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SIKA SPECIFICATION NOTE: This guide specification includes test methods, materials and installation procedures for Sikalastic RoofPro Cold Fluid Applied Polyurethane Protected Roofing Membrane System. Sikalastic RoofPro is a fully bonded, elastomeric waterproofing membrane designed for use over most common construction surfaces including concrete, plywood sheathing, cover board, metal substrates and/or modified bitumen roofing membranes. Sikalastic RoofPro is installed as a 1 ply fully reinforced, self-flashing membrane that will provide waterproof protection immediately after application.

## SECTION 07 55 56

### FLUID-APPLIED PROTECTED MEMBRANE ROOFING

#### 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. Provide a protected cold-fluid-applied polyurethane roofing/waterproofing system on structural concrete, plywood sheathing, cover board, metal or other substrates.
  - 1. Work includes substrate preparation.
  - 2. Work includes bridging and sealing air leakage and water intrusion pathways and gaps including connections of the walls to the roof air barrier, and penetrations of the building envelope including piping, conduit, ducts and similar items.
- B. Related Work: The following items are not included in this Section and are specified under the designated Sections:
  - 1. Section 03 30 00 – CAST-IN-PLACE CONCRETE.
  - 2. Section 06 16 00 – SHEATHING.
  - 3. Section 07 60 00 – FLASHING AND SHEET METAL.
  - 4. Section 07 92 13 – ELASTOMERIC JOINT SEALANTS
  - 5. Section 21 14 25 – ROOF DRAINS.

##### 1.3 PERFORMANCE REQUIREMENTS

- A. Cold fluid applied polyurethane protected roofing/waterproofing system is intended to perform as a continuous barrier against liquid water and to flash or discharge to the exterior incidental water. Membrane system is intended to receive an overburden of insulation and ballast or concrete pavers and shall accommodate movements of building materials as required with accessory sealant materials at locations such as: changes in substrate, perimeter conditions and penetrations.
- B. Installed roofing/waterproofing membrane system shall not permit the passage of water and will withstand the design pressures calculated in accordance with the most current revision of ASCE 7.

### FLUID-APPLIED PROTECTED MEMBRANE ROOFING

- C. Manufacturer shall provide all primary roofing/waterproofing materials that are physically and chemically compatible when installed in accordance with manufacturers current application requirements.

#### 1.4 SUBMITTALS

- A. Submittals: Comply with project requirements for submittals as specified in Division 01.
- B. Product Data: For each product.
- C. Shop Drawings: Manufacturer's standard details and shop drawings for the specified system.
- D. Manufacturer must provide a complete Cradle-To-Grave Life Cycle Analysis (LCA) and Environmental Product Declaration (EPD) according to ISO 14025:2006 for the roofing/waterproofing system.
- E. Installer's Authorization: Installer shall provide written documentation from the manufacturer of their authorization to install the system, and eligibility to obtain the warranty specified in this section.
- F. Manufacturer' Certification: Certification showing full time quality control of production facilities and that each batch of material is tested to ensure conformance with the manufacturer's published physical properties.
- G. VOC Certification: Manufacturer's certification that all roofing/waterproofing system products meet current Volatile Organic Compound (VOC) regulations as established by the State in which they are being installed; and stating total VOC content, in grams per liter, for all system components (i.e. primers, adhesives, coatings, etc.).

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer shall demonstrate qualifications to supply materials of this section by certifying the following:
  - 1. Membrane Manufacturer shall show evidence that the specified membrane has been manufactured by the same organization or direct affiliate for fifteen years.
  - 2. Membrane Manufacturer shall have available an in-house technical staff to assist the contractor when necessary in the application of the products and site review of the assembly.
- B. Installer's Qualifications: The Contractor shall demonstrate qualifications to perform the Work of this Section by submitting certification or license by the roofing/waterproofing membrane manufacturer as a trained and authorized applicator of the product the installer intends to use.
- C. Source Limitations: All components listed in this section shall be provided by a single manufacturer or approved by the primary roofing/waterproofing manufacturer.
- D. Materials Compatibility: All materials included in the roofing/waterproofing assembly, as well as associated materials adhered to/applied beneath the roofing/waterproofing membrane shall have been tested and verified to be compatible. Include written testing documentation and test reports if requested by Architect.
- E. Final Inspection: Manufacturer's representative shall provide to the Architect a comprehensive site visit report after the completion of the roofing/waterproofing system

- F. Applicable Regulations: Comply with local code and requirements of authorities having jurisdiction. Do not exceed VOC regulations as established by the State in which they are being installed, including total VOC content, in grams per liter, for all system components (i.e. primers, adhesives, coatings, and similar items).
- G. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.

#### 1.6 PRE-INSTALLATION CONFERENCE

- A. Prior to scheduled commencement of the roofing installation and associated work, conduct a meeting at the project site with the installer, architect/consultant, owner, manufacturer's representative and any other persons directly involved with the performance of the Work. The Installer shall record conference discussions and to include decisions and agreements reached (or disagreements) and furnish copies of recorded discussions to each attending party. The main purpose of this meeting is to review foreseeable methods and procedures related to the Work.

