

- b. Exposed fasteners will be resealed on perimeter metal details where required.
- c. All pitch pans will be refilled and topped off as required.
- d. Metal projections (hoods and clamps) will be checked and resealed.
- e. Soil stack leads will be inspected for cuts or holed and temporarily resealed when required with appropriate materials until arrangements can be made for permanent repair.
- f. Re-secure loose metal coping caps, termination bars, counter flashings and metal edge systems where required with appropriate fasteners.

4. Membrane

- a. Tears, splits and breaks in the perimeter and internal membrane flashing systems and flashing strip-ins will be repaired with appropriate repair materials.
- b. Visible membrane defects which may allow water into the roofing system will be repaired with appropriate repair materials.
- c. Dress-up reflective coatings where mastic repairs have been made.
- d. Drains and Gutters
- e. Check and re-secure drain bolts and clamping rings.
- f. Check strip-in around drain leads, coat with approved mastics if required.
- g. Reattach loose gutter straps, seal open gutter joints, and repair gutter strip-ins where required.
- h. Check scupper boxes for open solder or caulking and seal with appropriate materials if required.

END OF SECTION 017836

SECTION 061053 – MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 GENERAL

- A. Roofing contractor shall furnish and install all materials described herein unless specifically noted otherwise

1.3 SUMMARY

- A. This portion of specification sets forth general requirements, including quality and type of materials required for installation of all lumber used for wood curbs, nailing strips, miscellaneous blocking material, unexposed fillers, fascias, edging strips, etc.

1.4 STORAGE

- A. All material specified herein shall be stored (after delivery to site) and fully protected from damage and weather, and shall be piled to prevent warping. All lumber shall be fully protected to maintain original required moisture content as specified in item titled "Moisture Content".

1.5 OTHER REQUIREMENTS

- A. Dimensions indicated on drawings are nominal dimensions (except where details show actual sizes) and shall be subject to standard reductions required for surfacing or tolerances permitted by grading rules. Unless otherwise indicated on drawings, all material shall be S4S (surfaced four sides).

1.6 PROTECTION

- A. All finished work shall be adequately protected against damage from any source.

1.7 COORDINATION

- A. Carpenters shall coordinate work with other trades so progress continues without interruption.

PART 2 - PRODUCTS

2.1 WOOD - FRAMING AND CURBS, GRADING RULES, GRADES, AND SPECIES

- A. Lumber: Southern Pine, Yellow Pine, Douglas Fir, Spruce, Ponderosa Pine, Larch or Hemlock and shall meet following minimum grade requirement of construction standard (75% #1 and 25% #2); free from warping and visible decay. Lumber shall be graded according to standard grading rules of Southern Pine Inspection Bureau, West Coast Lumber Inspection Bureau, or Western Wood Products Association.

2.2 MOISTURE CONTENT

- A. All lumber shall be air-dried or kiln-dried before treatment, so moisture content is not more than 19%. After treatment, it shall be kiln-dried at temperatures not exceeding 160° F. (71°C) and moisture content is not more than 19% at time of shipment.

2.3 DECAY-RESISTANT TREATMENT

- A. Lumber in contact with roofing or acting as fascias, and all other exterior lumber, shall be Chemically Treated Wood or Natural rot resistant wood.
- B. Chemically Treated Wood
 - 1. Wood shall be pressure-treated with a preservative in accordance with AWPA Specifications and approved by EPA. Chromate copper arsenate, creosote and oil-borne preservatives are not acceptable.
 - 2. Treating processes, material conditions, plant equipment, and other pertinent requirements shall conform to AWPA Specifications for specific kind of lumber and type of preservative to be used. Retention shall be as required for intended use.
- C. Natural rot resistant wood
 - 1. North America Softwoods may be used in lieu of chemically treated wood, limited to:
 - a. Douglas Fir – Heartwood
 - b. Southern Pine – Sapwood
 - c. Western Red Cedar – Heartwood
 - d. Eastern White Cedar – Heartwood
 - e. Western Larch – Heartwood
 - f. Eastern Larch (Tamarack) - Heartwood
- D. All treated lumber shall bear mark of a code recognized third party agency such as AWPA.

2.4 PLYWOOD

- A. Grade: CDX or Cyme exterior Grade.
- B. Description: 5/8" thick Butt and finish strips: 20-gage sheet steel.

