

SECTION 07131

Sheet Membrane Waterproofing

Bituthene® Membrane and Bituthene Deck Prep System Specifications

PART 1 — GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions, and Division 1 General Requirements, apply to the work of this section.

1.02 SUMMARY

- A. The work of this section includes, but is not limited to, the following:
 - 1. Rubberized asphalt sheet membrane waterproofing system
 - 2. Pourable grade asphalt modified urethane surface treatment
 - 3. Prefabricated drainage composite
- B. Related Sections: Other specification sections which directly relate to the work of this section include, but are not limited to, the following:
 - 1. Section 02710 – Drainage Composites
 - 2. Section 02712 – Subsurface Drainage Pipes
 - 3. Section 03300 – Cast-In-Place Concrete
 - 4. Section 04200 – Unit Masonry
 - 5. Section 05810 – Expansion Joint Cover Assemblies
 - 6. Section 07150 – Dampproofing
 - 7. Section 07600 – Flashing and Sheet Metal
 - 8. Section 07900 – Joint Sealers
 - 9. Section 15400 – Drains

1.02 REFERENCE STANDARDS

- A. The following standards and publications are applicable to the extent referenced in the text.
- B. American Society for Testing and Materials (ASTM)
 - C 836-89 Standard Specification for High Solids, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course
 - D 412-87 Standard Test Methods for Rubber Properties in Tension
 - D 570-88 Standard Test Method for Water Absorption of Plastics
 - D 882-91 Standard Test Methods for Tensile Properties of Thin Plastic Sheeting
 - D 903-83 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
 - D 1876-83 Standard Test Method for Peel Release of Adhesives (T-Peel)
 - D 1970-94 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
 - D 3767-83 Standard Practice for Rubber - Measurements of Dimensions
 - D 5385-93 Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes
 - E 96-80 Standard Test Methods for Water Vapor Transmission of Materials
 - E 154-88 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover
- C. General Services Administration, Public Building Service
GSA-PBS-07115: Guide Specification for Elastomeric Waterproofing

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, installation instructions, use limitations and recommendations. Include certification of data indicating VOC (Volatile Organic Compound) content of all components of the waterproofing system.
- B. Samples: Submit representative samples of the following for approval:
 - 1. Sheet membrane
 - 2. Prefabricated drainage composite
 - 3. Protection board

1.04 QUALITY ASSURANCE

- A. Manufacturer: Sheet membrane waterproofing systems shall be manufactured and marketed by a firm with a minimum of 20 years experience in the production and sales of self-adhesive sheet membrane waterproofing. Manufacturer's proposed for use, but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past 5 years.
- B. Installer: A firm which has at least 5 years of experience in work of the type required by this section and for projects with performance warranties, installer must be pre-approved by sheet membrane manufacturer.
- C. Materials: For each type of material required for the work of this section, provide primary materials which are the products of one manufacturer.
- 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 and to coordinate this work with related and adjacent work. Agenda for meeting shall include review of special details and flashing.
- E. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during membrane waterproofing work to review installation procedures.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions, recommendations and material safety data sheets. Protect from damage from sunlight, weather, excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.
 - 1. Do not double-stack pallets of membrane on the job site. Provide cover on top and all sides, allowing for adequate ventilation.
 - 2. Protect primer, mastic and adhesive from moisture and potential sources of ignition.
 - 3. Store drainage composite or protection board flat and off the ground. Provide cover on top and all sides.
- B. Sequence deliveries to avoid delays, but minimize on-site storage

1.06 PROJECT CONDITIONS

- A. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials and products used.
- B. Proceed with installation only when substrate construction and preparation work is complete and in condition to receive sheet membrane waterproofing.

1.07 WARRANTY

- A. Sheet Membrane Waterproofing: Provide written 5-year material warranty issued by the membrane manufacturer upon completion of the work.

PART 2 — PRODUCTS

2.01 MATERIALS

- A. Sheet Membrane Waterproofing System: Bituthene Membrane by GCP Advanced Technologies Construction Products; a self-adhesive, cold-applied composite sheet consisting of a thickness of 1.4 mm (0.056 in.) of rubberized asphalt and 0.1 mm (0.004 in.) of cross-laminated, high density polyethylene film. Provide rubberized asphalt membrane covered with a release sheet which is removed during installation. No special adhesive or heat shall be required to form laps. Provide the following (NOTE TO SPECIFIER: Please specify membrane as appropriate for project):
 - a. Bituthene System 4000
 - b. Bituthene 3000
 - c. Bituthene Low Temperature
- B. Sheet Membrane Waterproofing:

PHYSICAL PROPERTIES FOR BITUTHENE MEMBRANES:

