Waterproofing Deckguard® for Steel Railway Bridges

Standard Specification, revised November 2022

SECTION I – 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 40 mils on the abutment areas where required.

B. The coating system shall be a spray-applied, 100% solids, fast-cure, high-build system meeting AREMA Cold-Spray Applied Waterproofing requirements Chapter 8, Section 29. Primer may be required.

1.02 Definitions

A. 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 datasheets and installation specification.

B. Submit SDS for product used in the work.

C. Submit substrate preparation details.

D. Submit sample of proposed membrane. 8-inch (200 mm) square sample shall include color, texture and thickness of proposed membrane system.

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1.04 Project Conditions

A. Environmental Requirements: Install system when air and substrate temperature is above 34°F and substrate is above dew point. For installation below 34°F, contact the membrane manufacturer.

B. Personnel Requirements: Provide protective clothing, gloves and respirators for use by installers as required.

1.05 Quality Assurance Provisions

A. Schedule pre-installation conference to review installation schedule, shutdown and restricted access procedures. Indicate Owner's Representative and Contractor's Superintendent.

B. Inspect surface preparation, review 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.

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SECTION II – Products

2.01 Manufacturer

The D.S. Brown Company
300 East Cherry Street
North Baltimore, Ohio 45872
Phone: (419) 257-3561

2.02 Materials

A. Primer: Deckguard® Primer - 100% solids, two-component polymer primer. Cures to 0ºF.

B. Waterproofing Membrane: Deckguard® Spray-Applied Membrane - 100% solids, rapid-curing elastomer.

Property	Test Method	Criteria
Open to Traffic*		4 Hours
Solids Content		100%
Gel Time		5 seconds
Tack-Free Time		10 seconds
Hardness	ASTM D2240	50 Shore D
Elongation	ASTM D638	250%+
Water Vapor Transmission	ASTM E96 Procedures A and B	< 0.2 perms
Adhesion to Steel	ASTM D4541	> 300 psi
Adhesion to Concrete (primed)	ASTM D7234 and D4541	> 200 psi**
Taber Abrasion H 18/1000 cycles	ASTM D4060	125 mg
Crack-Bridging	ASTM C1305 Minimum 80 mils at 40 cycles at -15º F with 1/8” opening	Pass
Ballast Test	N. American	Pass 2,000,000 cycles

Electrical Resistance	ASTM D257	1.5 x 1014 +ohmcm
Tensile Strength	ASTM D638	>2000
Chemical Resistance to Glycol, Calcium Chloride, Diesel and Gas	ASTM D543 Method B	Pass
Tear Strength, pli, Die C	ASTM D624	450 pli

**Deckguard membrane must include an approved aggregate and be allowed to cure 4 hours prior to allowing traffic.*

***Or failure in concrete.*

2.03 Equipment

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

SECTION III – Execution

3.01 Inspection

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

3.02 Preparation

A. Provide clean, sound, metal substrate.

B. Sandblast metal surfaces to SSPC SP10 to remove mill scale and other contaminants and provide 5 mil profile if surface is not to be primed.

C. Prepare metal surfaces to SSPC SP6 Commercial Blast if surface is to be primed.

D. Sandblasted surfaces must be sprayed within 6 hours of preparation or before rust bloom appears.

E. Test prepared surface using Elcometer adhesion testing (ASTM D4541). Minimum pull strength is 300 psi.

F. Metal surfaces must be above dew point prior to application.

G. Mask protected surfaces prior to spray applications.

H. Erect spray curtains and partitions as required.

3.03 Installation

A. Spray primer at a minimum of 125 square feet per gallon over concrete and 200 square feet per gallon over steel surfaces using a Graco Reactor pumping system or other approved by the manufacturer over surfaces to receive coating system. Allow primer to go tack free before spraying Deckguard® membrane

B. Metal surfaces must be dry, rust-free and have proper SSPC profile and preparation.

C. Reapply primer if set more than 12 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. Spray base coat over primed surfaces at 20 square feet per gallon (80 mils).

E. Retouch coat by filling low spots or areas with inadequate thickness.

F. Spray additional base coats to achieve specified system thickness. Retouch as required.

Deckguard® Primer

Property	Test Method	Criteria
Gel Time		30 seconds typical
Maximum Tack-Free Time at 77° F (hours)		1 hour
Bond to Deckguard® Membrane	ASTM D4541	500 psi+
Adhesion to Steel	ASTM D4541	>300 psi
Adhesion to Concrete	ASTM D7234 and D4541	150 psi*

**Or failure in concrete.*

3.04 Field Quality Control

A. Perform dry film thickness tests as required. Deckguard® gels too rapidly to wet film test. Use destructive testing, stroke per gallon method or place steel coupons at a rate of one every 400 square feet. Then measure thickness by a magnetic gauge to assure 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/magnetic testing is usually accurate to +/- 5%.

3. Repair destructive testing areas by respraying.

B. 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 SDS 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.

B. Place ballast after coating has cured for minimum of one hour.

3.07 Schedules

A. Submit spray schedule if required.