2.5 MECHANICAL FASTENERS/WOOD TO STEEL DECK

- A. Acceptable Manufacturers:
 - 1. Buildex Div. Of ITW Itasca, IL.
 - 2. Olympic Manufacturing Group Inc. Agawam, MA.
- B. Screw Length: Sufficient to engage steel deck $\frac{3}{4}$ " Submit proposed manufacturer's specification for owner approval.

2.6 WOOD TO WOOD

- A. Type: Galvanized, common, annular ring nail. Length: Sufficient to penetrate underlay blocking 1-1/4 inches.
- B. Acceptable Manufacturers:
 - 1. Buildex Div. of ITW Itasca, IL.
 - 2. Olympic Manufacturing Group Inc. Agawam, MA.

2.7 WOOD TO MASONRY

- A. Acceptable Manufacturers:
 - 1. Buildex Div. of ITW Itasca, IL.
 - 2. Olympic Manufacturing Group Inc. Agawam, MA.
 - 3. Rawl, Powers Fastening Co. New Rochelle, NY.
- B. Length: As recommended by manufacturer.

2.8 WOOD TO HOLLOW MASONRY

- A. Acceptable Manufacturers:
 - 1. Buildex Div. Of ITW Itasca, IL
 - 2. Olympic Manufacturing Group Inc. Agawam, MA
 - 3. Rawl, Powers Fastening Co. New Rochelle, NY
- B. Length: As recommended by manufacturer

PART 3 - EXECUTION

3.1 CARPENTRY

- A. At roof edge to receive metal fascia, around all roof top penetration perimeters, and under any flashing component that is to have a roof flange mechanically fastened to roofing substrate;
- B. Mechanically attach wood blocking. Blocking thickness: Equal to final insulation thickness. Width: Six inches nominal.
- C. Fasteners shall be installed in two rows staggered. Spacing in any one row shall not exceed 24 inches. Within eight feet of outside corners, spacing shall not exceed twelve inches in any one row.
- D. Offset blocking layers twelve inches and weave corners.
- E. When preservative treated wood is cut, cut end shall be treated in accordance with AWWPA Specification M4.
- F. Lumber shall be accurately cut to work requirements and shall be well fastened.
- G. Bolted fastenings shall have washers of adequate size under both heads and nuts. Nails shall be of correct size and quantity for proper fastening. Oversized nails that will result in splitting shall not be used. All fasteners shall be galvanized per ASTM A 153.

END OF SECTION 061053

SECTION 072113 – ROOF AND DECK INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Roof Insulation
- B. This portion of the specification describes materials and workmanship required for installation of insulation over roof decks.
- C. All materials described herein shall be furnished and installed by roofing contractor unless specifically noted otherwise.

1.3 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed insulation materials shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
- B. Material Compatibility: Provide insulation materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that has UL listed and FM Approvals approved for membrane roofing system consistent to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.
- C. Source Limitations: Obtain components including roof insulation, fasteners, adhesive, and etc. as approved by membrane roofing manufacturer.

- D. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.
1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
 5. Review structural loading limitations of roof deck during and after roofing.
 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 7. Review governing regulations and requirements for insurance and certificates if applicable.
 8. Review temporary protection requirements for roofing system during and after installation.
 9. Review roof observation and repair procedures after roofing installation.
- E. Pre-installation Roofing Conference: Conduct conference at Project site.
1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 5. Review structural loading limitations of roof deck during and after roofing.
 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 7. Review governing regulations and requirements for insurance and certificates if applicable.
 8. Review temporary protection requirements for roofing system during and after installation.
 9. Review roof observation and repair procedures after roofing installation.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Insulation shall be delivered to site in an undamaged and dry condition. Material received that is not dry or is otherwise damaged shall be rejected.
- C. Proper storage on or off site shall be roofing contractor responsibility.
- D. 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.
- E. Any unused insulation remaining on roof at end of workday shall be returned to storage.
- F. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.6 INSULATION – GENERAL

