September 8, 2022

SECTION 030150 – MAINTENANCE OF CAST DECKS AND UNDERLAYMENT

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. Concrete deck repairs shall be done as required creating a sound substrate for new roof installation. Deck repairs may only be done with the written approval by owner's representative.

PART 2 - PRODUCTS

2.1 CONCRETE DECK REPAIRS

A. Two-component, epoxy repair kit.

1. SRamPatch, SR Products, Macedonia, Ohio.

Test	Typical Value	Test Method
Tensile Strength	1800 psi	ASTM D 638
Compressive Strength	11,000 psi	ASTM D 695
Impact Resistance	160 1n/lb.	Gardener Impact
Abrasion Resistance	72 mg	ASTM D 4060

2.2 PRE-CAST CONCRETE PANELS

A. Match existing panels.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

A. Minimum application temperature - 50°F. (10°C).

B. Minimum application thickness -1/4".

3.2 PRODUCT APPLICATION

A. Remove spalled/deteriorated concrete deck areas until sound base is reached.

B. Wire brush flaking rust from exposed reinforcing bar. Apply rust inhibitive paint. Allow to dry.

C. Substrate must be clean, sound, dry and free of all contaminates before applying epoxy repair material

D. Mixing process:

1. Empty the sand mixture of the 5 gallon container (Part A) into a clean, dry plastic or steel wheel barrel or mortar box. A disposable surface such as a 4 x 8 plywood sheet may also be used.
2. Form an inverted cone in the (Part A) mixture with the aggregate epoxy mix. Make a hole down the center of cone and pour in liquid from quart can (Part B). Mix well.
3. Components shall be mixed thoroughly using small shovel, hoe and/or rake. Components not thoroughly mixed will result in a mixture that will not harden and will need to be removed from the patch area. Approximate pot life 45 minutes depending on weather conditions.
4. Fill prepared area flush with mixed two-component, epoxy repair material according to manufacturer's directions. Allow to set. Approximate hardening time 4-5 hours or hard to touch.

E. Clean Up:

1. Place empty container (Part B) and unused mixture into empty 5 gallon container (Part A) after use.

3.3 PRECAST CONCRETE PANEL REPLACEMENT

A. Remove and replace damaged panels as directed by building owner's representative.

END OF SECTION 030150

SECTION 050130 – MAINTENANCE OF METAL DECKING

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. Metal deck repairs shall be done as required creating a sound substrate for new roof installation. Deck repairs may only be done with written approval by building owner's representative.

PART 2 - PRODUCTS

2.1 METAL ROOF DECK

A. Sheet steel: ASTM A1008, Grade C structural quality; with factory applied prime coat.

B. Metal roof deck: Gage, rib depth, rib configuration - match existing; three span; lapped and stitched joints.

C. Butt and finish strips: 20-gage sheet steel.

D. Acceptable manufacturers:

1. Submit proposed manufacturer’s specification for owner approval.

E. Metal roof deck fastener manufacturers:

1. Buildex Div. of ITW, Itasca, IL

F. Rust inhibitive primer.

1. SR Asphalt Primer Low VOC

Property	Typical Value	Test Method
Solids, % by weight, Minimum	63 min.	ASTM D 6511
Solids, % by volume	56	ASTM D 6511

Viscosity @ 77°F	150-300	Saybolt Furol
Drying time, Touch	2-4 hours	70°F/50% R.H.
Flash Point, °F, Minimum	105 min.	Seta C.C.
V.O.C. Maximum	350 gm./liter max.	EPA Method 24A

PART 3 - EXECUTION

3.1 METAL ROOF DECK REPAIRS

A. Deck Reinforcement: Install sheet steel reinforcement profiled to existing decking configuration over all rusted openings 16 sq. inches or less. If two or more rusted openings existing in same deck section, replace deck.

B. Deck Reattachment:

1. Mechanically reattach loose sections of deck to steel support members twelve inches o.c.

C. Side laps:

1. Nestable side lap: Mechanically fasten 18 inches o.c.
2. Interlocking side lap: Button punch 18 inches o.c.

D. Deck Replacement:

1. Sawcut at bar joist/beam center, remove decking. Minimum length: Three spans.
2. Erect metal decking according to SDI Design Manual. If unable to lap, butt to adjacent deck. Minimum bearing on steel supports: one inch.
3. Mechanically fasten side laps 18 inches o.c.
4. Fasten deck to steel support members at ends and intermediate supports with mechanical fasten twelve inches o.c. maximum.
5. Install six inch wide sheet steel butt strip where deck ends butt. Mechanically fasten butt strips to steel deck six inches o.c.