#### 1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver all roofing/waterproofing materials to the site in original containers, with factory seals intact.
- B. Store all pail goods in their original undamaged containers in a clean, dry location within their specified temperature range.
- C. Do not expose materials to moisture in any form before, during, or after delivery to the site. Reject delivery of materials that show evidence of contact with moisture.
- D. Remove manufacturer supplied plastic covers from materials provided with such. Use "breathable" type covers such as canvas tarpaulins to allow venting and protection from weather and moisture. Cover and protect materials at the end of each workday. Do not remove any protective tarpaulins until immediately before the material will be installed.
- E. Materials shall be stored above 55°F (12.6°C) a minimum of 24 hours prior to application

#### 1.8 PROJECT CONDITIONS

- A. Weather: Proceed with roofing/waterproofing only when existing and forecasted weather conditions permit. Membrane application can proceed when precipitation is imminent. Sikalastic RoofPro is capable of curing in immersion immediately after application. Visual marks in the form of pock marks may occur if uncured membrane is exposed to heavy rainfall but is not considered a limiting factor in the performance of the roofing membrane. Ambient/Substrate temperatures shall be above 41°F (5°C) when applying the roofing/waterproofing system.
- B. All surfaces to receive the roofing/waterproofing membrane shall be free from visible water, dew, frost, snow and ice. Application of roofing/waterproofing membrane shall be conducted in well ventilated areas.
- C. Roofing Membrane:
  - 1. Roofing/waterproofing membrane is not intended to be exposed or in contact with a constant temperature below -22°F (-30°C) or in excess of 176°F (80°C). See technical data sheets for limitations, i.e., hot pipes and vents or direct steam venting.

2. Specified roofing/waterproofing membrane is non-flammable and VOC compliant. Consult container, packaging labels and Material Safety Data Sheets (MSDS) for specific safety information.
  3. Specified roofing/waterproofing membrane is resistant to gasoline, paraffin, fuel oil, mineral spirits, and moderate solutions of acids and alkalis, acid rain and detergents. Some low molecular weight alcohols can soften. Any exposure to foreign materials or chemical discharges shall be presented to membrane manufacturer for evaluation to determine any impact on the waterproof membrane assembly performance prior to warranty issuance.
- D. Contractor shall ensure adequate protection during installation of the roofing/waterproofing system.
- E. Specified roofing/waterproofing membrane may be used as a temporary roofing/waterproofing barrier when applied at a wet film thickness of 15-20 mils to a properly prepared deck. When the specified roofing/waterproofing membrane is used as a temporary roofing/waterproofing barrier the roofing/waterproofing membrane does not need to be removed prior to installation of the finished roofing/waterproofing system. An approved Sikalastic RoofPro Primer will need to be applied to the approved deck prior to applying the temporary roofing/waterproofing barrier. Sika Reactivation Primer or Sika Concrete Primer Lo-VOC will be applied in between the existing temporary roofing/waterproofing barrier and finished roofing/waterproofing system after existing temporary barrier is clean, dry and sound.

## 1.9 WARRANTY

- A. Warranty: Provide manufacturer's standard warranty. Materials warranty shall be for a minimum of one year starting at the date of Substantial Completion. System warranty shall be for the following duration in accordance with specified system.
1. Warranty Length: 15 years.
  2. Warranty Length: 20 years.
  3. Warranty Length: 25 years.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Basis-of-Design Manufacturer: Sika Corporation, 201 Polito Avenue, Lyndhurst NJ 07071. Toll Free 800-933-SIKA (7452), [www.sikausa.com](http://www.sikausa.com). No substitutions without prior written approval by the Architect.

### 2.2 ROOFING SYSTEM

- A. Fluid-Applied Membrane System, 15 Year Warranty: Sikalastic RoofPro WP 15, Premium Reemat:
1. Base Layer: Sikalastic 644 Lo-VOC, 45 mils wet film thickness; 35 sf/gal coverage rate approx.
  2. Top Layer: Sikalastic 644 Lo-VOC, 25 mils wet film thickness; 64 sf/gal coverage rate approx.
- B. Fluid-Applied Membrane System, 15 Year Warranty: Sikalastic RoofPro WP 15, 120 Sika Fleece:
1. Base Layer: Sikalastic 644 Lo-VOC, 45 mils wet film thickness; 35 sf/gal coverage rate approx.