- A. All insulation materials must be approved by warrantor of primary roof membrane materials. Samples should be provided to manufacturer and written approval from warrantor of primary roof membrane materials is required before ordering these materials for project.
- B. Insulation boards shall be full size except when cutting is required at roof edges and openings. Boards that are broken, cracked, have been exposed to moisture, or are otherwise damaged shall not be used.
- C. Proper installation and fit of wood nailers, blocking, and other rough carpentry in appropriate locations shall be verified prior to installation of roof insulation.
- D. Caution shall be exercised with construction traffic to avoid damage to new insulation. Breaking or crushing of insulation is unacceptable and any damaged insulation shall be replaced at roofing contractor's expense.
- E. Insulation shall be laid with end joints staggered and all joints tight; however, boards shall not be forced into place.
- F. No more insulation shall be installed during any work period than can be covered by all plies of roofing during same work period. At end of work period, temporary edge seals shall be installed to protect roof insulation. Upon resumption of work, they must be removed. Such seals shall consist of strips of roofing felt applied and top-coated with specified adhesive.

- G. Insulation surfaces shall be cleared of all debris before roofing is placed.

1.7 PROJECT CONDITIONS

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

1.8 WARRANTY

- A. Refer to Section 01 78 36 for warranty requirements.

PART 2 - PRODUCTS

2.1 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class I, Grade 3, felt or glass-fiber mat facer on both major surfaces, **1 layer of 3"**.
- C. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, ½" thick, factory primed.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Georgia-Pacific Corporation; Dens Deck Prime.
 - b. Or Owner Approved Equal.
- D. Cover Board: ASTM C 1278/C 1278M, cellulosic-fiber-reinforced, water-resistant gypsum substrate, ½".
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. USG Corporation; Securock.
 - b. Or Owner Approved Equal.
- E. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.2 INSULATION ACCESSORIES

- A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.
- B. Bead-Applied Insulation Adhesive: Insulation manufacturers' recommended bead-applied, low-rise, one-component or multi-component urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer.
- C. .Insulation Cant Strips: ASTM C 728, perlite insulation board.
- D. Wood Nailer Strips: Comply with requirements in Section 061053 "Miscellaneous Rough Carpentry."
- E. Tapered Edge Strips: ASTM C 728, perlite insulation board.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of insulation system:
 - 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
 - 2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Contractor must verify deck slopes and determine if insulation stops and/or backnailing is required by warranty supplier based on system being installed.
 - 4. Prior to installing insulation, deck must be inspected and accepted by roofing contractor and roofing system warrantor.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Roofing contractor shall perform all other work of preparing deck. When insulation is applied, deck shall be dry and free of dew, frost, ice, and snow.

3.3 INSULATION INSTALLATION

- A. Comply with roofing system manufacturer's written instructions for installing roof insulation.
- B. Insulation Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of roofing membrane system with vertical surfaces or angle changes more than 45 degrees.
- C. All boards installed shall be 18 inches in length or width, minimum.
- D. Install tapered insulation under area of roofing to conform to slopes indicated.
- E. 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 with insulation.
 - 1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
- F. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- G. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- H. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:
 - 1. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
- I. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints a minimum of 6 inches in each direction from joints of insulation below. Loosely butt cover boards together and Tape joints if required by roofing system manufacturer.
 - 1. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.
 - 2. Set each subsequent layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections and to prepare test reports.
- B. Test Cuts: Test specimens will be removed to evaluate problems observed during quality-assurance inspections of roofing membrane as follows:
 - 1. Approximate quantities of components within roofing membrane will be determined according to ASTM D 3617.

2. Repair areas where test cuts were made according to roofing system manufacturer's written instructions.
- C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
 1. Notify Architect and Owner 48 hours in advance of date and time of inspection.
- D. Roofing system will be considered defective if it does not pass tests and inspections.
 1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.5 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 072113

SECTION 075416 – ELVALOY MODIFIED THERMOPLASTIC ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 SUMMARY

- A. This portion of the specification sets forth the general requirements and describes materials and workmanship for installing the specified roofing system.
- B. Follow Membrane manufacturer's guidelines.
- C. Roofing contractor shall furnish and install all materials described herein unless specifically noted otherwise.
- D. This section is for work on roofs: SION.

1.3 DEFINITIONS

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

1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.
- C. Solar Reflectance Index: Not less than initial when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
- D. Energy Performance: Provide roofing system with initial solar reflectance not less than 0.822 and emissivity not less than 0.87 when tested according to CRRC-1.