E. Deck Protection: Apply rust inhibitive primer over surface that was cleaned of rust.

END OF SECTION 050130

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 ¾". 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 AWPA 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 035216 –WATER REPELLENT FOR MASONRY SURFACES

PART 1 - GENERAL

1.1 DESCRIPTION

A. This specification describes installation of water repellent for masonry and masonry patch surfaces.

1.2 GENERAL

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

B. This specification shall be read in conjunction with project specifications and/or drawings indicating the precise extent of work and the use and location of specific materials.

C. WORK INCLUDED

D. Provide all labor, materials, equipment and services necessary to complete the following water repellent application work:

1. Protection of surfaces not to be treated, using polyethylene sheets or removable masking agent.
2. Application of water repellent materials by low pressure airless spray. Application procedures and coverage rates to be employed in application of the treatment are dependent upon the condition of the substrate and the results of testing conducted at the jobsite prior to beginning general application.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of waterproofing.

B. Shop Drawings: Show locations and extent of waterproofing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

1.4 WEATHER CONDITIONS

A. The installation of, as well as the subsequent curing of all water repellent work shall be governed by the following:

1. No work shall commence if precipitation is expected. In case of unexpected precipitation, work shall cease immediately and all uncured work shall be covered with polyethylene tarps.
2. Normal water repellent application as outlined in this specification shall be carried out when ambient and subsurface temperatures during application and ultimate cure fall between 50 degrees F and 95 degrees F.
3. If ambient or subsurface temperature is expected to rise above 95 degrees F (30 degrees C) during application and curing, the hot weather precautions outlined in item 3 of this section shall be followed.
4. If ambient or substrate temperatures are below 50 F , follow the cold weather precautions as outlined in Section 2, below.
5. Do not proceed with application over damp substrates. The surface should be sufficiently dry to readily observe the wetting/darkening of the spray pattern during application.

B. Cold Weather Precautions

1. Store all materials in heated area or vehicle at 65 degrees F minimum until just prior to use.
2. Do not proceed with application if temperature is below 40 F or if ice or frost are evident on the substrate.

C. Plot Weather Precautions

1. Store all materials in cool area, 75 degrees F maximum until just before use.
2. Do not work in direct sun at temperatures above 95 degrees F.

1.5 SUPERVISION

A. Applicator must present certification from the Manufacturer that he is a Licensed Applicator for the water repellent specified. Supervision of the execution of all work under this specification, to the extent deemed necessary by the water repellent manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver liquid materials to Project site in original containers with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, shelf life, 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 waterproofing manufacturer.

C. Remove and replace liquid materials that cannot be applied within their stated shelf life.

D. Protect stored materials from direct sunlight.

E. Store in product a dry, well-ventilated, weather tight place at temperatures between 50°F and 80°F until product is ready to be applied (keep from freezing).

F. Do not stack material pallets more than two (2) high.

G. Do not subject existing roof structure to unnecessary loading of stockpiled materials

1.7 TESTING AND APPROVALS

A. Submit manufacturer's literature, specifications and application instructions for water repellent materials.

B. Testing will be conducted on each surface exposure in unobtrusive locations on representative surface conditions. Tests will employ the cleaning and other surface preparation techniques proposed for the overall project, followed by application of the specified treatment employing the proposed application procedures and equipment. General application shall not proceed until test areas are approved by the owner's representative.

1.8 Limited Warranty

A. Applicator shall be required to present a validated Certificate of Limited Warranty from the topping manufacturer, covering all defects in materials and materials performance for the x year period following installation. Applicator shall be required to execute the workmanship section of the warranty, providing xxxx year's free replacement of defective workmanship.

B. Warranty shall not include damages due to abuse, construction operations, structural settling or other latent defect in building design or construction, natural disasters such as earthquake or hurricane, or catastrophic events such as fire. Warranty shall include repair or replacement at no charge to Owner of any materials which lose effectiveness or adhesion during the five year limited warranty period.

PART 2 - WATER REPELLENT MATERIALS

2.1 DESCRIPTION

A. This specification describes the materials used in, and in conjunction with water repellent treatment.

2.2 PERFORMANCE

A. All water repellent materials shall be produced by a single manufacturer, and shall be eligible for coverage under the Manufacturer's xx-Year Limited Warranty program. All materials shall be delivered to jobsite in unopened containers bearing manufacturers' original labels and markings. Water repellent shall provide effective reduction in

substrate water absorption, increase of chemical resistance to dilute acids and airborne pollutants, and shall increase the bond strength of loosened, weathered masonry surface particles to the substrate.

B. The water repellent shall be a clear, penetrating, o component proprietary product formulated for application to vertical and horizontal masonry surfaces, and shall comply with local VOC regulations.

