

Waterproofing Deckguard® for Concrete Highway Bridge Decks

Standard Specification, revised April 2023

SECTION I – 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 elastomer system. Primer is required.
- C. Deckguard® Primer is applied onto concrete at 125 to 200 ft² per gallon.
- D. Deckguard® Spray Membrane is applied over the Deckguard® Primer at a nominal 80 mils. Application of a second subsequent 30 to 40 mil layer of membrane top coat shall be applied on highway bridge decks that have been determined to require an aggregate broadcast for shear-key purposes.
- E. Broadcast Aggregate applied at .25 to .5 lbs. per ft² at minimum 70% coverage rate minimum.
- F. An asphalt-wearing course will be applied over Deckguard® Tack Coat that has been applied at 25 ft² per gallon.

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.

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- 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.

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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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 0°F.
- B. Waterproofing Membrane: Deckguard® Spray-Applied Membrane - 100% solids, rapid-curing elastomer.
- C. Membrane top coat: Deckguard® Primer or Deckguard® Membrane, 100% solids, two-component rapid-curing elastomer.
- D. Broadcast Aggregate: inert graded aggregate as supplied by the membrane manufacturer.
- E. Tack Coat: Bitumen modified hot applied coating as supplied by the D.S. Brown Company.

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Deckguard® Waterproofing System

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	< 0.9 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 -15°F with 1/8" opening	Pass
Ballast Test	N. American	Pass 2,000,000 cycles
Electrical Resistance	ASTM D257	1.5 x 10 ¹⁴ +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.



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Concrete Highway Bridge Decks | Deckguard® Spray-Applied Membrane**2.03 Equipment**

- A. Provide spray equipment suitable for use with product 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, concrete substrate.
- B. Repair spalls and other defects with Five Star Structural Concrete or approved alternate material.
- C. Sandblast or metal shot blast concrete to remove laitance and other contamination and provide suitable blast profile not exceeding ¼” or less than coarse sandpaper.
- D. Prepare metal surfaces to SSPC SP6 Commercial Blast or better.
- E. Test prepared surface using Elcometer adhesion testing (ASTM D4541). 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. Concrete and masonry surfaces may be damp but surface dry. Moisture content of concrete surface to be less than 5.0%.

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- B. 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.
- 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 highway bridge exceeds 4.5%, or there are areas where severe braking is anticipated or challenging geometry as determined by the engineer, an application of Deckguard® Top Coat or Deckguard® Membrane will be required at 30 to 40 mils nominal thickness, then seeded with manufacturer-approved broadcast aggregate.
- F. Immediately apply D.S. Brown supplied broadcast aggregate at .25 to .5 lbs. per ft² to achieve minimum 70% coverage rate.
- G. Apply Deckguard® Tack Coat at 25 ft² per gallon. Cement may be lightly broadcast into top of tack coat to prevent tire/track pick-up of tack coat during asphaltting.

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*

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Deckguard® Top Coat

Property	Test Method	Criteria
Open to Traffic		4 Hours*
Solids Content		100%
Gel Time		30-45 seconds
Tack-Free Time		3 minutes
Hardness	ASTM D2240	45-50 Shore D
Elongation	ASTM D638	250%+
Water Vapor Transmission	ASTM E96 Procedures A and B	< 0.9 perms
Adhesion to Steel	ASTM D4541	> 300 psi
Adhesion to Concrete (primed)	ASTM D7234 and D4541	> 200 psi**
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3.04 Field Quality Control

- A. Perform dry film thickness tests as required. Deckguard® Membrane 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.

3.07 Schedules

- A. Submit spray schedule if required.



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Deckguard® Tack Coat

Property	Test Method	Criteria
Color		Black
Specific Gravity at 25°C		1.02
Penetration at 77°F	ASTM D5	15-40
Weight per Gallon at 60°F		8.5 lbs
Flash Point, C.O.C.		550°F min
Odor		Tar



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