2. Top Layer: Sikalastic 644 Lo-VOC, 25 mils wet film thickness; 64 sf/gal coverage rate approx.
- C. Fluid-Applied Membrane System, 20 Year Warranty: Sikalastic RoofPro WP 20, Premium Reemat:
  1. Base Layer: Sikalastic 644 Lo-VOC, 45 mils wet film thickness; 35 sf/gal coverage rate approx.
  2. Top Layer 1: Sikalastic 644 Lo-VOC, 30 mils wet film thickness; 53 sf/gal coverage rate approx.
- D. Fluid-Applied Membrane System, 20 Year Warranty, Sikalastic RoofPro WP 20, Sika 140 Fleece:
  1. Base Layer: Sikalastic 644 Lo-VOC, 50 mils wet film thickness; 32 sf/gal coverage rate approx.
  2. Top Layer: Sikalastic 644 Lo-VOC, 25 mils wet film thickness; 64 sf/gal coverage rate approx.
- E. Fluid-Applied Membrane System, 25 Year Warranty: Sikalastic RoofPro 25 WP, Premium Reemat:
  1. Base Layer: Sikalastic 644 Lo-VOC, 45 mils wet film thickness; 35 sf/gal coverage rate approx.
  2. Top Layer #1: Sikalastic 644 Lo-VOC, 25 mils wet film thickness; 64 sf/gal coverage rate approx.
  3. Top Layer #2: Sikalastic 644 Lo-VOC, 25 mils wet film thickness; 64 sf/gal coverage rate approx.
- F. Fluid-Applied Membrane System, 25 Year Warranty: Sikalastic RoofPro WP 25, Sika 170 Fleece:
  1. Base Layer: Sikalastic 644 Lo-VOC, 60 mils wet film thickness; 27 sf/gal coverage rate approx.
  2. Top Layer: Sikalastic 644 Lo-VOC, 35 mils wet film thickness; 45 sf/gal coverage rate approx.

## 2.3 MEMBRANES AND COATINGS

- A. Base embedment coat with Reemat reinforcement shall be Sikalastic 644 Lo-VOC by Sika Corp, a single component, cold, fluid applied, moisture triggered, aliphatic, polyurethane base coat membrane.
- B. Base embedment coat with Fleece reinforcement shall be Sikalastic 644 Lo-VOC by Sika Corp, a single component, cold, fluid applied, moisture triggered, aliphatic, polyurethane base coat membrane.
- C. Topcoat with both Reemat and Fleece reinforcement shall be Sikalastic 644 Lo-VOC by Sika Corp, a single component, cold, fluid applied, moisture triggered, aliphatic, polyurethane top coat membrane.
- D. Base coat and topcoat membranes shall be a one component, low VOC elastomeric polyurethane membrane that may be brush or roller applied. Membrane shall have the following physical properties and conforms to ASTM D7311-07: Standard Specification for Liquid Applied, Single Component, Moisture-Triggered, Aliphatic Polyurethanes used in Roofing.
- E. Liquid Property Requirements:

1. VOC Content, ASTM D-2369-81: < 50 g/l
2. Volume Solids, ASTM D2697: 76% minimum.
3. Weight Solids: ASTM D1644: 83% minimum.
4. Sag Resistance, ASTM D4400: No sag at 700 micrometers (0.028 in. / 28 mil)

F. Film Physical Property Requirements:

1. Tensile Strength (Tension): ASTM D412: Minimum 1.86 MPa (270lb/in2)
2. Elongation: ASTM D412: MIN 200%.
3. Accelerated Weathering FL/UV – 5000 Hours, ASTM G 154, No cracking or checking.
4. Water Vapor Transmission, Permeability / Permeance: ASTM E96: Maximum 8.5 gms/m2/ day (0.033 perm-inches).
5. Flexibility – Mandrel Bend, ASTM D522: Pass, no cracking or flaking.
6. Tear Resistance, ASTM D625: Minimum 5.8 kN/m (33 lbf/in)
7. Indentation Hardness, ASTM D2240: 82 Durometer Units (+/- 5 units)
8. Dynamic Puncture Resistance, ASTM D5635: Minimum 15 joules (357 ft.pounds)
9. Static Puncture Resistance, ASTM D5602: Minimum 20.7 kg. (45.5 lbs.)

2.4 MEMBRANE REINFORCEMENT - FIBERGLASS

- A. Reinforcement for the roofing/waterproofing membrane system shall be Sika Reemat by Sika Corp, a conformable, random strand fiberglass mat specifically designed to provide greater impact resistance and greater resistance to excessive thermal and structural movement while maintaining elasticity and membrane film integrity.
- B. Supplemental reinforcement of the roofing/waterproofing membrane system shall be Sika Flexitape Heavy by Sika Corp, a nylon mesh specifically designed for local reinforcement of the roofing/waterproofing membrane at structural cracks, expansion joints and transitions between dissimilar materials, OR Sika Joint Tape SA by Sika Corp., a self-adhering polymeric rubberized tape with woven polyester facer.

2.5 MEMBRANE REINFORCEMENT - POLYESTER

- A. Reinforcement for the roofing/waterproofing membrane system shall be Sika Fleece by Sika Corp., a non-woven, needle-punched polyester fleece specifically designed to provide greater impact resistance and greater resistance to excessive thermal and structural movement while maintaining elasticity and membrane film integrity.
- B. Supplemental reinforcement of the roofing/waterproofing membrane system shall be Sika Flexitape Heavy by Sika Corp, a nylon mesh specifically designed for local reinforcement of the roofing/waterproofing membrane at structural cracks, expansion joints and transitions between dissimilar materials, OR Sika Joint Tape SA by Sika Corp., a self-adhering polymeric rubberized tape with woven polyester facer.