2.3 ACCEPTABLE PRODUCTS AND MANUFACTURERS:

A. Water repellent:

1. SR Dampproofer-SR Products, Macedonia Ohio: low-solids, clear, waterborne siloxane water repellant.

Property	Typical Value
Viscosity	N/A
Weight/Gallon: (lbs/gal)	8.3 +/- 0.25 lbs
Gloss:	N/A
Weight Solids	1.2% +/- 0.25
Volume Solids	1.2 +/- 0.25
VOC (calculated)	Less than 50 grams/liter Less than 0.4 lbs/gal
Flash Point (Setaflash)	N/A

B. Cementitious Crack filler:

1. A single component, polymer-modified mortar which is mixed with water approved by the manufacture.

C. Flexible epoxy crack sealant

1. Closed cell backer rod
2. 2-part polyurethane sealant approved by the manufacture

2.4 STORAGE & HANDLING

A. Store all components at room temperature, off the floor, dry.

B. Observe all safety and handling information as shown on the Material Safety Data Sheets supplied by the Manufacturer.

PART 3 - EXECUTION

3.1 DESCRIPTION

A. This specification describes the preparation required for various surfaces which are to receive water repellent, and the application of same.

3.2 GENERAL

A. Prior to the application of water repellent all surfaces must be prepared in accordance with this section of the specifications.

B. The result of this preparation shall render a surface clean, meaning having complete exposure of sound, rough surface without any deposits of contaminants, coatings, compounds, laitance, foreign, matter or loose material which could affect the bond between the surface and water repellent materials.

C. C. Surfaces to receive water repellent must be surface dry prior to coating.

D. D. All caulking, patching, crack repair materials and joint sealants should be installed prior to application of the water repellent. New patching materials shall have cured a minimum of 3 days prior to application, and shall be through-dry.

3.3 CRACK REPAIRS

A. All surface cracks wider than .008" (0.2mm) shall be repaired in accordance with this section of the specifications.

B. Cracks less than 1/16" (1.5 mm) wide shall be sealed after cleaning has been performed. Refer to Section 04500 and drawings for locations and methods for each type of crack and crack sealant to be used.

C. Cracks 1/16" to 1/8" wide shall be routed to a 1/2" by 1" groove, backer rod shall be installed, groove walls shall be primed with sealant primer and groove shall caulked with 2-part polyurethane sealant. Fill grooves flush with adjacent surfaces. Allow sufficient curing time for the sealant to dry-through before proceeding with water repellent application. At least 24 hours are required.

3.4 INSTALLATION

A. Strictly observe all mix ratios. Wherever practicable, use full, pre-measured units as factory-supplied.

B. Water repellent shall be mixed and applied to dry surfaces by phenolic core roller or airless spray at a rate of 100-200 square feet per gallon, depending on the porosity of the substrate. Product shall be applied in two consecutive saturating applications ("wet-on-wet"), applied at 3 to 5 minute intervals. Minimum application temperature is 40 F.

C. Product shall be applied from the top of the vertical surface to the bottom, saturating the surface but avoiding excessive rundown. Less material will be required for the second application than for the first.

D. Protect all uncured surfaces from rain, dirt, traffic and wind-blown debris for at least 2 - 4 hours after application. For horizontal/traffic bearing surfaces, coating should be

tack-free and through-cured before subjecting to traffic. Cure rate is affected by temperature and other application parameters.

END OF SECTION 035216

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Extruded polystyrene foam-plastic board.
2. Polyisocyanurate foam-plastic board.
3. Glass-fiber blanket.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

B. Evaluation Reports: For foam-plastic insulation, from ICC-ES.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:

1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD (TYPE X) AT CAVITY WALLS

A. Extruded polystyrene boards in this article are also called "XPS boards." Roman numeral designators in ASTM C 578 are assigned in a fixed random sequence, and their numeric order does not reflect increasing strength or other characteristics.

B. Extruded Polystyrene Board, Type IV: ASTM C 578, Type X, 15-psi (173-kPa) minimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. DiversiFoam Products
   b. Dow Chemical Company (The)
   c. Owens Corning

2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.2 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD (TYPE IV) AT FOUNDATIONS

A. Extruded polystyrene boards in this article are also called "XPS boards." Roman numeral designators in ASTM C 578 are assigned in a fixed random sequence, and their numeric order does not reflect increasing strength or other characteristics.

B. Extruded Polystyrene Board, Type IV: ASTM C 578, Type IV, 25-psi (173-kPa) minimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. DiversiFoam Products
   b. Dow Chemical Company (The)
   c. Owens Corning

2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.3 POLYISOCYANURATE FOAM-PLASTIC BOARD AT ROOF

A. Polyisocyanurate Board, Glass-Fiber-Mat Faced: ASTM C 1289, glass-fiber-mat faced, Type 11, Class 2.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Carlisle Coatings & Waterproofings, Inc.
   b. Dow Chemical Company (The)
   c. Hunter Panels

d. Rmax, Inc.