Property	Test Method	Typical Value – Bituthene System 4000	Typical Value – Bituthene 3000	Typical Value – Bituthene Low Temperature
Color		Gray-black	Dark gray-black	Gray-black
Thickness	ASTM D 3767 Method A	1.5 mm (0.060 in.) nominal	1.5 mm (0.060 in.) nominal	1.5 mm (0.060 in.) nominal
Flexibility, 180° Bend over 25 mm (1 in.) mandrel at -43°C (-45°F)	ASTM D 1970	Unaffected	Unaffected	Unaffected
Tensile Strength, Membrane Die C Modified	ASTM D 412	2240 kN/m ² (325 lb/in. ²) minimum	2240 kN/m ² (325 lb/in. ²) minimum	2240 kN/m ² (325 lb/in. ²) minimum
Tensile Strength, Film	ASTM D 882	34 500 kN/m ² (5 000 lb/in. ²) minimum	34 500 kN/m ² (5 000 lb/in. ²) minimum	34 500 kN/m ² (5 000 lb/in. ²) minimum
Elongation, Ultimate Failure of Rubberized Asphalt	ASTM D 412	300% minimum	300% minimum	300% minimum
Crack Cycling –32°C (-25°F), 100 Cycles	ASTM C 836	Unaffected	Unaffected	Unaffected
Lap Adhesion at Minimum Application Temperature	ASTM D 1876	880 N/m (5 lb/in.)	700 N/m (4 lb/in.)	880 N/m (5 lb/in.)
Peel Strength	ASTM D 903	1576 N/m (9 lb/in.)	1576 N/m (9 lb/in.)	1576 N/m (9 lb/in.)
Puncture Resistance, Membrane	ASTM E 154	222 N (50 lb) minimum	222 N (50 lb) minimum	222 N (50 lb) minimum
Resistance to Hydrostatic Head	ASTM D 5385	70 m (231 ft) of water	60 m (200 ft) of water	60 m (200 ft) of water
Exposure to Fungi in Soil, 16 weeks	GSA-PBS 07115	Unaffected	Unaffected	Unaffected
Permeance	ASTM E 96 Method B	2.9 ng/m ² sPa (0.05 perms) maximum	2.9 ng/m ² sPa (0.05 perms) maximum	2.9 ng/m ² sPa (0.05 perms) maximum
Water Absorption	ASTM D 570	0.1% maximum	0.1% maximum	0.1% maximum

- C. Prefabricated Drainage Composite: Hydroduct® 660 Drainage Composite by GCP Advanced Technologies Construction Products. Drainage Composite shall be designed to promote positive drainage while serving as a protection course.
- D. Pourable Grade Asphalt Modified Urethane:
 - 1. Bituthene Deck Prep Surface Treatment – Two component, self-leveling, pourable grade asphalt modified urethane membrane to be applied onto structural concrete deck prior to application of Bituthene 3000.
- E. Miscellaneous Materials: Primer, mastic, liquid membrane, tape and accessories specified or acceptable to manufacturer of sheet membrane waterproofing.

PART 3 — EXECUTION

3.01 EXAMINATION

- A. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are completed.

3.02 PREPARATION OF SUBSTRATES

- A. Refer to manufacturer's literature for requirements for preparation of substrates. Surfaces shall be structurally sound and free of voids, spalled areas, looser aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods which are acceptable to manufacturer of sheet membrane waterproofing.
- B. Cast-In-Place Concentrate Substrates:
 - 1. Do not proceed with installation until concrete has properly cured and dried (minimum 7 days for normal structural concrete and minimum 14 days for lightweight structural concrete).
 - 2. Fill form tie rod holes with concrete and finish flush with surrounding surface.
 - 3. Repair bugholes over 13 mm (0.5 in.) in length and 6 mm (0.25 in.) deep and finish flush with surrounding surface.
 - 4. Remove scaling to sound, unaffected concrete and repair exposed area.
 - 5. Grind irregular construction joints to suitable flush surface.

- C. Masonry Substrates: Apply waterproofing over concrete block and brick with smooth trowel-cut mortar joints or parge coat.
- D. Wood Substrates: Apply waterproofing membrane over securely fastened sound surface. All joints and fasteners shall be flush to create a smooth surface.
- E. Related Materials: Treat joints and install flashing as recommended by waterproofing manufacturer.

3.03 INSTALLATION

- A. Refer to manufacturer's literature for recommendations on installation, including but not limited to, the following:
 - 1. Apply Bituthene Deck Prep Surface Treatment onto the prepared concrete at a minimum thickness of 2.0 mm (0.08 in.).
 - 2. Allow Bituthene Deck Prep Surface Treatment to cure a minimum of 24 hours and then apply Bituthene self-adhered sheet membrane directly onto the Bituthene Deck Prep Surface Treatment.
 - 3. Seal daily terminations with troweled bead of Bituthene Liquid Membrane.
 - 4. Apply protection course and related materials in accordance with manufacturer's recommendations.

3.04 CLEANING AND PROTECTION

- A. Remove any masking materials after installation. Clean any stains on materials which would be exposed in the completed work.
- B. Protect completed membrane waterproofing from subsequent construction activities as recommended by manufacturer

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