2.6 FILLET BEAD AND PENETRATION SEALANT

- A. Sealant for fillet bead applications and membrane penetrations shall be Sikaflex 11FC by Sika Corp., a one-part polyurethane sealant suitable for fillet bead transition compound to be applied prior to the installation of the membrane system at changes in substrate direction, sealing reglet terminations, cracks in the substrate and penetrations of the roof /waterproofing system.
- B. Exposed finish sealant shall be Sikaflex Hyflex 150 LM by Sika Corp., a one-part low modulus hybrid sealant OR Sikasil WS-295. A one-part, low-modulus, weather sealing, silicone sealant suitable for finishing terminations at saw cuts and all UV exposed sealant terminations.

SikaHyflex-150 LM is also suitable for fillet bead transition, changes in substrate direction, cracks in the substrate and penetrations of the roof before installation of the RoofPro membrane system

## 2.7 PRIMERS

- A. Concrete, roof cover boards and sealing cementitious and gypsum-based substrates shall be primed with Sika Concrete Primer Lo-VOC by Sika Corp., a single component, rapid curing, high solids, moisture cured primer or Sikalastic Primer EP / Sikalastic Primer EP Rapid by Sika Corp., a two-component, cyclo-aliphatic, amine cured material.
- B. Water based primer for concrete, roof cover boards, masonry and previously coated surfaces shall be Sika Bonding Primer by Sika Corp., a fast-drying, two-component, water-based, adducted polyamide epoxy primer.
- C. Green and damp concrete shall be primed with Sikalastic® GDC primer by Sika Corp., a 2-component, moisture mitigating epoxy primer for Green, Damp and Dry Concrete surfaces as well as plywood.
- D. Metal substrates shall be primed with Sikalastic® EP Primer/Sealer by Sika Corp., a two-component, cyclo-aliphatic, amine cured material with a high level of corrosion resistance for metal, bleed blocking on stable asphaltic surfaces, and chemically treated wood or the faster curing version Sikalastic® EP Primer Rapid by Sika Corp.
- E. EPDM/TPO membrane roofing primer shall be Sikalastic EPDM by Sika Corp., a single component rubber polymer-based primer or EPDM/TPO Lo-VOC by Sika Corp., a rubber polymer-based primer to improve adhesion to flexible EPDM and TPO roofing membranes
- F. PVC membrane roofing primer shall be Sikalastic® EP Primer/Sealer by Sika Corp., a two-component, cyclo-aliphatic, amine cured material.
- G. Membrane over-coating primer shall be Sika Reactivation Primer by Sika Corp., a single component polyurethane-based primer specifically designed for the reactivation of existing roof /waterproofing system applications prior to membrane over-coating OR Sikalastic Concrete Primer Lo-VOC, a single component, rapid curing, high solids, moisture cured primer

## 2.8 CONCRETE REPAIR AND PATCHING

- A. Horizontal Cementitious repair mortar to repair bug holes, spalled areas, and other non-structural surface defects, or to slope decks shall be SikaQuick 1000 by Sika Corp., a two component, polymer-modified, Portland cement, fast-setting, trowel-grade mortar. Vertical & Overhead Cementitious repair mortar to repair bug holes, spalled areas and other non- structural surface defects shall be SikaQuick VOH.
- B. Epoxy resin or urethane to fill uneven areas and birdbaths shall be Sikadur-22 Lo-Mod or Sikalastic-720.

## 2.9 COVER BOARD/THERMAL BARRIER

- A. Glass-faced/treated gypsum core, moisture resistant cover board/thermal barrier, min. ½" thick, intended for use as a thermal barrier directly to the structural wood or steel deck. Cover board shall be Dens-Deck Prime by Georgia-Pacific Corp.
- B. Fiber-reinforced/treated gypsum core, moisture resistant cover board/thermal barrier, min. ½" thick, intended for use as a thermal barrier directly to the structural wood or steel deck. Cover board shall be Securock Gypsum Board by United States Gypsum Corp.

- C. Glass-faced/cementitious core, moisture resistant cover board/thermal barrier, min. ½" thick, intended for use as a thermal barrier directly to the structural wood or steel deck. Cover board shall be Securock Cement Board by United States Gypsum Corp.

## 2.10 MECHANICAL FASTENERS

- A. Mechanical fasteners and plates for cover board/thermal barrier securement shall meet requirements of Factory Mutual and be of appropriate type and length for structural deck substrate.
- B. #12 or #14 screw-type fasteners for steel decks shall penetrate through the steel deck a minimum of 3/4".
- C. #12 or #14 screw-type fasteners for wood decks shall achieve a minimum of 1" penetration depth into the wood or shall penetrate through the wood deck a minimum of ¼".
- D. #14 screw-type or drive spike fasteners for concrete decks shall achieve a minimum penetration depth of 1" into the concrete. Predrilling of the concrete deck is required.
- E. All fasteners shall be installed with 3" diameter galvalume plates.
- F. Fasteners and plates shall be by Sika Sarnafil.

## 2.11 URETHANE FOAM ADHESIVE

- A. Low-rise urethane foam adhesive for cover board/thermal barrier securement shall meet requirements of Factory Mutual and be compatible with the intended deck substrate.
- B. Adhesive shall be Sarnacol OM Board Adhesive.