2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.4 GLASS-FIBER BLANKET

A. Glass-Fiber Blanket Insulation, Polypropyiene-Scrim-Kraft Faced: ASTM C665, Type II (nonreflective faced), Class A (faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier).

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. CertainTeed Corporation
   b. Johns Manville; a Berkshire Hathaway Company
   c. Knauf Insulation
   d. Owens Corning

2.5 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. Spray Polyurethane Foam Insulation: ASTM C 1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.

B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.3 INSTALLATION OF SLAB INSULATION

A. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.

1. If not otherwise indicated, extend insulation a minimum of 36 inches (915 mm) below exterior grade line.

B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

1. If not otherwise indicated, extend insulation a minimum of 36 inches (915 mm) in from exterior walls.

3.4 INSTALLATION OF FOUNDATION WALL INSULATION

A. Butt panels together for tight fit.

B. Anchor Installation: Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows:

1. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application.
2. Apply insulation standoffs to each spindle to create cavity width indicated on Drawings between concrete substrate and insulation.
3. After adhesive has dried, install board insulation by pressing insulation into position over spindles and securing it tightly in place with insulation-retaining washers, taking care not to compress insulation.
4. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.

C. Adhesive Installation: Install with adhesive or press into tacky waterproofing or dampproofing according to manufacturer's written instructions.

3.5 INSTALLATION OF CAVITY-WALL INSULATION

A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches (610 mm) o.c. both ways on inside face and as recommended by manufacturer. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions. Press units firmly against inside substrates.

1. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Section 04 2000 "Unit Masonry."

3.6 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
4. Attics: Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
5. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
6. For wood-framed construction, install blankets according to ASTM C 1320 and as follows:

    a. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.

3.7 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

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.

C. FM Approvals Listing: Provide membrane roofing, base flashings, and component materials that are consistent with requirements in FM Approvals 4470 as part of a membrane roofing system, Identify materials with FM Approvals markings.

1. Fire/Windstorm Classification: **Class 1A-60**.

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. 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.

1.5 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.

H. All precautions should be made to prevent bitumen dripping during and after application of insulation and roofing materials.

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, **two layers**, minimum thickness **2.6" over areas to be ripped.**

C. Recover-Board: semi-rigid asphaltic roofing substrate board consisting of asphalt impregnated fiberglass-reinforcing mats and a mineral modified asphaltic core, 1/8" thick. **This to be used in conjunction with all "go over" roof areas**

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. PIKA PLY RECOVER- BOARD
b. Or Owner Approved Equal.

D. 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. Fasteners:

1. Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
2. OMG Rhinobond insulation plates and OMG Super XHD screws designed for fastening insulation boards to a steel deck.

C. Modified Asphaltic Insulation Adhesive: Insulation manufacturer's recommended modified asphaltic, asbestos-free, cold-applied adhesive formulated to attach roof insulation to substrate or to another insulation layer.

D. Bead-Applied Insulation Adhesive: Insulation manufacturer's recommended bead-applied, low-rise, one-component or multi-component urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer.

E. Full-Spread Applied Insulation Adhesive: Insulation manufacturer's recommended spray-applied, low-rise, two-component urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer.

F. Cold-applied, one-part, solvent-free, asphalt/urethane insulation adhesive: INSULATION ADHESIVE SF. Apply to the insulation or substrate using a ribbon pattern to meet specified uplift requirements.

G. Modified Coal Tar Insulation Adhesive: SR INSULATION ADHESIVE, two-component modified coal tar adhesive. Apply to manufacturer approved surfaces by squeegee or mechanical spreader.

H. Insulation Cant Strips: ASTM C 728, perlite insulation board.

I. Wood Nailer Strips: Comply with requirements in Section 061053 "Miscellaneous Rough Carpentry."

J. 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. Nailer Strips: If warranty supplier requires backnailing of the plies due to slope, wood insulation stops or nailers shall be provided.

1. Wood nailer thickness shall be equal to insulation thickness with smooth transition.
2. Spacing of the wood nailers shall not exceed the recommendations of the warranty supplier.

E. Install tapered insulation under area of roofing to conform to slopes indicated.

F. 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.

G. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches (68 mm) or more, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.

H. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

I. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.

J. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:

1. Prime surface of concrete deck with asphalt primer at rate of 3/4 gal./100 sq. ft. (0.3 L/sq. m) and allow primer to dry.
2. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
3. Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

K. 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. Set each subsequent layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
2. Set each subsequent layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.4 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 07 54 16 – 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. FM Approvals Listing: Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Approvals 4470 as part of a membrane roofing system, Identify materials with FM Approvals markings.

