

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
WARRANTY ON CONCRETE SURFACE COATING

STR:SCK

1 of 5

 APPR:JAB:BMW:02-07-24
FHWA:APPR:02-27-24

a. Description. This work consists of furnishing and applying an elastomeric acrylic based concrete surface coating to concrete structures, including but not limited to barriers, median barriers, sound walls, screen walls, retaining walls, fascias, wing walls, piers and substructure locations as specified on the plans, and providing a 2-year performance warranty for the concrete surface coating. Conform to the standard specifications except as modified herein.

b. Materials. Select the elastomeric acrylic based concrete surface coating with the following minimal properties:

Ultimate Elongation (<i>ASTM D2370</i>)	200%
Ultimate Tensile Strength (<i>ASTM D412 @ 75 degrees</i>)	≥100 psi
Crack Bridging Capabilities @ recommended DFT	0.016 inch (minimum)
Flexibility (<i>ASTM D522/D522M</i>)	0.5 inch mandrel (no cracking)
Pull-off Strength Adhesion (<i>ASTM D4541</i>)	≥100 psi
Water Vapor Permeance (<i>ASTM D1653</i>)	4 perms
Salt Spray Resistance (<i>ASTM B117</i>)	300 hours

For this project, furnish and apply a smooth textured surface coating.

The coating manufacturer must furnish certification and test results to verify that the material complies with the applicable specifications.

The color(s) to be used for the concrete surface coatings and the location(s) of the specific colors are on the plan sheets. Ensure the color of the first coat is in contrast with both the bare concrete and the finish coat. On any single structure, use the same product for all areas to be coated with a specified color. Do not mix colors or products from more than one source.

Submit color samples to the Engineer for review and approval. If required by the Engineer, complete a test section to demonstrate the final color prior to application of the coating to the structure.

c. Construction.

1. Surface Preparation. Cure new concrete a minimum of 28 days before coating.

Following the curing period, and prior to coating, test for moisture content in the concrete as described below.

Test all concrete to be coated for the presence of moisture after surface preparation has been completed and prior to application of the coating. Perform testing in accordance with *ASTM D4263*. Tape an 18 inch by 18 inch sheet (4 mil) of transparent polyethylene to the concrete surface to be coated. Seal all edges with tape that will stick to the concrete substrate and not allow the infiltration of air. Leave the plastic sheet in place a minimum of 16 hours to detect the presence of moisture in the concrete. Ensure there is no moisture visible on the polyethylene sheet after the minimum period of time has elapsed. This will be verified by the Engineer before application of the coating begins. This test may not be reliable in cooler conditions. Ensure any alternate method to detect moisture is approved by the Engineer. Ensure this test is performed a minimum of once every 100 lineal feet on barriers, walls etc., and a minimum of once on columns, piers, etc. Prepare the surface, including removing fins and projections and filling surface voids and cracks (if required), in accordance with manufacturer's recommendations, except as modified by this special provision.

Ensure the surface to be coated is dry, clean and free from all contamination including, but not limited to: dirt, form release agents, oil, grease, laitance, loose material, old coatings, and curing compounds. Clean surface by low-pressure water cleaning, steam cleaning, or abrasive blasting (followed by oil-free compressed air cleaning) or any combination to achieve an acceptable cleaned surface. Furnish an airline for blowing prepared concrete surface clean with an in-line water trap and air free of oil and water as it leaves the air-line. When low-pressure water cleaning or steam cleaning is used, ensure the CSP meets CSP 1 in accordance with the *International Concrete Repair Institute (ICRI) Guideline for Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays, and Concrete Repair (Guideline No. 310.2R-2013)*. When abrasive blasting is used, ensure the CSP is CSP 2 to CSP 4. Low-pressure water or steam cleaning primarily removes water soluble contaminants. Concrete with contaminants such as curing compound, coatings and/or sealers may require light abrasive blasting to completely remove the contaminants. Since many curing compounds contain wax, even well adhered residue is to be removed prior to coating to ensure a good bond between the surface coating and the concrete.

When using light abrasive blasting to remove contaminants on concrete, be careful not to remove excessive concrete material.

2. Application. Apply two coats (do not dilute) of the acrylic based concrete surface coating. Apply each coat to provide the minimum wet film thickness as recommended by the manufacturer. A primer is not required unless stated as required in the manufacturer's product data sheet. Temperature limitations of the air, coating material and concrete for application must follow manufacturer's recommendations but must not be outside the temperature range of 45 to 90 °F, and ensure the temperature of the air, coating material and concrete is at least 5 °F above the dew point. Do not apply the concrete surface coating at a relative humidity greater than 90 percent or if rain is forecasted within the specified rain resistance period.

d. Warranty.