## 2.12 DRAINAGE MAT

- A. Soil, sand or stone ballast over burden:
  - 1. Sika Drainage Mat 420: impermeable high flow dimpled polypropylene drainage core heat-bonded to a layer of non-woven polypropylene filter fabric on the exposed top side and a polyethylene membrane protection film on the substrate facing bottom side.
- B. Vegetated roof assemblies:
  - 1. Sika Drainage Mat GRS: impermeable dimpled polystyrene drainage core that is perforated, then bonded to a root resistant non-woven polypropylene filter fabric on the exposed top side and non-woven polypropylene membrane protection fabric on the substrate facing bottom side. The core is installed dimpled side down to allow water retention within the cups. Excess water is collected and conveyed to a proper collection system, helping to control drainage flow.
- C. Freshly placed concrete or grout overburden:
  - 1. Sika Drainage Mat 720: impermeable high flow dimpled polypropylene drainage core heat-bonded to a layer of woven polypropylene filter fabric on the exposed top side and a polyethylene membrane protection film on the substrate facing bottom side. Meant for overburden experiencing light traffic up to 21,000 psf.
  - 2. Sika Drainage Mat 1000: high density polyethylene geonet drainage core with its ridges heat fused to a layer of non-woven polypropylene filter fabric on the exposed top side and



a heavy duty non-woven polypropylene membrane protection fabric on the substrate facing bottom side. Meant for overburden experiencing heavy traffic up to 40,000 psf.

#### 2.13 EXTRUDED POLYSTYRENE INSULATION

- A. Extruded polystyrene foam board insulation, either flat stock or tapered, meeting the requirements of ASTM 578 Type VI (40 psi – stone ballast or pavers in sand bed/direct application), Type VII (60 psi – concrete pavers on pedestals), or Type V (100 psi – superimposed loads). Insulation shall be Sika Sarnafil XPS.

#### 2.14 FILTER FABRIC

- A. Non-woven needle-punched polyester UV-stabilized mat, 3 oz./sq.yd., used between the extruded polystyrene insulation and stone ballast. Filter fabric shall be Sika 120 Fleece by Sika Corporation.

#### 2.15 CONCRETE PAVERS

- A. Architectural finish pavers meeting the following physical properties:
  - 1. Compressive Strength, ASTM C140: Greater than 7,000 psi average min..
  - 2. Flexural Strength, ASTM C293: Greater than 600 psi average min.
  - 3. Water Absorption, ASTM C140: Not greater than 5%
  - 4. Freeze/Thaw, ASTM C67: Less than 1% loss/dry weight (50 Cycles)
  - 5. Centerload: Min. 1,750 lbs.
  - 6. Weight: Min. 20 lbs/sq.ft. or as required for wind loading
- B. Pavers shall be manufactured by Hanover Architectural Products, Inc., Wausau Tile, Inc., or Westile, Inc. Paver pedestal systems shall be provided by the paver manufacturer.

#### 2.16 STONE BALLAST

- A. Standard graded stone ballast, either smooth river bottom stone or coarse aggregate, cleaned of fines and debris, meeting the gradation requirements of ASTM D448, as follows: #3, #4, or #24, to be applied at the minimum rate of 1,000 pounds per 100 square feet.
- B. Large graded stone ballast, either smooth river bottom stone or coarse aggregate, cleaned of fines and debris, meeting the gradation requirements of ASTM D448, as follows: #1 or #2, to be applied at the minimum rate of 1,300 pounds per 100 square feet.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the Work of this section. Notify Architect in writing of any discrepancies. Commencement of the Work in an area shall indicate Installer's acceptance of the substrate.
- B. Surfaces shall be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill voids, gaps and spalled areas in substrate to provide an even plane. Strike masonry joints full flush.

### 3.2 SURFACE PREPARATION

- A. Verify that the deck is clean and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers or gutters. Verify that all roof openings or penetrations through the roof are secured back to solid blocking. Ensure all preparatory Work is complete prior to applying membrane.
- B. Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing and fastened into solid backing.
- C. All surfaces shall be blown clean using best methods to remove any remaining loose debris.
- D. All cracks and voids greater than 0.040 inches shall be routed and caulked with a polyurethane sealant. Allow to cure per roof /waterproofing membrane manufacturer's technical data sheets prior to over-coating with the specified roof /waterproofing membrane system.
- E. At all inside corners, gaps or voids at the juncture of the deck and penetrations apply a minimum 3/4 inch fillet bead of polyurethane sealant and allow to cure per roof /waterproofing membrane manufacturer's technical data sheets prior to installing the roof /waterproofing membrane system.
- F. At all moving cracks, moving joints between dissimilar materials, and similar conditions, create a minimum 1 inch wide bond break utilizing bond breaker tape, centered over the crack or joint.
- G. Membrane terminations shall be established prior to project start-up and documented in shop drawings. Terminations shall occur in raked-out mortar joints, saw cut terminations or under installed counter-flashing materials.
- H. Use tape lines to achieve a straight edge detail. Remove tape while application is still wet for clean lines.