1. Fire/Windstorm Classification: Class 1A-60.

D. Solar Reflectance Index: Not less than initial when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

E. 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 01 32 19 – SUBMITTALS SCHEDULE.

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 – 1380 E. Highland Road, Macedonia, Ohio 44056

B. Membrane and Flashing Sheets: ASTM D 751.

1. SION RM

Property	Typical Value	Test Method
Tear Strength, min, lbf	89 MD 108 XMD	ASTM D 751
Linear Dimensional Change max, (%)	0.3 MD	ASTM D 1204
Elongation at Break, min, (%)	50 MD 42 XMD	ASTM D 751
Breaking Strength, min, lbf/in.	325 MD 324 XMD	ASTM D 751
Seam Strength, (lbf)	295	ASTM D 751
Membrane Thickness (Nominal) (in)	.060"	ASTM D 751
Low Temperature Bend	-40°F (Pass)	ASTM D 2136
Solar Reflectance (%)	82	ASTM C 1549
Emissivity	.91	ASTM C 1371
SRI	109	ASTM E 1980
Dynamic Puncture Resistance	Pass	ASTM D 5635
Heat Aging (%)	>90	ASTM D 3045
Permeance (Perms)	0.003	ASTM E 96

Accelerated Weather Test	Pass	ASTM G 155
Fungi Resistance	No growth	ASTM G 21
Water Immersion, max, (%)	1.20	ASTM D 570
Static Puncture Resistance	Pass	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.
2. SION RM Strip-In Membrane - strip-in membrane for SION RM membrane and FS Clad metal ends and joints.
3. SION FS Clad Metal - 24 gauge G-90 galvanized steel laminated with a 25 mil thick sheet of non-reinforced SION.

C. Bonding Adhesive:

1. SION FS Bonding Adhesive LV.

2. SION RM Substrate 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), pre-punched.

H. Fasteners:

1. 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.
2. OMG Rhinobond Insulation Plate and OMG Super XHD Screws designed for fastening insulation board to a steel deck.

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 05 31 00 "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 05 31 00 "Steel Decking," according to acoustical roof deck manufacturer's written instructions, immediately before installation of overlying construction and to remain dry.

3.3 MEMBRANE ROOFING INSTALLATION

A. Adhered 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 cap sheet to position the selvedge to the factory lap line marked on the previous roll. Upon alignment, specified cap sheet is folded halfway back upon itself from the end lap direction.
3. Hold back specified adhesive 3" from the start of selvedge.
4. Cap sheet is hand introduced into adhesive.
5. Cap sheet must be firmly broomed into adhesive and then rolled with a roller (minimum 200 lbs.) to insure proper adhesion.
6. All seams to be made using the hot air welding method with a minimum 1.5" full weld at edge. Hand held hot-air welder, 115 volt, 1500 watt power minimum. Motorized hot-air welder, 220 volt, 5000 watt power minimum. Generator minimum output of 7500 watts required.
7. All welded seams to be probed. Roll ends of the fleece backed cap sheet membrane are butted and then capped with specified 8" hot-air welded strip-in membrane.
8. At the completion of each working day, cap sheet is lapped onto existing roof surfacing and secured with specified adhesive. Remove and discard the lapped membrane at the start of the next workday.
9. At no time will hot asphalt adhesive be permitted to contact the top surface of membrane.
10. 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. 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 fleece backed 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. Seal top with specified pitch pan sealant.

J. 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 fleece backed 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 AT SCUPPERS

A. Remove existing scupper liners and membrane to wood blocking.

B. Replace rotted and untreated blocking as needed and approved by owner's representative with new, treated wood blocking.

C. Install flashing ply over wood blocking, into the port and out onto the roof 2 feet in all directions, set in a bed of asphalt mastic.

D. Install surface field membrane.

E. Install pre-manufactured scupper formed from clad metal.

F. Install scupper head below outside of port and new downspouts.

G. Install cap-flashing ply with minimum 2" hot air welds to scupper flanges.

H. Wall flashing shall extend over flanges and roof membrane out 4" past cant.

3.9 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. Install new downspouts at spill-out scupper locations. Dimensions to match existing.

3.10 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.

3.11 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.

3.12 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 07 54 16

SECTION 076200 – SHEET METAL FLASHING AND TRIM

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. Formed sheet metal work for flashing and insulated expansion joint covers are specified in this section.

