

Section

**Elastomer Waterproofing Coating, Concrete Rail Bridge Deck and Abutments
Cold Spray-Applied Waterproofing**

PART 1 - GENERAL

1.01 Summary

- A. Furnish labor, products and equipment required for the application of a seamless, spray elastomer coating system to suitable concrete, masonry or miscellaneous metal surfaces. Default thickness is 80 mils (2 mm) on the deck surfaces and 80 mils on the abutment areas where required.
- B. The membrane system shall pass ASTM C 836-00 Crack Bridging Test at 80 mils, or the membrane thickness applied shall be at least equal to the thickness used by the manufacturer for the ASTM C 836-00 Crack Bridging Test.
- C. The membrane system shall meet AREMA C-29.9.10 cold applied waterproofing membrane, and shall be applied at a minimum thickness of 80 mils, or the membrane thickness applied shall be at least equal to the thickness used by the manufacturer to pass the ASTM C 836 Crack Bridging Test. Primer is required.
- D. The membrane system shall be capable of sealing across the expansion joints using Bridge Preservation Expansion Joint System without the need to use a separate gland and bonding agents on the membrane. This will assure a continuous waterproofing membrane system across the entire deck.

1.02 Definitions

- A. Concrete Surface Preparation – SSPC-SP13/NACE No. 6.
- B. SSPC Metal Preparation Standards - SSPC-SP 5, White Metal Blast; SP 6, Commercial Blast; and 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 is above dew point.
- 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 on railroad bridge decks. The manufacturer should be a primary blender with proprietary formulations, an Authorized Applicator training program, capacity to provide field technical services as required and manufacturer to issue warrantee to owner.
- B. Applicator Qualifications: Use Applicator holding a current Authorized Applicator Certificate from the manufacturer.

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 measurements 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 Ave
 Kansas City, KS 66105
 913-321-9000

2.02 Materials

- A. Primer.
 Bridge Deck Concrete Primer - 100% solids, two component polymer primer.
- B. Concrete and Metal Coating.
 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
Electrical Resistance	ASTM D 257-99	$\geq 2.0 \times 10^{13}$ ohm-cm
Crack Bridging Test (80 Mills - 1/8" Opening @ -15°F, 25 cycles)	ASTM C 836-00	Pass
Ballast Test (North American)	2 Million Cycles	No Damage

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 other as acceptable to the Manufacturer.

- C. Prepare concrete surfaces to SSPC SP13/NACE No. 6.
- D. Prepare metal surfaces to SSPC SP10.
- E. Concrete to have less than 5.0% moisture content prior to installation of primer
- F. Test prepared surface using Elcometer adhesion testing (ASTM D 4541). Minimum pull strength is 150 psi or failure in the concrete substrate.
- G. Mask protected surfaces prior to spray applications.
- H. Erect spray curtains and partitions as required.

3.03 Installation

- A. Spray, squeegee or roll concrete primer at 130 - 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 have less than 5.0 % moisture prior to installation.
- C. Metal surfaces must be dry, rust-free, and have proper SSPC profile and preparation.
- D. Reapply primer if set more than twenty four hours.
- E. Spray base coat over primed deck surfaces at 20 square feet per gallon (80 mils).
- F. Retouch coat by filling low spots or areas with inadequate thickness.
- G. Spray additional base coats to achieve specified system thickness. Retouch as required.
- H. Spray apply coating system to the abutments at locations noted at 80 mils.

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.