### 3.3 SUBSTRATE PREPARATION

- A. Acceptable substrates include concrete, concrete block, solid wood/plywood sheathing, cover board/thermal barriers and metal.
- B. Wood and Plywood Sheathing:
  - 1. Solid wood sheathing shall be tongue & groove, or splined, or covered with a layer of plywood sheathing. Solid wood sheathing shall be not less than 3/4 inch (13 mm) thick.
  - 2. Plywood sheathing shall be exterior grade, minimum 4 ply, and not less than 1/2 inch (12.7 mm) thick.
  - 3. Preservatives or fire retardants used to treat the decking shall be compatible with roofing materials.
  - 4. The deck shall be installed over joists that are spaced 24 inches (61 cm) o.c. or less and that all four sides bear on and are secured to joist and cross blocking. "H" clips are not acceptable.
  - 5. Panels shall be installed with a 1/8 inch to 1/4 inch (3mm – 6mm) gap between panels and shall match vertically at joints to within (1/8 inch (3mm)).
  - 6. Decking shall be kept dry and roofed promptly after installation.
  - 7. A 1/2" thick thermal barrier shall be installed and secured over all solid wood decks in accordance with wind uplift requirements.
- C. Structural Concrete:
  - 1. Acceptable concrete substrates are limited to poured in place concrete decks.

2. Minimum deck thickness for structural concrete is 4 inches (10.2 cm).
3. Concrete surface to be light broom finish or equivalent.
4. Curing agents shall be checked for compatibility with specified roofing/waterproofing materials. Most curing agents shall be completely removed from the substrate by grinding, scarifying, or other mechanical means.
5. Concrete and masonry surfaces shall be low-pressure (5,000 psi or less) power-washed in accordance with ICRI Guideline No. 03732: Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays to remove all dirt, debris or surface contamination that would compromise bonding of the specified roofing/waterproofing membrane system. Remove oil or grease with solvents, or detergent and water. Rinse surface clean of remaining cleaning agents.
6. Do not apply on substrates with moisture content greater than 4% by weight, measured by Tramex Concrete Moisture Encounter meter.
7. Application to Damp (moisture content greater than 4%) Concrete: Sikalastic® GDC Primer can be applied to damp concrete as soon as surface water has dissipated after rainfall or other sources of water have ceased.
8. Application to Green Concrete: Sikalastic® GDC Primer can be applied to horizontal concrete surfaces 48 hours after concrete pour (or when concrete is walkable) and vertical surfaces 24 hours after forms are removed.
9. Minimum substrate compressive strength > 3000 psi. at the time Sikalastic® GDC Primer is applied

D. Metal Decking:

1. Metal profile decks shall be sound and secured to purlins, bar joists, etc. A ½" thick thermal barrier shall be installed and secured over all metal profile decks in accordance with wind uplift requirements.

E. Metal Surfaces:

1. Exposed drain bowls, pipes, and other metal surfaces shall be cleaned by power tool cleaning (SSPC SP-3) to remove corrosion deposits back to a clean, bright metal followed by a solvent wipe prior to application of the specified primer.

### 3.4 PRIMING

A. Concrete, Masonry, Cover Boards, and Wood:

1. Mix and apply specified primer for concrete/masonry/wood surfaces by brush or roller at the application rate shown on the technical data sheet. Porous, rough or absorbent surfaces will decrease coverage rates.
2. Allow to cure and dry in accordance with manufacturer's technical data sheets.

B. Metal:

1. Apply specified primer for metal surfaces to clean and prepared drain bowls and other metal surfaces by brush or roller at the application rate shown on the technical data sheet to achieve an overall wet film thickness of 6-8 mils. High porosity and roughness of the substrate will decrease coverage rates.
2. Allow to cure and dry in accordance with manufacturer's technical data sheets.

C. Existing Membrane Tie-In:

1. Apply specified reactivation primer to existing roof/waterproofing membrane greater than seven (7) days old by roller at a maximum coverage rate of 250 sf/gallon. Allow to cure in

accordance with manufacturer's technical data sheets prior to application of subsequent roof/waterproofing membrane system.

### 3.5 MEMBRANE REINFORCEMENT

- A. Reinforcement of Cracks, Plywood and Cover Board Joints, and Base/Curb Flashing Transitions:
1. For all locations where the specified membrane system is to be applied directly to the substrate surface, provide reinforcement of cracks and joints prior to applying the specified membrane system
  2. For all moving cracks and joints, create a minimum 1 inch wide bond break centered over the crack or joint by applying bond break tape centered over each crack or joint.
  3. For all non-moving cracks and joints, rout and seal with Sikaflex polyurethane sealant.
  4. For all horizontal-to-vertical transitions, provide a  $\frac{3}{4}$ " x  $\frac{3}{4}$ " Sikaflex polyurethane sealant cant.
  5. Apply a minimum of a 3 inch wide strip of Sika Joint Tape SA directly, or alternatively Flexitape Heavy membrane reinforcement into a bed of liquid roofing/waterproofing membrane. Back roll reinforcement to fully embed reinforcement into the wet liquid polyurethane membrane. Add more liquid membrane as needed to fully embed the reinforcement.
  6. Ensure reinforcement is not in tension during embedment.