1.4 RELATED WORK

A. Single ply base flashing system:

1. Section 075323 EPDM SHEET ROOFING.

B. Flashing of Roof Drains:

1. Section 221426 ROOF DRAINS.

1.5 SUBMITTALS

A. Submit in accordance with Section 013323, Shop Drawings, Product Data, and Samples.

B. Shop drawings:

1. Flashings.
2. Gravel Stop-Fascia.
3. Fascia-cant.
4. Manufacturer's Literature and Data.
5. Two-piece counterflashing.

1.6 APPLICABLE PUBLICATIONS

A. The publications listed below for a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM):

1. A167-99(R 2004): Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
2. A653/A653M-05: Steel Sheet Zinc-Coated (Galvanized) or Zinc Alloy Coated (Galvanized) by the Hot- Dip Process
3. B32-04: Solder Metal
4. B209-04: Aluminum and Aluminum-Alloy Sheet and Plate
5. B370-03: Copper Sheet and Strip for Building Construction
6. D173-03: Bitumen-Saturated Cotton Fabrics Used in Roofing and Waterproofing
7. D412-98 (R2002): Vulcanized Rubber and Thermoplastic Elastomers-Tension
8. D1187-97 (R2002): Asphalt Base Emulsions for Use as Protective Coatings for Metal
9. D1784-03: Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
10. D3656-04: Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Yarns
11. D4586-00: Asphalt Roof Mastic, Asbestos Free

C. American National Standards Institute/Single Ply Roofing Industry (ANSI/SPRI):

1. ES-1-2017: Test Standard for Edge Systems Used with Low Slope Roofing Systems

D. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): Architectural Sheet Metal Manual (Fifth Edition, 1993).

E. National Association of Architectural Metal Manufacturers (NAAMM):

1. AMP 500 Series: Metal Finishes Manual

F. American Architectural Manufacturers Association (AAMA):

1. 605-98: Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions Panels

G. Federal Specification (Fed. Spec):

1. A-A-1925A: Shield, Expansion; (Nail Anchors)
2. UU-B-790A: Building Paper, Vegetable Fiber

H. International Building Code (IBC):

1. 2015 Edition

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Sheet: ASTM B209, alloy 3003-H14. // Except alloy used for color anodized aluminum shall be as required to produce specified color. Alloy required to produce specified color shall have the same structural properties as alloy 3003-H14. //

B. Galvanized Sheet: ASTM, A653.

C. Nonreinforced, Elastomeric Sheeting: Elastomeric substances reduced to thermoplastic state and extruded into continuous homogenous sheet (0.056 inch) thick. Sheeting shall have not less than 7 MPa (1,000 psi) tensile strength and not more than seven percent tension-set at 50 percent elongation when tested in accordance with ASTM D412. Sheeting shall show no cracking or flaking when bent through 180 degrees over a 1/32 inch diameter mandrel and then bent at same point over same size mandrel in opposite direction through 360 degrees at temperature of -30°C (-20 °F).

D. Fasteners:

1. Use copper, copper alloy, bronze, brass, or stainless steel for copper and copper clad stainless steel, and stainless steel for stainless steel and aluminum alloy. Use galvanized steel or stainless steel for galvanized steel.
2. Nails:

   a. Minimum diameter for copper nails: 3 mm (0.109 inch).
   b. Minimum diameter for aluminum nails: 3 mm (0.105 inch).
   c. Minimum diameter for stainless steel nails: 2 mm (0.095 inch) and annular threaded.
   d. Length to provide not less than 7/8" penetration into anchorage.

3. Rivets: Not less than 3 mm (1/8 inch) diameter.
4. Expansion Shields: Fed Spec A-A-1925A.

E. Sealant: As specified in Section SEALANTS AND CAULKING for exterior locations.

F. Insect Screening: ASTM D3656, 18 by 18 regular mesh.

2.2 SHEET METAL THICKNESS

A. Except as otherwise shown or specified use thickness or weight of sheet metal as follows:

B. Exposed Locations:

1. Thickness of aluminum or galvanized steel is specified with each item.

2.3 FABRICATION

A. Cleats:

1. Fabricate cleats to secure flashings and sheet metal work over 12 inches wide and where specified.
2. Provide cleats for maximum spacing of 12 inch centers unless specified otherwise.
3. Form cleats of same metal and weights or thickness as the sheet metal being installed unless specified otherwise.
4. Fabricate cleats from 2 inch wide strip. Form end with not less than 3/4 inch wide loose lock to item for anchorage. Form other end of length to receive nails free of item to be anchored and end edge to be folded over and cover nail heads.