1.5 PROJECT CONDITIONS

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

1.6 SUBMITTALS

- A. Related section: SECTION 01300 - SUBMITTALS
- B. Prior to starting work, the roofing contractor shall submit 3 copies of the technical data on roofing materials, including material specifications, Material Safety Data Sheets, and installation procedures.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that has UL listed and FM Approvals approved for membrane roofing system consistent to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.
- C. Source Limitations: Obtain components including roof insulation, fasteners, adhesive, and etc. as approved by membrane roofing manufacturer.
- D. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- E. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
 - 5. Review structural loading limitations of roof deck during and after roofing.

6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

F. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.8 DELIVERY, STORAGE, AND HANDLING

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

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

1.9 PROJECT CONDITIONS

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

1.10 WARRANTY

- A. Refer to Section 01 78 36 for warranty requirements.

PART 2 - PRODUCTS

2.1 ROOFING MANUFACTURERS

- A. Basis of Design: Subject to compliance with requirements, provide products by the following:

1. SR Products – 30505 Bainbridge Road, Solon, OH 44139

- B. Membrane and Flashing Sheets: ASTM D 751.

1. SION FS

Property	Typical Value	Test Method
Tear Strength, min, lbf	88 MD 108 XMD	ASTM D 751
Linear Dimensional Change max, %	0.4 MD 0.1 XMD	ASTM D 1204
Elongation at Break, min, %	29 MD 32 XMD	ASTM D 751
Breaking Strength, min, lbf/in.	374 MD 407 XMD	ASTM D 751
Seam Strength, min, % of Tensile or Breaking Strength	100	ASTM D 751
Membrane Thickness (Nominal) (in)	.045", .060" & .080"	ASTM D 751
Low Temperature Bend	-40°C (Pass)	ASTM D 2136
Solar Reflectance	0.822	ASTM E 903
Emissivity	.915	ASTM E 903
SRI	109	ASTM E 1980
Dynamic Puncture Resistance	Pass @ 20 J	ASTM D 5635
Heat Aging: Retention of Breaking Strength, min, % of original	92 MD 97 XMD	ASTM D 751/3045
Heat Aging: Retention of Elongation, min, % of original	100 MD 91 XMD	ASTM D 751/3045

Accelerated Weather Test; Cracking (7X magnification) Crazing (7X magnification)	No Cracking No Crazing	ASTM G 53
Change in Weight after Immersion in Water, max, %	0.41	ASTM D 570
Static Puncture Resistance	Pass @ 33 lbs.	ASTM D 5602

2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

- A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.
- B. Sheet Flashing:
 - 1. SION NR Detail Membrane (non-reinforced) - Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as KEE sheet membrane.
- C. Bonding Adhesive:
 - 1. SION FS Bonding Adhesive.
- D. Slip Sheet: Manufacturer's standard, of thickness required for application.
- E. Pipe Boot:
 - 1. SION Preformed Pipe Boot.
 - 2. SION Split Pipe Boot.
- F. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.
- G. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick (25 mm wide by 1.3 mm thick), prepunched.
- H. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions consistent with FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- I. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.3 WALKWAYS

- A. Flexible Walkways: SION Walk Tread - Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway rolls.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
 - 2. 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. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."
 - 4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
 - 5. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 - 6. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. 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.
- D. Install acoustical roof deck rib insulation strips, specified in Section 053100 "Steel Decking," according to acoustical roof deck manufacturer's written instructions, immediately before installation of overlying construction and to remain dry.

3.3 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Sheet Installation:
 - 1. Starting at the lowest point of the roof, unroll, dry set and align specified cap sheet as indicated on approved shop drawings.

2. Align the sheet to position the selvage to the factory lap line marked on the previous roll. Upon alignment, specified sheet is folded halfway back upon itself from the end lap direction.
3. Specified adhesive is applied with full coverage to substrate - hot asphalt (minimum rate of 25 lbs/100 sq. ft.); cold substrate adhesive (1-1/2 – 2 gal/100 sq. ft.).
4. Hold back specified adhesive 3" from the start of selvage.
5. Cap sheet is hand introduced into adhesive.
6. Cap sheet must be firmly broomed into adhesive and then rolled with a roller (minimum 200 lbs.) to insure proper adhesion.
7. All seams to be made using the hot air welding method with a minimum 2" full weld at edge. Hand held hot-air welder, 115 volt, 1500 watt power minimum. Motorized hot-air welder, 220 volt, SION FS Clad Metal watt power minimum. Generator minimum output of 7500 watts required.
8. All welded seams to be probed. Voids corrected and specified seam sealer applied daily, as work is completed.
9. Roll ends of the cap sheet are butted and then capped with specified 6" hot-air welded strip-in membrane. All edges are probed and sealed with seam sealer.
10. At the completion of each working day, cap sheet is lapped onto existing roof surfacing, secured with specified adhesive and fully sealed with edge sealant. Remove and discard the lapped membrane at the start of the next workday.
11. At no time will hot asphalt adhesive be permitted to contact the top surface of membrane.
12. Roof traffic on applied areas of membrane must be restricted to eliminate asphalt staining of the top surface.

