



Iowa Department of Transportation

SPECIAL PROVISION FOR COLORED SEALER COATING FOR STRUCTURAL CONCRETE

Clinton County
NHSX-030-9(134)--3H-23

Effective Date
January 18, 2012

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

PART 1 GENERAL.

1.01 SUMMARY.

A. Section Includes:

1. This part of the Specifications includes all labor, materials, equipment, and supervision required to furnish and install a colored, high silicone-content, acrylic concrete sealer coating to the concrete surfaces of the structural walls, as designated in the plans. Color to be per plan.
2. This section includes the specifications for colored sealer coating installation.

1.02 MEASUREMENT AND PAYMENT.

A. Colored Sealer Coating:

1. Basis of Measurement: Not Applicable - Incidental item
2. Basis of Payment: Not Applicable - Incidental item

1.03 SUBMITTALS.

- A. Submit per Iowa DOT Standard Specifications for Highway and Bridge Construction, latest series. The contractor shall submit product specification sheets and coated concrete samples to the Engineer for approval prior to application.
- B. Product Data: Samples for coating color are to be concrete of the same mix design to be used

for actual construction, 1 foot square by 2 inches thick, prepared according to the guidelines described in these notes, and coated on the formed face only.

- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- D. Maintenance Data: For sealer color.

1.04 QUALITY ASSURANCE.

- A. Applicator's Experience: It is required that an applicator with 3 or more years of experience applying similar coatings to concrete surfaces apply the product, and that a product manufacturer's representative be on site during initial surface preparation and product application. It is also required that a 3 foot by 3 foot test section be reviewed and approved by the Engineer before continuing with final product application.

1.05 DELIVERY, STORAGE, AND HANDLING.

- A. Store and handle lighting equipment to prevent damage to equipment and finishes, and to protect from weather until installed.

1.06 EXTRA MATERIALS.

- A. Furnish two quarts of touch-up paint.

PART 2 PRODUCTS.

2.01 MANUFACTURERS.

- A. Sherwin-Williams SWD DOT Bridge and Highway Sealer B-97 Series
The Sherwin-Williams Company
10132 Buxton
Houston, TX 77017
281-615-7571
- B. Anvil Siliconized Acrylic Concrete Opaque Sealer
Anvil Paints and Coatings
1255 Starkey Road
Largo, FL 33771
800-822-6776
- C. Advanced Concrete Stain Pigmented Sealer
Advanced Surfaces Inc.
2000 Banks Road
Margate, FL 33063
954-973-4528

Alternate products and suppliers are to be submitted to Engineer for approval prior to material acquisition and application.

PART 3 EXECUTION.

The following guidelines are in addition to the manufacturer's product recommendations. In no case should the manufacturer's recommendations be violated.

3.01 PRE- APPLICATION SURFACE PREPARATION.

- A. All new concrete surfaces to receive the colored sealer coating are to be given a class 2 strip down surface finish per article 2403.03, P, 2,b of the Standard Specifications.
- B. New concrete must be cured for a minimum of 14 days and pass the pH, water penetration and moisture content tests described in the section “pre-application surface tests” of these notes.
- C. It is recommended that curing compounds used on the architectural walls be approved by the concrete sealer manufacturer for over-coating with the concrete sealer. Curing compounds containing paraffin shall not be used. Any curing compounds not approved by the concrete sealer manufacturer must be thoroughly removed prior to final coating application.
- D. A concrete etching solution conforming to the concrete sealer manufacturer’s recommendations shall be used on surfaces of the architectural walls less than three months old. The etching solution application shall yield an open, porous surface for proper adhesion of the concrete sealer coating.
- E. All surfaces must be clean, dry, and free of grease, oil, paint, curing compounds not approved for overcoating by the sealer coating manufacturer, concrete sealers or any other material that would prevent a stable bond between the concrete sealer coating and the concrete surface.
 - 1. Surface cleaning at a minimum requires the use of 3000 psi high-pressure washing at a flow rate of 3 to 14 gallons per minute. Allow to dry for a minimum of 24 hours prior to coating application.
 - 2. If the concrete cannot be cleaned adequately with a water wash, combined sand- and water-blasting or light sandblasting (brush blast) should be used.
 - 3. In all cases the public, bridge, and all surfaces should be protected from harm during the cleaning process.

3.02 PRE- APPLICATION SURFACE TESTS.

- A. Prior to the commencement of any coating, the concrete surfaces are to be checked by the contractor for pH level and for the presence of sealers, oils, curing compounds not approved by the concrete sealer manufacturer or other possible bond breakers, using the following methods and techniques:
 - 1. pH test: prepared concrete should have a pH level between 6 and 10. Perform pH test per ASTM D4262 prior to coating surface. An acid-etch conforming to the coating product manufacturer’s recommendations may be added to the water wash to reduce the ph. If acid-etch is used, surfaces must be rinsed prior to re-testing the ph level.
 - 2. Water penetration test: dry concrete surfaces shall be tested for the presence of sealers, oils, curing compounds not approved by the concrete sealer manufacturer, etc. Both by visual inspection and by wetting with fine mist water spray. Properly prepared, porous surfaces will show no water beading after one minute. If beading of water is apparent after one minute, surface must be cleaned of sealing agents. This may require further high-pressure washing, combined sand- and water-blasting, or light sandblasting (brush blast). Portions of all surfaces designated to receive colored sealer coating shall be tested in different locations as directed by and to the satisfaction of the engineer.

3. Moisture content test: testing for moisture content and readiness of the concrete surface to receive the coating shall be in accordance with ASTM E1907. Acceptable test methods include electrical resistance or electrical impedance testing.

3.03 PRODUCT APPLICATION.

- A. A minimum of two coats shall be applied.
- B. Apply under dry conditions only. Do not apply if rain is expected within 12 hours following application.
- C. Air and surface temperature should be between 50°F and 90°F during and for 24 hours following application.
- D. Do not over apply. Follow manufacturer's recommendations for coating thickness. No drips, runs or sags will be allowed during the application or in the final results.
- E. Stir product thoroughly before and during application.
- F. The following application methods are allowed.
 1. Brush: use a natural bristle brush.
 2. Roller: use a 3/8 to 1/2 inch nap lambs wool or other solvent-resistant cover.
 3. Spray: airless sprayer with a pressure of 1500 psi and a 0.013 to 0.017 inch tip opening.
- G. First coat: apply first coat evenly, working in one direction. Allow at least 12 hours before applying the second coat. Do not overwork, as brushing or rolling back over partially dried material may cause lifting of the coating from the surface.
- H. Second coat: for best coverage apply the second coat perpendicular to the first coat.
- I. Third coat: apply if needed to eliminate brush or roller marks that are evident in the finish. Apply in the same direction as the first coat.
- J. Concrete areas adjacent to surfaces to receive the colored sealer coating shall be protected from any splash, staining, dripping or over-rolling of the coating during application. Any coating material applied to surfaces not intended to receive the coating will be immediately and thoroughly removed to prevent staining.
- K. Refer to the plans for specified coating colors and locations.

3.04 FIELD QUALITY CONTROL.

- A. Perform field inspection and testing in accordance with Specifications.