### 3.6 COLD FLUID APPLIED MEMBRANE APPLICATION

- A. Install roofing/waterproofing membrane system in accordance with current technical data sheets and in accordance with Part 2 Section 2.2.
- B. Apply base embedment coat to horizontal deck and vertical wall surfaces by brush or with 1/2 inch – 3/4 inch nap roller to achieve a continuous and uniform minimum wet film thicknesses as specified in Part 2 section 2.2. For fleece applications, approximately 2/3 of the total resin shall be applied as the base embedment coat.
- C. Immediately lay specified conformable reinforcement into the wet base embedment resin coat. Reemat reinforcement is typically precut before application; Fleece reinforcement is typically precut at flashings only before application.
- D. Apply pressure to the membrane reinforcement with a roller as appropriate to fully embed and saturate the membrane reinforcement into liquid roofing/waterproofing material. Remove air pockets from under the membrane by rolling them out.
- E. Apply additional liquid material as required to ensure the membrane reinforcement is fully embedded and has conformed to the substrate without tenting or visible pinholes.
- F. Overlap sheets of Reemat membrane reinforcement a minimum of 2 inches in all directions. Overlap sheets of Fleece membrane reinforcement 3 inches at side laps and 6 inches at end laps.
- G. Extend membrane reinforcement vertically at adjacent wall surfaces in accordance with project details and specifications.
- H. When using fiberglass mat reinforcement, allow the base embedment coat to fully cure dry prior to the placement of top coat or other applications of the specified roofing/waterproofing material.
- I. When using polyester fleece reinforcement, immediately apply the resin topcoat wet-on-wet.

- J. Apply topcoat by nap roller or brush to achieve a continuous and uniform minimum wet film thickness as specified in Part 2 Section 2.2.
- K. Install all flashings in accordance with manufacturer's construction details.

### 3.7 PARAPET AND WALL FLASHINGS

- A. Clean, prepare and prime flashing substrate surfaces ready to receive membrane flashing applications.
- B. All parapet, wall, and curb flashings shall be provided with a cant bead of Sika 11FC sealant cant with Flexitape or Sika SA Tape reinforcement prior to Sika Reemat Premium/Sika Fleece flashing application.
- C. Terminate roofing/waterproofing membrane system at raked-out mortar joints, termination saw cut joint, or under installed counter-flashing materials. Seal all mortar joints and saw cut joints with Sikaflex polyurethane sealant.
- D. Install metal counter flashings in accordance with details.

### 3.8 DRIP EDGES AND OTHER METAL FLANGED FLASHING

- A. Clean, prepare and prime metal flange surfaces ready to receive membrane flashing applications.
- B. Metal flanges are typically encapsulated between two membrane layers, usually by providing membrane flashing as a stripping ply over the metal flange, with the field or flashing membrane extending beneath the metal flange. It is also acceptable to install the stripping ply under the metal flange and extend the field or flashing membrane over the metal flange.
- C. For insulated roof assemblies, metal flanges shall be mechanically fastened through the first membrane layer to wood nailers. For direct to substrate membrane applications where the roof / waterproofing membrane is applied directly to the structural deck, metal flanges shall be mechanically fastened through the first membrane layer to the structural deck.

### 3.9 ROOF DRAINS

- A. Clean, prepare and prime surfaces ready to receive membrane applications. Block drain bowl opening to avoid roofing/waterproofing material from entering the drainage system.
- B. Remove strainer baskets and clamping rings from the drain bowl assembly. Temporarily replace the bolts back into assembly to avoid miss-alignment of connections after membrane applications are completed.
- C. Extend the liquid roofing/ waterproofing material and membrane reinforcement directly into the throat of the prepared drain.
- D. Remove drain blocks and allow the roofing/waterproofing system to fully cure dry prior to re-connecting the drain bowl assembly.

### 3.10 ROOF PENETRATIONS

- A. Clean, prepare and prime surfaces ready to receive membrane flashing applications. Ensure that penetrations are secured to prevent movement.

- B. Penetration flashings typically consist of two components. A vertical flashing component extends up the penetration and is torn (if Reemat reinforcement) or finger cut (if fleece reinforcement) at the bottom so that it can be extended horizontally onto the deck/substrate. A horizontal flashing component covers all of the tears/finger cuts and extends vertically up the penetration. The intent is to achieve a 2-3 inch overlap of the two flashing components.

### 3.11 EXPANSION JOINTS

- A. Clean, prepare and prime surfaces ready to receive membrane flashing applications. For insulated roof assemblies, wood nailers shall be installed as insulation stops prior to expansion joint flashing application.
- B. Expansion joints shall be sealed with a compressible filler such as batt insulation to prevent condensation and to provide support for the flashing bellows.
- C. Expansion joint flashings typically consist of four components. An initial reinforced membrane cradle of 6" wide Flexitape Heavy or Fleece is installed first, followed by a compressible foam rod under 25% compression, extending equally above and below the membrane level. A second reinforced membrane layer is installed over the foam rod to create a bellows. A third reinforced membrane layer is installed over the bellows. It is acceptable to use the flashing or roof / waterproofing membrane as the final layer.

