

# SIKAPROOF® WATERPROOFING MEMBRANE MASTER SPECIFICATION

## SUGGESTED MASTER SPECIFICATION

### SECTION 07 13 00 PRE-APPLIED SHEET MEMBRANE WATERPROOFING

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES:

- A. The Work of this Section includes, but is not limited to, blindside pre-applied sheet membrane waterproofing that forms a mechanical bond to poured concrete for the following applications:
  - 1. Horizontal Applications: Membrane applied on prepared subbase prior to placement of concrete slabs.
  - 2. Vertical Applications: Membrane applied against formwork, or soil retention system prior to placement of concrete foundation walls.
  - 3. Waterstops for sealing concrete construction joints, pipe penetrations, and knock-outs.

##### 1.02 RELATED SECTIONS

- A. Section 03 10 00 - Concrete Forming and Accessories
- B. Section 03 15 13 - Waterstops
- C. Section 03 20 00 - Concrete Reinforcing
- D. Section 03 30 00 - Cast-In-Place Concrete
- E. Section 31 20 00 - Earth Moving
- F. Section 31 62 00 - Driven Piles
- G. Section 31 64 00 - Caissons

##### 1.03 REFERENCES

- A. American Society for Testing and Materials International (ASTM)
  - 1. ASTM C 836 Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course
  - 2. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
  - 3. ASTM D570 Standard Test Method for Water Absorption of Plastics
  - 4. ASTM D 903 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
  - 5. ASTM D 1876 Standard Test Method for Peel Resistance of Adhesives (T-Peel Test)
  - 6. ASTM D1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
  - 7. ASTM D3767 Standard Practice for Rubber - Measurement of Dimensions



8. ASTM D5385 Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes
9. ASTM E96 Standard Test Method for Water Vapor Transmission of Materials
10. ASTM E 154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

## 1.04 SUBMITTALS

- A. Manufacturer's Product Data, installation instructions for waterproofing membrane system, and representative membrane samples for approval.
- B. LEED Submittals – Provide LEED submittal information as required.
- C. Shop Drawings: Manufacturer to provide shop drawings of the entire sub-grade waterproofing system showing locations and extent of all waterproofing materials, waterstops, and accessories including details of substrate joints, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, integration with air barrier system, and other termination conditions.
- D. Mock-up Panels: Mock-up panels as specified herein shall be constructed by the Contractor at locations selected by the Architect, to test all products specified in this Section and arrive at acceptable methods of installation.

## 1.05 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Sheet membrane waterproofing system manufacturer shall be ISO 9001 certified and demonstrate a minimum of fifteen (15) years continuous, successful experience in production of waterproofing membranes.
- B. Installer Qualifications: Sheet membrane waterproofing system installation shall be performed by one Contractor, approved by the waterproofing manufacturer, and shall have at least three (3) years experience in work of the type required by this Section.
- C. Manufacturer Technical Representatives: Membrane manufacturer shall provide trained direct company personnel to attend necessary job meetings, perform periodic inspections as necessary, and conduct a final inspection upon successful completion of the installation.
- D. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions, to coordinate this work with related and adjacent work, and to review special details.
- E. Give a minimum of five (5) days notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.
- F. Contractor shall attend necessary job meetings and furnish competent and full time supervision, experienced mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the membrane installation in accordance with this specification.
- G. Materials: Obtain primary sheet membrane waterproofing and all joint sealing and waterstop materials of each type required from a single manufacturer. Manufacturer to provide waterproofing shop drawings.
- H. Backup Preparation: The Contractor shall prepare the backup surfaces to accept the approved waterproofing system in the manner necessary to comply with all requirements of the membrane manufacturer and architect. Backup preparation shall be guided by the following:
  1. Mock-up areas shall be used to determine required methods and tools to obtain degree of backup preparation required by the membrane manufacturer. Prepare and clean a three (3) foot by three (3) foot areas of each substrate material type.



- I. Schedule Coordination: Schedule work such that the membrane will not be left exposed to jobsite conditions for longer than that recommended by the manufacturer. Manufacturer or manufacturer's representative to be on site during waterproofing installation.

## 1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original and unopened labeled packages. Store and handle in strict compliance with manufacturer's instructions. Protect from damage from weather, excessive temperature, and construction operations. Remove and dispose of damaged material in accordance with applicable regulations.

## 1.07 CODE REQUIREMENTS

- A. Work shall be performed in accordance with the more stringent requirements of these specifications, the Local Building Code, OSHA, or other governmental authorities including Federal, State, and Local, having jurisdiction.

