

## Waterproofing Deckguard® for Concrete Highway Bridge Decks

### Standard Specification, revised April 2022

#### 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 ft<sup>2</sup> per gallon.
- D. Top coating with Deckguard® Membrane or Deckguard® Primer onto previously sprayed 80 mils membrane to be applied at 30 – 40 mils to then aggregated if conditions warrant.
- E. Broadcast Aggregate applied at .25 to .5 lbs. per ft<sup>2</sup> at minimum 70% coverage rate minimum.
- F. An asphalt-wearing course will be applied over Deckguard® Tack Coat that has been applied at 25 ft<sup>2</sup> 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.
- B. Submit SDS for product used in the work.

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- 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 Control Provisions**

- A. Manufacturer Qualifications: The manufacturer should be a primary blender with proprietary formulations, an Authorized Applicator program and capacity to provide field technical services as required.

Manufacturer to provide Infrared Spectrograph of the actual membrane tested whose results are published on the Manufacturer's datasheet and represented by the third party test certificates.

Manufacturer to provide Infrared Spectrograph of membrane shipped to the project and certification that the membrane meets all physicals represented on the product datasheet.

- B. Applicator Qualifications: Use Contractor holding a current Authorized Applicator Certificate from the manufacturer or the presence of Manufacturer's direct representative on site during installation.

**1.06 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.

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- B. Inspect surface preparation, review application procedures, and review proposed dry film thickness at each installation location.

**1.07 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.

**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 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*		1 Hour
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 <sup>14</sup> +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

\* Membrane system shall not be exposed to traffic for more than 7 days or as allowed by the product manufacturer.

\*\*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, squeegee or roll primer at 125 to 200 square feet per gallon 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® Primer 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 ft<sup>2</sup> to achieve minimum 70% coverage rate.
- G. Apply Deckguard® Tack Coat at 25 ft<sup>2</sup> 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*

*\*Or failure in concrete.*



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Deckguard® Top Coat

Property	Test Method	Criteria
Open to Traffic		1 Hour*
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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**Concrete Highway Bridge Decks | Deckguard® Spray-Applied Membrane****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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