B. Membrane installation further requirements:

1. Follow warranty supplier's recommendations for backnailing requirements.
2. Place ply sheets to ensure water will flow over or parallel to, but never against, exposed edges.
3. When using adhesives, ply should never touch ply even at roof edges, laps, tapered edge strips, and cants.
4. Apply specified adhesive no more than ten feet ahead of each roll being embedded, less in cool weather.
5. Avoid excessive application of adhesive over top ply, leave top ply exposed with minimal adhesive at ply lines or back-line on the insulation.
6. Light brooming or squeegeeing may be required to aid adhesion of ply sheets, base sheets, and/or cap sheets.
7. Avoid traffic on all newly installed membrane.
8. Overlap previous day's work 24 inches.
9. Lap ply sheet ends six inches. Stagger end laps twelve inches minimum.
10. Fit plies into roof drain rims, install metal flashing and finishing plies, secure clamping collars, and install domes.
11. Cut out fishmouths/side laps that are not completely sealed. Replace all sheets that are not fully and continuously bonded.
12. Roof is to be inspected and approved by representative from roof system warrantor before application of surfacing.

3.4 DAILY WATERSTOP/TIE-INS

- A. Install "deadman" insulation filler at insulation staggers.
- B. Extend roofing plies at least twelve inches onto prepared area of adjacent roofing. Embed plies into Specified Interply Adhesive. Strip edges with twelve-inch wide ply sheet embedded completely in alternate uniform courses of Specified Interply Adhesive.
- C. At beginning of next day's work, remove temporary connection by cutting felts evenly along edge of existing roof system. Remove "deadman" insulation fillers.

3.5 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
 - 1. Snap a chalk line 4" from toe of cant out onto roof membrane.
 - 2. Cut and dry fit one ply of top ply flashing membrane. Flashing must extend 4" beyond the toe of the cant onto the thermoplastic field membrane and a minimum of 8" in height. Allow for top ply flashing sections to overlap for a minimum of 2" hot air welds at vertical laps.
 - 3. Fully adhere top ply flashing above the cant using top ply flashing adhesive. Using a roof or masonry trowel, apply top ply flashing adhesive to the designated surface in a monolithic film (approximately 8-10 sq. ft. per gallon). Allow material to flash for a minimum of 15 minutes on days warmer than 70°F, and 30-45 minutes when temperatures are cooler than 70°F. Place flashing membrane into the still tacky top ply flashing adhesive and work smooth with roller pressure. Be sure to overlap cap sections a minimum of 2" with the overlap free of adhesive for hot air welding.
 - 4. Mechanically fasten top of flashing to substrate using aluminum termination bars fastened a minimum of 12" O.C.
 - 5. Seal top of termination bar with specified sealant.
 - 6. Dry laid area of top ply flashing extends over the cant and to chalk line that is 4" beyond toe of cant on field surface ply of thermoplastic membrane.
 - 7. Hot air weld toe of top ply flashing membrane to field surface membrane using minimum 2" welds.
 - 8. Hot air weld vertical laps of top flashing ply using minimum 2" welds.
 - 9. Apply seam sealer to all edges after all welds have been probed and corrected as required.
 - 10. Install specified counter flashing system as per detail drawings.

3.6 AT SINGLE AND MULTIPLE PENETRATIONS-SMALL PIPES & CONDUITS

- A. Remove existing pitch pans.
- B. Install roofing system onto wood blocking.