## 1.08 FIELD CONDITIONS

- A. Perform work only when weather conditions as well as ambient and substrate temperatures are within the limits established by the manufacturer of the sheet membrane waterproofing system. Do not apply waterproofing in snow, rain, or mist.
- B. Proceed with installation only when the substrate construction and preparation work is complete and is suitable to support sheet membrane waterproofing.

## PART 2 PART

### 2.01 MANUFACTURER

- A. **Sika St. Louis**, 3400 Tree Court Industrial Boulevard, St. Louis, MO 63122; Phone: 800-325-9504; Fax: 800-551-5145; Email: [info@greenstreak.com](mailto:info@greenstreak.com); [usa.sika.com](http://usa.sika.com)
- B. Source Limitations for Waterproofing System: Obtain primary sheet membrane waterproofing and all joint sealing and waterstop materials of each type required from a single manufacturer.

### 2.02 MATERIALS

- A. Pre-applied Integrally Bonded Sheet Waterproofing Membrane: **SikaProof A** by **Sika**, a multi-layered composite sheet membrane consisting of a flexible polyolefine membrane, laminated with a polyolefin adhesive sealant applied in a fine grid pattern, and a non-woven polypropylene fleece. The membrane shall form a continuous and permanent mechanical bond to poured concrete to prevent lateral water migration between the membrane and structural concrete.
  1. Horizontal Applications:
    - a. Sika (St. Louis Sales Office); SikaProof A-08.
  2. Vertical Applications:
    - a. Sika (St. Louis Sales Office); SikaProof A-05.
- B. Provide membrane with the following physical properties:

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Property	Test Method	Result
Color		Yellow
Thickness (nominal)	ASTM D 3767	1.1mm (0.04in.), 1.35mm(0.05in.), 1.7mm (0.07in.)
Lateral Water Migration Resistance	ASTM D 5385 modified	Pass at 71m (231 ft.) of hydrostatic head pressure head pressure
Resistance to Hydrostatic Head	ASTM D 5385 modified	71m (231 ft.) min.
Low Temperature Flexibility	ASTM D 1970	Pass at -29°C (-20°F)
Tensile Strength <sup>1</sup>	ASTM D 412	1,200 psi (8.3 MPa) min.
Elongation <sup>1</sup>	ASTM D 412	700% min.
Water Absorption	ASTM D 570	0.03%
Crack Cycling	ASTM C 836	Pass at -26°C (-15°F)
Peel Adhesion to Concrete	ASTM D 903	40 lbs/in. (7,000 N/m) min.
Lap Peel Adhesion	ASTM D 1876	40 lbs/in. (7,000 N/m) min.
Permeance	ASTM E 96 Method B	3.45ng/Pa x s x m <sup>2</sup> (0.06 perms)
Puncture Resistance	ASTM E 154	150 lbs (670 N) min.
Radon Permeability (SPA-08)	Certificate E-214/2011	(2.0 +/- 0.3) x 10 <sup>-12</sup> m <sup>2</sup> /s

Footnotes:

1. Tensile strength and ultimate elongation testing performed on total waterproofing system (i.e. membrane, sealant layer, and fleece layer) at a rate of 20in./min.

## 2.03 ACCESSORIES

- A. SikaProof A Edge: Preformed L-shaped waterproofing sheet to form perimeter edge, internal and external corners, and connections of membrane waterproofing system.
- B. Tapes for Detailing:
  1. SikaProof Tape-150: Self-adhesive tape for internal jointing.
  2. SikaProof ExTape-150: Self-adhesive tape for external jointing.
- C. Waterstop: Sika Greenstreak waterstops as required by Section 03 15 13.
- D. Reinjectable Injection Hose System: SikaFuko VT injection hose system used in conjunction with Sika Injection 306 as required by Section 03 1513.
- E. Sarnafelt NWP-HD: Separation layer comprised of a high quality geotextile fabric of non-woven polypropylene used as a leveling layer to absorb the inconsistencies of the substrate.
- F. Sika 5 mm Protection Board: Extruded polypropylene protection layer.
- G. Sika Drainage Mat 420: Consists of a polypropylene dimpled drainage core bonded with a non-woven geocomposite fabric on the top side, and a membrane protective film bonded to the bottom side.
- H. SikaProof FixTape-50: Self-adhesive tape for adhering waterstop and detailing.
- I. SikaProof Metalsheet: Fleece lined metal sheeting for special detailing around pile heads.



- J. SikaProof Patch-200: External membrane patching tape for sealing any external penetrations or local membrane damage.
- K. Miscellaneous Accessories: Accessories specified or acceptable to manufacturer of pre-applied waterproofing membrane system.