### 3.12 AGGREGATE SURFACING

- A. Apply aggregate surfacing as specified for protective layer. DO NOT BROADCAST SAND INTO TOPCOAT
- B. Apply an additional 15 wet mil layer of Sikalastic-644 Lo-VOC resin to cured roofing/waterproofing membrane as soon as membrane can be walked on without damage.
- C. Tile Overburden - Broadcast kiln-dried sand to refusal into the wet resin layer and allow to cure. Remove all loose sand/aggregate.
- D. Non-Skid Finish - Broadcast kiln-dried sand to refusal into the wet resin layer and allow to cure. Remove all loose sand/aggregate. Apply an additional 15 wet mil layer of Sikalastic- 644 Lo-VOC resin to seal kiln-dried sand.
- E. Non-Skid Finish Broadcast & Backroll - Broadcast kiln-dried sand into the wet resin layer and back roll to encapsulate the kiln dried sand. Allow to cure.
- F. .

### 3.13 APPLICATION OF PENETRATION SEALANT

- A. Seal reglet-based membrane terminations, heads of exposed mechanical fasteners, around penetrations, duct work, electrical and other apparatus extending through the roofing/waterproofing membrane with specified penetration sealant.

### 3.14 FLOOD TEST

- A. Upon the completion of the roofing/waterproofing membrane system and associated terminations the contractor shall flood test the system. Provide temporary stops and plugs for the roof drains within the test area. Flood test with a minimum 2 inches of water for no less than 24 hours.

- B. Repair and retest the system for no less than 24 hours, report all deficiencies to the Architect. Remove temporary stops and plugs. No other Work is to proceed without prior direction from the Architect.

### 3.15 ROOF PROTECTION

- A. Protect roofing/waterproofing Work from other trades until completion.
- B. Stage materials in such a manner that avoids foot traffic over completed roof areas.
- C. Provide temporary walkways and platforms to protect completed Work from traffic and point loading during the application process.
- D. Provide temporary membrane tie-ins and water-stops at the end of each workday and remove prior to commencement of Work the following day.

### 3.16 PREFABRICATED COMPOSITE DRAINAGE AND PROTECTION MAT

- A. Install the drainage mat when it can be followed immediately by the installation of the extruded polystyrene insulation and pavers/ballast.
- B. Install the drainage mat on horizontal and vertical surfaces in accordance with the product data sheet. Lay out and position drainage mat, and allow to lay flat. Cut and closely fit drainage mat to perimeter and penetrations.
- C. Overlap filter fabric from adjacent sheets/rolls, and bond all fabric overlaps with Sikaflex sealant. Install supplemental filter fabric as required to ensure filter fabric continuity at flashing locations.

### 3.17 INSTALLATION OF EXTRUDED POLYSTYRENE INSULATION

- A. Before the application of the insulation, any damage or deterioration to the composite drainage and protection mat shall be repaired.
- B. Loose lay insulation in a staggered manner, and tightly butt together all insulation boards. The maximum acceptable joint width is 3/8 inch. Cut and closely fit insulation within 3/4 inches to perimeter and penetrations.
- C. For multi-layer insulation applications, the bottom layer shall be the thickest layer and shall be a minimum of 2 inches thick. Stagger the joints of each insulation layer.
- D. Vertical insulation applications can be spot adhered to the drainage mat and to additional insulation layers, utilizing an acceptable adhesive.
- E. Do not install damaged insulation boards.

### 3.18 FILTER FABRIC

- A. Install filter fabric on horizontal and vertical surfaces over the extruded polystyrene insulation in accordance with the product data sheet.
- B. Lay out and position filter fabric. Cut and closely fit filter fabric to perimeter and penetrations, extending the filter fabric vertically to the height of the overburden.
- C. Overlap filter fabric to achieve 6 inch side and end laps. As required, bond all fabric overlaps with Sikaflex sealant to ensure filter fabric continuity prior to and during overburden installation.

### 3.19 CONCRETE PAVERS

- A. Furnish and install concrete pavers in accordance with the product data sheet, including specified pedestal support system.
- B. Pavers shall be laid and fitted together to achieve a maximum joint width of 1/4 inch, and a maximum height variation between adjacent pavers of 1/4 inch.
- C. Plan paver installation to minimize use of paver segments smaller than one-half of a full paver.
- D. Cut pavers neatly to fit around penetrations and at perimeter, with a maximum gap of 1 inch.
- E. Do not install damaged paver units.

### 3.20 STONE BALLAST

- A. Install stone ballast of the specified gradation at the prescribed application rate, in accordance with the most current revision of ANSI RP-4. Ensure full and even coverage.

### 3.21 CLEAN-UP

- A. Work areas are to be kept clean, clear and free of debris at all times.
- B. Do not allow trash, waste, and/or debris to collect on the roof deck area. Trash, waste, and/or debris shall be removed from the roof on a daily basis.
- C. All tools and unused materials shall be collected at the end of each workday and stored properly off of the finished roof surface and protected from exposure to the elements.
- D. Dispose of or recycle all trash and excess material in a manner conforming to current EPA regulations and local laws.
- E. Properly clean the finished roof surface after completion, and make sure the drains and gutters are not clogged.
- F. Clean and restore all damaged surfaces to their original condition

### END OF SECTION

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