

Section
Elastomer Waterproofing Membrane, Concrete Highway Bridge Decks

PART 1 - GENERAL

1.01 Summary

- A. Furnish labor, products and equipment required for the application of a spray elastomer waterproofing membrane system to suitable concrete, masonry or miscellaneous metal surfaces. Default thickness of membrane is 80 mils (2 mm).
- B. The coating system shall be a spray applied, 100% solids, fast cure, high build polymer system. Primer is required.
- C. The membrane system shall pass ASTM C 836-00 Crack Bridging Test at 80 mils, or the thickness applied shall be at least equal to the thickness used by the manufacturer for the ASTM C 836-00 Crack Bridging Test.
- D. Concrete Primer applied at 130 to 200 ft² per gallon.
- E. Apply aggregate broadcast into Bridge Deck Top Coat membrane applied at 30 – 40 mils if conditions warrant (see Sec 3.03 E).
- F. Broadcast Aggregate applied at .25 to .5 lbs. per ft² at minimum 70% coverage rate minimum if conditions warrant (see Sec 3.03 F).
- G. An asphalt wearing course shall be applied over hot applied Bridge Deck Tack Coat, supplied by Bridge Preservation. Tack Coat shall be heated to 400°F and applied at 25 ft² per gallon.

1.02 Definitions

- A. Concrete Surface Preparation – SSPC-SP13/NACE No. 6.
- B. SSPC Metal Preparation Standards - SSPC-SP 10 Near White Blast.

1.03 Submittals

- A. Submit product data sheets and installation specification.
- B. Submit MSDS sheets for product used in the Work.
- C. Submit substrate preparation details.
- D. Submit sample of proposed membrane. 4 inch (100 mm) square sample shall include color, texture, and thickness of proposed membrane system.

1.03 Project Conditions

- A. Environmental Requirements
 - 1. Install system when air and substrate temperature is above -20°F and substrate temperature is 5°F above dew point and rising.
- B. Personnel Requirements
 - 1. Provide protective clothing, gloves, and respirators for use by installers as required.

1.04 Quality Control Provisions

- A. Manufacturer Qualifications: Use manufacturer with minimum five years experience providing similar systems. The manufacturer should be a primary blender with proprietary formulations, an Authorized Applicator program, and capacity to provide field technical services as required.
- B. Applicator Qualifications: Use Contractor holding a current Authorized Applicator Certificate from the manufacturer or the presence of Manufacturer's representative on-site during installation.

1.05 Quality Assurance Provisions

- A. Schedule pre-installation conference to review installation schedule, shut down and restricted access procedures. Indicate Owner's Representative and Contractor's Superintendent.
- B. Inspect surface preparation, application procedures, and review proposed dry film thickness at each installation location.

- 1.06 Delivery, Storage, and Handling
 - A. Deliver product in manufacturer’s original containers.
 - B. Store product in warm dry condition.
 - C. Replace product damaged by shipment, weather, or job conditions.

PART 2 - PRODUCTS

2.01 Manufacturer: Bridge Preservation
 87 Shawnee Road
 Kansas City , KS 66105
 913-321-9000

2.02 Materials

- A. Primer.
 Bridge Deck Concrete Primer - Two component polymer primer.
- B. Waterproofing Membrane.
 Bridge Deck Membrane - 100% solids, rapid curing elastomer. Install by spray

<u>Property, Cured Product</u>	<u>Test Method</u>	<u>Typical Value</u>
Solids Content		100%
Shore Hardness	ASTM D 2240	50 D
Elongation	ASTM D 638	>250%
Tensile Strength, psi	ASTM D 638	>2,000
Tear Strength, pli, Die C	ASTM D 624	390
Tabor Abrasion, mg. Loss (1000 gm, 1000 rev, H-18)	ASTM D 4060	250
Moisture Vapor Transmission	ASTM E 96	<0.025 perms
Gel Time		<10 Seconds
Tack Free		<30 Seconds
Open to Light Traffic		1 Hour
Crack Bridging Test (80 Mils - 1/8" Opening @ -15°F, 25 cycles)	ASTM C 836-00	Pass

- C. Agregated Top Coat .
 Bridge Deck Top Coat - 100% solids, two component rapid curing elastomer.
- D. Tack Coat .
 Bridge Deck Tack Coat - Bitumen modified hot applied coating.

2.03 Equipment

- A. Provide spray equipment suitable for use with products specified.

PART 3 - EXECUTION

3.01 Inspection

- A. Prior to application of primer inspect and approve substrate preparation.

3.02 Preparation

- A. Provide clean sound concrete substrate.
- B. Repair spalls and other defects with Five Star Structural Concrete or approved alternate material.

- C. Prepare concrete surfaces to SSPC SP13/NACE No 6. Surface Preparation of Concrete.
- D. Prepare metal surfaces to SSPC SP10 Near White Blast.
- E. Test prepared surface using Elcometer adhesion testing (ASTM D 4541). Minimum pull strength is 150 psi and failure in concrete substrate.
- F. Mask protected surfaces prior to spray applications.
- G. Erect spray curtains and partitions as required.

3.03 Installation

- A. Spray, squeegee or roll primer at 130 to 200 square feet per gallon over surfaces to receive coating system. Allow primer to go tack free before spraying Bridge Deck Membrane.
- B. Concrete and masonry surfaces must be dry. Moisture content of concrete surface to be less than 5.0%.
- C. Reapply primer if set more than 24 hours.
- D. Spray membrane over primed surfaces at 20 square feet per gallon (80 mils) by using a Graco Reactor pumping system or other approved by the manufacturer.
- E. Application Rate: If the gradient of the bridge exceeds 4.5%, or there is areas where severe braking is anticipated or challenging geometry as determined by the Engineer, an application of Bridge Deck Membrane Top Coat will be required at 30 to 40 mils nominal thickness.
- F. Apply immediately Broadcast Aggregate at .25 to .5 lbs. per ft² to achieve minimum 70% coverage rate (if conditions warrant)
- G. Apply Tack Coat at 25 ft²per gallon. Cement may be lightly broadcast into top of Tack Coat to prevent tire/track pick-up of tack coat during asphaltting.

3.04 Field Quality Control

- A. Perform dry film thickness tests in accordance with SSPC-PA2 Measurement of Dry Coating Thickness.
- B. Use magnetic or ultrasonic test equipment, destructive testing, or stroke per gallon method of assuring proper film thickness.
 1. Spray equipment is calibrated and tested to a stroke count per gallon of product sprayed. This is suitable for thickness assurance on most projects.
 2. Ultrasonic testing is usually accurate to +/- 5%.
 3. Repair destructive testing areas by respraying or filling with special two component gun grade material provided by manufacturer.
- C. Other components of system may be wet film tested for thickness.
- D. Maintain spray and other installation equipment in proper operating condition throughout installation. Provide reserve equipment as required.

3.05 Cleaning

- A. Clean spills and oversprays as they occur.
- B. Consult manufacturer's literature and MSDS sheets for proper cleaning products and methods.
- C. Clean site to Owner's satisfaction prior to final acceptance.

3.06 Protection

- A. Protect installed work prior to acceptance by Owner.

3.07 Schedules

- A. Submit spray schedule if required.