## PART 3 EXECUTION

### 3.01 GENERAL

- A. The Installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify the Contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.
- B. Membrane Placement: Thickness of the sub-grade membrane shall be determined by the following factors and approved by the membrane manufacturer's technical representative and the architect.
  - 1. SikaProof A-08: Use on all horizontal surfaces and where rebar cages are placed next to vertical surfaces. Run SikaProof A-08 Edge up vertical wall to a height above the rebar concentration and marry to the SikaProof A-05 membrane.
  - 2. SikaProof A-05: Use on all vertical surfaces above high static pressure elevations and on vertical surfaces where rebar damage is less problematic.

### 3.02 SUBSTRATE PREPARATION

- A. The substrate shall be of sufficient stability to prevent movement during the concrete placement. Substrates must be regular and smooth with no gaps or voids larger than 0.5 in. Acceptable substrates include: concrete, permanent or removable formwork, plywood, fleece, rigid protection board, or drainage composite.
  - 1. Horizontal Surfaces: The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over crushed stone or earth, ensure substrate is well compacted to prevent displacement of the substrate due to traffic or concrete placement. Substrate may be damp, but standing water must be removed.
  - 2. Vertical Surfaces: Use a suitable substrate such as permanent or temporary formwork, plywood, rigid protection board, or drainage composite to provide membrane support.

### 3.03 INSTALLATION

- A. General: Strictly comply with installation instructions in manufacturer's published literature, including but not limited to the following:
- B. Horizontal Applications:
  - 1. Install a separation/protection or leveling layer based on existing jobsite conditions.
  - 2. Install the pre-formed SikaProof A-08 Edge sheet for the perimeter of the installation area.
  - 3. Form the corners with the same SikaProof A-08 Edge sheet adhering both externally with SikaProof ExTape-150 and internally with SikaProof Tape-150.
  - 4. Install the SikaProof A membrane fleece side up, adhering the joints with the self-adhesive strip longitudinally. Adhere transverse joints externally with SikaProof ExTape-150 and internally with SikaProof Tape-150.



5. Accurately position succeeding sheets to overlap the self-adhesive strip by a minimum of 90 mm (3.5 in.) along the marked edge. Ensure the underside of the succeeding sheet is clean, dry, and free from contamination before removing the protective release liner.
  6. Remove the protective release liner exposing the self-adhesive strip from between the overlaps as the two layers are adhered together. Ensure a continuous bond is achieved without creases.
  7. Install detail areas, such as pipe penetrations, pits, connections, expansion joints, and any other special details using the appropriate accessory products and in strict accordance with the manufacturer's installation instructions.
- C. Vertical Applications:
1. Install leveling layer based on existing jobsite conditions.
  2. Mechanically fasten the membrane using fasteners appropriate to the substrate with the fleece side facing towards the concrete placement. The membrane may be installed in either horizontal or vertical orientation in any convenient length.
  3. Accurately position succeeding sheets to overlap the self-adhesive strip by a minimum of 90mm (3.5 in.) along the marked edge. Ensure the underside of the succeeding sheet is clean, dry, and free from contamination before removing the protective release liner.
  4. Remove the protective release liner exposing the self-adhesive strip from between the overlaps as the two layers are adhered together. Ensure a continuous bond is achieved without creases.
- D. Dual Vertical Formwork Applications:
1. Mechanically fasten the membrane using fasteners appropriate to the substrate with the fleece side facing towards the concrete placement. The membrane may be installed in either horizontal or vertical orientation in any convenient length.
  2. Accurately position succeeding sheets to overlap the self-adhesive strip by a minimum of 90mm (3.5 in.) along the marked edge. Ensure the underside of the succeeding sheet is clean, dry, and free from contamination before removing the protective release liner.
  3. Remove the protective release liner exposing the self-adhesive strip from between the overlaps as the two layers are adhered together. Ensure a continuous bond is achieved without creases.
  4. After removing the formwork penetrations, such as form ties, any membrane damage and construction joints can be sealed on the external side of the membrane with SikaProof Patch-200 or the Sika Dilatec system.
  5. Protect membrane in accordance with the manufacturer's published literature prior to backfilling operations.

### 3.04 FORM LINER ACCESSORY INSTALLATION

- A. Protect membrane in accordance with the manufacturer's recommendations until placement of concrete. Inspect membrane for damage just prior to concrete placement and make repairs in accordance with manufacturer's recommendations.

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**END OF SECTION**

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