B. Edge Strips or Continuous Cleats:

1. Fabricate continuous edge strips where shown and specified to secure loose edges of the sheet metal work.
2. Except as otherwise specified, fabricate edge strips or minimum // 24 oz copper // 0.024 inch thick stainless steel // 0.050 inch thick aluminum. //
3. Use material compatible with sheet metal to be secured by the edge strip.
4. Fabricate in 10 feet maximum lengths with not less than ¾ inch loose lock into metal secured by edge strip.
5. Fabricate Strips for fascia anchorage to extend below the supporting wood construction to form a drip and to allow the flashing to be hooked over the lower edge at least ¾ inch.
6. Fabricate anchor edge maximum width of 3 inches or of sufficient width to provide adequate bearing area to insure a rigid installation using 32 oz copper // 0.031 inch thick stainless steel // 0.0625 inch thick aluminum.

C. Drips:

1. Form drips at lower edge of sheet metal counter-flashings (cap flashings), fascias, gravel stops, wall copings, by folding edge back 1/2 inch and bending out 45 degrees from vertical to carry water away from the wall.
2. Form drip to provide hook to engage cleat or edge strip for fastening for not less than 3/4 inch loose lock where shown.

D. Edges:

1. Edges of flashings concealed in masonry joints opposite drain side shall be turned up 1/4 inch to form dam, unless otherwise specified or shown otherwise.
2. Finish exposed edges of flashing with a ¼ inch hem formed by folding edge of flashing back on itself when not hooked to edge strip or cleat. Use ¼ inch minimum penetration beyond wall face with drip for through-wall flashing exposed edge.
3. All metal roof edges shall meet requirements of IBC 2015.

E. Metal Options:

1. Where options are permitted for different metals use only one metal throughout.

2. Stainless steel may be used in concealed locations for fasteners of other metals exposed to view.
3. Where copper gravel stops, copings and flashings will carry water onto cast stone, stone, or architectural concrete, or stainless steel.

2.4 FINISH

A. Use same finish on adjacent metal or components and exposed metal surfaces unless specified or shown otherwise.

B. In accordance with NAAMM Metal Finishes Manual, unless otherwise specified.

C. Finish exposed metal surfaces as follows, unless specified otherwise:

1. Aluminum:

a. Manufacturer's finish: Kynar.

2.5 GRAVEL STOPS

A. General:

1. Fabricate in lengths not less than 8 feet long and maximum of 10 feet.
2. Fabricate internal and external corners as one-piece with legs not less than 2 feet or more than 4 feet long.
3. Fabricate roof flange not less than 4 inches wide.
4. Fabricate top edge to extend above roof not less than one inch for embedded gravel aggregate and not less than 4 inches for loose laid ballast.
5. Fabricate lower edge outward at an angle of 45 degrees to form drip and as fascia or as counter flashing as shown.

a. Fabricate of one-piece material of suitable width for fascia height of 10 inch maximum or counterflashing lap of not less than 4 inch over base flashing.
b. Fabricate bottom edge of formed fascia to receive edge strip.
c. When fascia bottom edge forms counter flashing over roofing lap roofing not less than 6 inches.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Install flashing and sheet metal items as shown in Sheet Metal and Air Conditioning Contractors National Association, Inc., publication, ARCHITECTURAL SHEET METAL MANUAL, except as otherwise shown or specified.

2. Apply sheet metal and other flashing material to surfaces which are smooth, sound, clean, dry and free from defects that might affect the application.
3. Remove projections which would puncture the materials and fill holes and depressions with material compatible with the substrate. Cover holes or cracks in wood wider than 1/4 inch with sheet metal compatible with the roofing and flashing material used.
4. Coordinate with masonry work for the application of a skim coat of mortar to surfaces of unit masonry to receive flashing material before the application of flashing.
5. Apply a layer of 15 pound saturated felt followed by a layer of rosin paper to wood surfaces to be covered with copper. Lap each ply 2 inch with the slope and nail with large headed copper nails.
6. Confine direct nailing of sheet metal to strips 12 inch or less wide. Nail flashing along one edge only. Space nails not over 4 inches on center unless specified otherwise.
7. Install bolts, rivets, and screws where indicated, specified, or required in accordance with the SMACNA Sheet Metal Manual. Space rivets at 3 inch on centers in two rows in a staggered position. Use neoprene washers under fastener heads when fastener head is exposed.
8. Coordinate with roofing work for the installation of metal base flashings and other metal items having roof flanges for anchorage and watertight installation.
9. Nail continuous cleats on 3 inch on centers in two rows in a staggered position.
10. Nail individual cleats with two nails and bend end tab over nail heads. Lock other end of cleat into hemmed edge.
11. Install flashings in conjunction with other trades so that flashings are inserted in other materials and joined together to provide a water tight installation.
12. Where required to prevent galvanic action between dissimilar metal isolate the contact areas of dissimilar metal with sheet lead, waterproof building paper, or a coat of bituminous paint.
13. Isolate aluminum in contact with dissimilar metals others than stainless steel, white bronze or other metal compatible with aluminum by:

    a. Paint dissimilar metal with a prime coat of zinc-chromate or other suitable primer, followed by two coats of aluminum paint.
    b. Paint dissimilar metal with a coat of bituminous paint.
    c. Apply an approved caulking material between aluminum and dissimilar metal.
    d. Paint aluminum in contact with or built into mortar, concrete, plaster, or other masonry materials with a coat of bituminous paint.
    e. Paint aluminum in contact with absorptive materials that may become repeatedly wet with two coats of bituminous paint or two coats of aluminum paint.

