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Standard Specification for Materials for Bridge Deck Waterproofing Membrane Systems¹

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1. Scope

1.1 This specification covers deck waterproofing membrane systems designed for use on bridge decks which will receive an asphaltic concrete overlay.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

1.4 This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

- 2.1 *ASTM Standards:*²
- ~~D146~~D146/D146M Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing
 - D5167 Practice for Melting of Hot-Applied Joint and Crack Sealant and Filler for Evaluation
 - E96/E96M Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials

3. Classification

3.1 Bridge deck waterproofing membrane systems covered in this specification include three types:

3.1.1 *Type I*—Cold applied elastomeric.

3.1.2 *Type II*—Hot applied elastomeric.

3.1.3 *Type III*—Preformed sheet membrane.

¹ This specification is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.32 on Bridges and Structures.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

4. General Requirements

4.1 Type I covers cold liquid-applied chemically curing membrane materials that may be applied to a bridge deck to prevent the passage of water from the bituminous asphalt surface course to or through the bridge deck. A membrane protection course, as specified by the membrane manufacturer, is required.

4.2 Type II covers hot applied elastomeric membrane systems that prevent the passage of water from the bituminous asphalt surface course to or through the bridge deck. A membrane protection course, as specified by the membrane manufacturer, is required.

4.3 Type III covers preformed sheet membrane systems which prevent the passage of water from the bituminous asphalt surface course to or through the bridge deck.

5. Physical Properties

5.1 Type I, II, and III:

5.1.1 Permeability shall be determined in accordance with Test Method E96/E96M water method.

5.1.2 Pliability shall be determined in accordance with Test Method D146/D146M, except that the test temperature of the test specimen shall be 0°F (-18°C) after 24 h and 180° bend over a 1/4-in. (6 mm) in. (6 mm) mandrel.

6. Performance Requirements

6.1 Bridge deck protective membrane materials shall be proposed as systems that shall specify each of the installation components within the system and state the rates of applications, and so forth, where applicable. Materials which are combined in accordance with the system proposal shall meet the requirements stated in performance (applications) specification. Membrane, when tested at the manufacturer’s recommended rate of application, shall meet the minimum requirements as stated in Table 1.

7. Sampling

7.1 Type I—The purchaser shall have the right to sample and test the material at any point prior to being incorporated into the work, to ensure that the material conforms to the specified requirements. If sampled at the point of manufacture, it shall be the responsibility of the manufacturer to determine that the samples taken are representative of the batches or lots proposed for shipment. Samples for testing shall consist of not less than a total sample of 10 lb (4.5 kg) or 1 gal (3.8 L) of liquid sealant from each batch or lot submitted for sampling. A batch or lot shall be considered as all finished material that was manufactured simultaneously or continuously as a unit prior to packaging. Samples shall be obtained by taking approximately equal portions from three containers selected at random. Each of the three containers’ samples shall be resealed and marked for identification, and have application instructions including material safety data sheets in each container.

7.2 Type II—The purchaser shall have the right to sample and test the material at any point prior to its being incorporated into the work, to ensure that the material conforms to the specified requirements. If sampled at the point of manufacture, it shall be the responsibility of the manufacturer to determine that the samples taken are representative of the batches or lots proposed for

TABLE 1 Physical Requirements for Membrane

Permeability	Test Method E96	5.7 NG/PaSm ² (perms. 0.1) (max)
Pliability (180° bend over a 1/4 in. (6 mm) mandrel at 0°F (-18°C) for 24 h)	Test Method D146	No Breaks

TABLE 1 Physical Requirements for Membrane

Permeability	Test Method E96/E96M	5.7 NG/PaSm ² (perms. 0.1) (max)
Pliability (180° bend over a 1/4 in. (6 mm) mandrel at 0°F (-18°C) for 24 h)	Test Method D146/ D146M	No Breaks