- C. Install specified pitch pan(s) fabricated with clad metal and riveted flange corners around penetration(s) and attach flange to blocking 3" o.c.
- D. Do not prime pan interior or projection if two-part pitch pocket sealant is used.
- E. Cover vertical riveted seam of pitch pan with duct tape (see detail drawing).
- F. Seal flange and vertical riveted seam with flashing with minimum 2" hot air weld to Elvaloy modified thermoplastic field membrane and to clad metal flange.
- G. Heat weld outside corners to all four (4) corners of pitch pan.
- H. Fill to pitch pan 3/4" from top with non-shrink grout, allow to set up.
- I. Apply edge sealant after probing and correcting difficult welds.
- J. Seal top with specified pitch pan sealant.
- K. All penetrations will receive a bonnet or watershed as shown in detail drawings.

3.7 AT PLUMBING VENTS

- A. Remove existing flashing and clean to bare metal.
- B. Wedge plumbing vent tight against deck.
- C. Install prefabricated plumbing vent flashing.
- D. Hot air weld flange to Elvaloy modified thermoplastic membrane (minimum 2" weld).
- E. Secure top of boot to pipe with a stainless steel draw band or clamp and seal with specified caulking.
 - 1. Apply edge sealant to flange weld after probing and correcting any voids.

3.8 EQUIPMENT STANDS - "I" BEAMS AND ANGLE IRONS

- A. Remove existing flashing. Weld 1/4 inch plate steel (where required) to open portion of beam. Slope to shed water away from I-beam. Fill beam interior below sloped plate to roof deck with batt insulation. Install vertical and horizontal sections of wood blocking around column. Blocking height to be a minimum of 8 inches above final insulation surface. Provide tapered edge strip and cant around stand. Mechanically attach to deck; miter corners.
- B. Install new roofing two inches beyond top edge of cant. Adhere specified flashing membrane. Overlap section four inches. Extend flashing ply four inches beyond toe of cant.
- C. Install Cap Ply of specified flashing membrane over the base ply. Nail cap flashing ply to wood curb six inches o.c.; extend 4 inches beyond cant, Mechanically fasten top of

sheeting to substrate with one inch cap nails eight inches o.c. Hot air weld base to cap flashing ply to field membrane with 2" weld.

- D. Apply seam sealer to all edges.
- E. Fabricate and install new aluminum counter flashing. Mechanically fasten counter flashing to structural beam with compatible bar/fasteners. Extend counter flashing two inches below top of base flashing. Wipe clean top surface of counter flashing with metal cleaner. Caulk top of counter flashing, provide watershed, and tool neatly.

3.9 EXPANSION JOINTS, ROOF DIVIDERS AND COPING

- A. Install new wood blocking at flashing base. Provide tapered edge strip over installed insulation at blocking edge. Firmly butt tapered edge strip to blocking. Edge strip shall be properly adhered or attached to the substrate.
- B. Properly adhere or attach cant strip securely to substrate and blocking.
- C. Extend new roofing at least two inches beyond top edge of cant.
- D. Adhere flashing to flashing substrate in a continuous application of flashing adhesive. Remove wrinkles and voids. Overlap sections four inches. Extend flashing ply four inches beyond toe of cant.
- E. Expansion Joints shall receive the following:
 1. Install vinyl water barrier over joint opening. Allow barrier to drape four inches within joint opening. Nail both sides of barrier eight inches o.c.
 2. Insert fiberglass batten insulation into expansion joint opening; fill entire opening.
- F. Surface flashing as specified.
- G. Install joint cover as shown on detail drawing.
- H. Install cap-flashing ply with minimum 2" hot air welds to scupper flanges.
- I. Wall flashing shall extend over flanges and roof membrane out 4" past cant.
- J. Apply seam sealer to all edges.

3.10 AT GRAVEL STOP, DRIP EDGE, AND FASCIA

- A. Remove existing edge flashing system to wood blocking.
- B. Replace rotted blocking as needed and approved by building owner's representative.
- C. Provide tapered edge strip along gravel stop, over installed insulation at blocking edge. Firmly butt tapered edge strip to blocking. Fully adhere edge strip to insulation.

- D. Solidly adhere roof membrane plies completely to insulation and blocking. Envelope felts. Ensure complete bond and continuity without wrinkles or voids.
- E. Install fascia system and stripping plies according to detail drawings.
- F. Heat weld edge of Elvaloy flashing to Elvaloy clad metal fascia flange and Elvaloy modified fleece backed thermoplastic field membrane with minimum 2" hot air welds.
- G. Apply seam sealer to all edges after all welds have been probed and corrected as required.
- H. Install new downspouts at spill-out scupper locations. Dimensions to match existing.