B. Flashing at Masonry, Stone, or Precast Concrete Copings:

1. Install flashing with drips on both wall faces unless shown otherwise.
2. Form penetration openings to fit tight against dowel or other item with edge turned up. Seal penetrations with sealant.

3.2 COUNTERFLASHING

A. General:

1. Install counterflashing over and in conjunction with installation of base flashings, except as otherwise specified or shown.
2. Install counterflashing to lap base flashings not less than 4 inch.
3. Install upper edge or top of counterflashing not less than 9 inch above top of the roofing.
4. Lap joints not less than 4 inch. Stagger joints with relation to metal base flashing joints.
5. Use surface applied counterflashing on existing surfaces and new work where not possible to integrate into item.
6. When fastening to concrete or masonry, use screws driven in expansion shields set in concrete or masonry. Use screws to wood and sheet metal. Set fasteners in mortar joints of masonry work.

B. One Piece Counterflashing:

1. Where flashing is installed at new masonry, coordinate to insure proper height, embed in mortar, and end lap.
2. Where flashing is installed in reglet in concrete insert upper edge into reglet. Hold flashing in place with lead wedges spaced not more than 8 inches apart. Fill joint with sealant.
3. Where flashing is surface mounted on flat surfaces.

    a. When top edge is double folded anchor flat portion below sealant "V" joint with fasteners spaced not over 16 inch on center.
    b. Locate fasteners in masonry mortar joints.
    c. Use screws to sheet metal or wood.
    d. Fill joint at top with sealant.

4. Where flashing or hood is mounted on pipe.

    a. Secure with draw band tight against pipe.
    b. Set hood and secure to pipe with a one by 1 x 1/8 inch bolt on stainless steel draw band type clamp, or a stainless worm gear type clamp.
    c. Completely fill joint at top with sealant.

3.3 GRAVEL STOPS

A. General:

1. Install gravel stops and fascias with allowance for expansion at each joint; minimum of 1/4 inch.
2. Extend roof flange of gravel stop and splice plates not less than four inches out over roofing and nail or screw to wood nailers. Space fasteners on 3 inch centers in staggered pattern.
3. Install continuous cleat for fascia drip edge. Secure with fasteners as close to lower edge as possible on 3 inch centers.

4. Where ends of gravel stops and fascias abut a vertical wall, provide a watertight, flashed and sealant filled joint.
5. Set flange in roof cement when installed over built-up roofing.
6. Edge securement for low-slope roofs: Low-slope membrane roof systems metal edge securement, except gutters, shall be designed in accordance with ANSI/SPRI ES-1, except the basic wind speed shall be determined from Figure 1609, of IBC 2015.

B. Sheet metal gravel stops and fascia:

1. Install with end joints of splice plates sheets lapped three inches.
2. Hook the lower edge of fascia into a continuous edge strip.
3. Lock top section to bottom section for two piece fascia.

C. Scuppers:

1. Install scupper with flange behind gravel stops; leave 1/4 inch joint to gravel stop.
2. Set scupper at roof water line and fasten to wood blocking.
3. Use sealant to seal joint with fascia gravel stops at ends.
4. Coordinate to lap over conductor head and to discharge water into conductor head.

3.4 GOOSENECK ROOF VENTILATORS

A. Install on structural curb not less than 8 inch high above roof surface.

B. Securely anchor ventilator curb to structural curb with fasteners spaced not over 12 inch on center.

C. Anchor gooseneck to curb with screws having neoprene washers at 6 inch on center.

END OF SECTION 076200

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 gravel stop systems.

1.3 REFERENCES

A. Fascia system shall be tested by an independent third party per ANSI/SPRI ES-1 design test requirements.

B. 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 ½ 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: Storm Defender 1500 by SR Products or approved equal, a three-part fascia assembly designed for single ply roofs. The fascia system consists of a continuous galvanized steel water dam, spring clip exterior fascia cover, concealed joint cover, continuous rails and corrosion resistant fasteners.

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.

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.
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, replace as required
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