1. Performance Warranty. The Contractor unconditionally warrants to the MDOT that the concrete surface coating system applied to each concrete surface as required by this contract will be free of defects, as hereinafter defined and determined by visual inspection, for a period of 2 years from the date of initial acceptance (see attached form) for the project by the

Engineer. Ensure the warranty bond called for is on a form furnished by MDOT. Ensure this warranty bond is submitted to the MDOT Contract Services Division prior to the award of the contract.

The concrete surface coating system will be considered defective if any of the following conditions are discovered within the 2-year warranty period:

- A. Coating applied over dirt, debris, blasting debris.
- B. Peeling, debonding or insufficient coverage of coating.
- C. Damage to the coating system caused by the Contractor while removing scaffolding or performing other work. Damage caused by snow removal or vehicular impacts is not considered defective coating.

2. Warranty Evaluation. Four months before the end of the 2-year warranty period(s), or earlier (as determined by the Engineer), the Engineer will inspect the areas of coated concrete for the coating system defects listed. MDOT personnel will conduct this inspection using equipment and operating personnel furnished by the Contractor. Furnish inspection equipment that is MIOSHA approved, vehicle-mounted, and furnishes access to all areas of coated concrete. Furnish and maintain traffic control and signing in accordance with section 812 of the Standard Specification for Construction during the inspection. The Contractor may accompany the Engineer during this inspection. Furnish railroad flagging as directed by the Engineer. The Engineer will determine if there are defective areas present as defined above.

Acceptance by the Engineer of any portion of the work during the original contract surface preparation and coating will not relieve the Contractor of the requirements of this warranty.

3. Corrective Work. Repair all defective areas identified by the Engineer, in accordance with the concrete surface coatings manufacturer's specifications. Submit repair procedures and Progress Schedule in writing to the Engineer for review and approval. No work may be done until Engineer approval of the repair procedures and Progress Schedule has been received.

Perform all coating repair work in the same season as the inspection, unless the seasonal limitations stated in the coating specifications prevents the completion that season. In this case, ensure the corrective work is completed the following season. Furnish traffic control and signing during the corrective work. Furnish railroad flagging as directed by the Engineer. Notify the Engineer at least 2 weeks before planning to begin the corrective work. Furnish the Engineer full inspection of all operations and furnish safe access to the areas being repaired.

Follow a Department approved maintaining traffic plan when performing warranty work.

4. Warranty Bond. Supply a warranty bond equal to the sum of 25 percent of the original total contract amount for "Conc Surface Coating, Warranty (Structure Identification)." The bond is to secure the performance by the Contractor of corrective work on any coating system defects that it is directed by the MDOT to perform and must be in force for the period covering the 2-year warranty and the time required to perform any corrective work covered by the warranty. Use the bond form furnished by the MDOT and execute in accordance with the requirements of this special provision. If corrective work is required, the warranty bond must remain in effect for the duration of the corrective work. The warranty bond must be in all

respects satisfactory and acceptable to the MDOT and executed by a surety company authorized to do business in the State of Michigan.

The warranty bond must become effective the date the MDOT accepts the warranted work and must remain in effect until such time as the MDOT advises the Contractor that there are either no coating system defects, or, that there are coating system defects, and said coating system defects have been repaired.

5. Permit. If corrective work is required, the Contractor must apply to the Transportation Service Center (TSC) Permits Staff for a permit to work within the MDOT right-of-way. The permit fee and an individual permit performance bond are not required. The permit insurance requirements, however, do apply. The Contractor is required to furnish proof of supplemental lien bond and liability insurance to the Engineer in addition to the existing warranty bond prior to starting corrective action work. The Contractor is responsible for obtaining a lien bond for an amount approximately equal to the cost of corrective action work. The Engineer is responsible for approving the amount of the lien bond. The Engineer should coordinate with the TSC permit agent to verify the insurance and permits have been issued. The Contractor will not be allowed on-site to perform corrective work until all insurance and permits are verified.

e. Measurement and Payment. The completed work, as described, will be measured as a lump sum and paid for at the contract price using the following pay item:

Pay Item

Pay Unit

Conc Surface Coating, Warranty (Structure Identification).....Lump Sum

Conc Surface Coating, Warranty (Structure Identification) includes preparing the substrate concrete surface, conducting the visual inspection and applying the primer (if required) and two top coats of surface coating. No additional payment will be made for the test section.

All costs associated with performance of the inspection and corrective work, the required maintaining traffic, railroad flagging, the required warranty bond, and the required permit insurance, railroad permits and insurance will not be paid for separately but will be considered to be included in the Contractor's overhead and administrative costs.

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