3.11 WALKWAY INSTALLATION

- A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.12 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- B. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.
- C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.13 PROTECTING AND CLEANING

- A. 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 Architect and Owner.
- B. 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.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075416

SECTION 077119 – MANUFACTURED GRAVEL STOP FASCIA SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 SUMMARY:

- A. Work included: Furnishing and installing factory fabricated and finished fascia systems.

1.3 REFERENCES:

- A. Fascia system shall be tested by an independent third party per ANSI/SPRI ES-1 design test requirements.
- B. Fascia system shall be tested in accordance with Factory Mutual Global “Approval Standard for Roof Perimeter Flashing Class Number 4435”.
- C. Attachment of the perimeter wood blocking shall be installed in accordance with Factory Mutual Global “Property Loss Data Sheets 1-49”.

1.4 SUBMITTALS:

- A. Design Pressures: Provide documentation that the product shall be designed and installed for wind loads in accordance with Chapter 16, Figure 1609 of the International Building Code and tested for resistance in accordance with ANSI/ SPRI ES-1.
- B. Product Data: Provide specified product and installation data for all materials.
- C. Shop drawings: Show profiles, joining method, location of accessory items, anchorage and flashing details, adjacent construction interface, and dimensions.
- D. Samples: Available on request; sized to adequately represent material.
- E. Submit: Warranty and manufacturer/supplier’s performance certificates.
- F. Submit: Product Approval Sheets to adequately represent field dimensions and conditions.
- G. Submit: LEED Recycled Content Documents -MR Credit 4 – use materials with recycled content such that the sum of postconsumer recycle content plus $\frac{1}{2}$ of the pre-

consumer content constitutes at least 10% (1-point) or 20% (2-points) based on cost, of the total value of the materials in the project.

1.5 QUALITY ASSURANCE:

- A. Certificates: Warrantor's certificate ANSI requirements.

1.6 PRODUCT HANDLING:

- A. All materials shall arrive in the manufacturer/supplier's original sealed, labeled containers.
- B. Store the fascia materials in a dry, protected and well-vented area. Report damaged material immediately to delivering carrier and manufacturer/supplier.
- C. Remove protective plastic surface film after immediately after installation.

1.7 SUBMITTAL PROCEDURES:

- A. Related Section: SECTION 013300 – SUBMITTAL PROCEDURES

1.8 JOB CONDITIONS:

- A. Verify that other trades are complete before mounting coping covers.
- B. Fascia mounting surfaces shall be straight, level and secure; substrates shall be proper width.
- C. Refer to construction documents, shop drawings and fascia installation instructions.
- D. Coordinate installation with roof membrane warrantor's instructions before starting.
- E. Installation contractor is responsible for actual field measurements.

1.9 WARRANTY:

- A. Related section: SECTION 017836 - WARRANTIES
- B. Upon project completion, acceptance by building owner and payment of all materials and fees, the specified system warranty will be issued.

PART 2 - PRODUCTS

2.1 MANUFACTURED GRAVEL STOP FASCIA SYSTEM:

- A. Manufactured Gravel Stop Fascia System: shall be Storm Defender Designer Series Single Ply Fascia by SR Products or approved equal, a two-part fascia assembly designed for thermoplastic roof systems. This product offers a smooth face profile for a unique contemporary roof edge. . The fascia system consists of a continuous extruded aluminum roof edge termination system, exterior fascia cover, and corrosion resistant fasteners
- B. Formed metal fascia:
 - 1. Cover Metal Type: **Kynar Coated Galvanized Steel** or **Kynar Coated Aluminum**.
 - 2. Cover Metal thickness: **0.40" aluminum** or **24 gauge steel**.
 - 3. Fascia Size: 4", 5-1/2", 7" and 8.5", size to extend 1" below bottom of wood blocking.
- C. Fascia: Standard 12'-0" lengths with matching concealed joint splice plates.
- D. Extruded anchor bar: Std. 12'-0" length of commercial type extruded aluminum.
- E. Fasteners: shall be supplied by the manufacturer/supplier per substrate application and be corrosion resistant.

2.2 ACCESSORIES:

- A. Corners, fascia sumps, spill outs, ledge caps, downspouts, or other special fabrications shall be fabricated by the fascia manufacturer/supplier.
- B. Welding the accessory assembly shall be used to maintain watertight integrity.

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Edging installation shall not disrupt other trades.
- B. Contractor to verify that wood substrate is level (+ or - 1/8") dry, clean and free of foreign matter.
- C. Correct defects before proceeding.

3.2 INSTALLATION:

- A. Follow warrantor's installation instructions to insure proper design and installation.

- B. Submit design drawings to Architect or Specifier for approval before fabrication.
- C. Installer shall check as-built condition and approve specified details before fabrication.
- D. Installer shall install mechanical fasteners into water dam cant or continuous rail, concealed splice plates and fascia cover shall be snapped into place consistent with warrantor's instructions; suitable to substrates.

END OF SECTION 077119

SECTION 221426 – ROOF DRAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2 GENERAL

- A. Existing drains will be re-worked, re-flashed, and deteriorated components replaced.
- B. At start of each workday, drains within daily work area shall be plugged. Plugs to be removed at end of each workday or before arrival of inclement weather.
- C. All drains will require new flashing lead.
- D. New drains to be installed as directed by building owner's representative.

1.3 ACTION SUBMITTALS

- 1. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 DRAIN ACCESSORIES

- A. Replacement parts should be from same manufacturer of original drain.
- B. New drains should be appropriate for existing conditions. Acceptable drain manufacturer's are:
 - 1. Zurn, Erie, PA.
 - 2. Smith, Montgomery, Alabama.
 - 3. Josam, Michigan City, Indian.
- C. Metal flashing:
 - 1. ASTM B29-79(1984), four lb. sheet lead.
 - 2. Soft copper drain flashing sheet.
- D. Mastics & Adhesives:
 - 1. As approved by roofing system manufacturer.

PART 3 - EXECUTION

3.1 DRAINS

A. Existing Drains:

1. Remove flashing collar. Clean. If broken, replace.
2. Install tapered edge strip around drain to create 48 x 48 inch sump. Miter corners. Seal top of tapered edge to drain rim with fiberglass mesh embedded between alternate courses of mastic.
3. Re-clamp flashing collar to drain in bed of mastic. If bolts are broken, drill and re-tap. If ladder clamps are installed, replace clamps.
4. Neatly cut lead within drain at rim, remove.
5. Install strainer.

B. New Drains:

1. Locate and install drain body in locations specified by owner's representative.
2. Install tapered edge strip around drain to create 48 x 48 inch sump. Miter corners. Seal top of tapered edge to drain rim with fiberglass mesh embedded between alternate courses of asphalt mastic.
3. Install multi-ply roofing or stripping plies into sump and onto drain rim.
4. Apply 1/16 inch uniformly thick layer of asphalt mastic to surface receiving lead flashing.
5. Set single piece lead flashing (30" square minimum) in mastic centered over drain, extend lead six inches beyond drain rim. Neatly dress lead with wood block.
6. Prime lead with asphalt primer.
7. Install two plies fiberglass roof ply embedded in alternate courses of hot melt adhesive over primed lead. Stripping plies shall extend two and four inches beyond edge of lead.
8. Re-clamp flashing collar to drain in bed of mastic. If bolts are broken, drill and re-tap. If ladder clamps are installed, replace clamps.
9. Neatly cut lead within drain at rim, remove.
10. Seal/plug drain to prevent water entry until service connection is completed.

C. Service Connection:

1. Locate new piping to include as few bends as possible. Do not overload any existing pipe and drain, ensure balanced disposal of all rain water. Make adequate provisions for thermal movement of all piping. Location should not be adjacent to structural columns.
2. Provide cleanouts at elbows under each drain, and at tops and bottoms of each vertical run, at connection to storm sewer, as called for by Plumbing Code, and as required to make sure that drainage system can be cleaned anywhere, if needed. Provide and install access panels if required for service cleanouts.
3. Where new work joins old, provide all necessary materials, repairs, changes, and associated work as needed for proper connections.
4. Make all connections watertight.
5. Remove seal/plug and install strainer.

6. Use insulation on all pipes and fittings from drains to existing down- pipes. Ensure full continuity of insulation over pipes, fitting, and connections. Provide concealed saddles at all hangers.

END OF SECTION 221426

