



**SPECIAL PROVISIONS  
FOR  
FLUOROPOLYMER PAINT FOR STRUCTURAL STEEL**

**Scott County  
IM-NHS-074-1(206)5--03-82**

**Effective Date  
October 16, 2018**

**THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

**150415.01 DESCRIPTION.**

These Special Provisions describe surface preparation and shop painting of structural steel and incidental parts for the I-74 Mississippi River Crossing and Corridor project using a three coat fluoropolymer paint system.

**150415.02 MATERIALS.**

Approved fluoropolymer paint systems for this project are listed in Materials I.M. 482.09.

**150415.03 CONSTRUCTION.**

The work includes the following items: preparation of all surfaces to be painted, application of paint, protection, drying of paint coatings, and repairing and repainting of coating damaged in the shop or after erection, or both.

**A. Surface Preparation.**

1. Remove oily or greasy residues with solvent according to SSPC-SP1, Solvent Cleaning.
2. Provide a near white metal blast cleaning to steel surfaces to be painted according to SSPC-SP10. If bearing assemblies are specified to be painted, first clean bearing assemblies of any surface contamination using suitable solvents according to SSPC-SP1, and then provide a near white metal blast cleaning according to SSPC-SP10. The standard used for acceptance of the surface preparation will be SSPC-VIS 1, Visual Standard for Abrasive Blast Cleaned Steel.
3. Do not blast clean machined surfaces designated in the contract documents to have a surface roughness of ANSI 125 or less. Masking or other protection is required if these parts are subjected to the blast cleaning process.

4. Use a clean, dry abrasive free from organic contamination. After blasting, thoroughly clean the surface to be painted with dry, oil free, compressed air to remove all blast residue.
5. Achieve a sharp, angular blast profile of a minimum 1.5 mils and maximum 3 mils on all surfaces, including thermal cut edges. Prior to blasting, grind thermal cut edges to a smooth finish that will allow the specified angular blast profile to be achieved. If the paint manufacturer's recommended blast profile is more restrictive, submit recommendations to the Engineer for approval.
6. Ensure surfaces to be painted comply with these Special Provisions and are dry.

## **B. Painting.**

1. Perform shop painting only in a facility approved by AISC, SSPC, and the Engineer. Allow only painters who are trained and certified by the paint manufacturer for the type of work performed to apply the paint.
2. Prior to painting, ensure all surfaces are free of all moisture, dirt, oxidation products, oil, and other detrimental material, and is of a suitable temperature according to the manufacturer's recommendations. Follow the paint manufacturer's application recommendations regarding mixing, thinning, application, pot life, steel temperature, and weather conditions. Apply paint so the painted areas have a smooth, uniform, adhering coat that is free of over-spray, dry spray, mud cracking, runs, sags, cracks, holidays, or other defects.
3. Do not paint machined surfaces with small clearances between moving components, such as full circle pins and pin holes, partial circle pins and pin recesses in castings, and similar surfaces. Instead, shop coat these surfaces with an application of waterproof multipurpose grease complying with National Lubricating Grease Institute No. 3, or other approved protective coating. Thoroughly clean machined surfaces before applying grease. Apply protective coating as soon as practical after component parts have been machined, welded if required, and blasted.
4. Before erection, wipe machined surfaces clean and apply a second shop coat of the same grease used above.

## **C. Structural Steel Applications.**

### **1. General.**

- a. Use prime coat, intermediate coat and topcoat paints manufactured by the same company. Protect painted surfaces to prevent soiling during painting and through the tack-free stage. Take care not to damage the paint system during handling, delivery, storage, and erection of the structural steel. Repair prime coat damage attributable to shop activities according to the paint manufacturer's recommendations before shipment to the field. Repair intermediate coat and topcoat damage according to the manufacturer's recommendations.
- b. Shop apply a prime coat to structural steel surfaces, including faying surfaces of high strength bolt connections. Also shop apply a prime coat to all bearing assemblies, except galvanized masonry plates and galvanized swedged bolts unless specified otherwise in the plans.

### **2. Shear Studs.**

After welding of shear studs, repair paint damage on the underside of the top flange.

**3. Prime Coat.**

- a. Apply a coat of the organic zinc rich paint from the approved fluoropolymer paint system to all surfaces as soon as possible after blasting and before formation of any surface rust, and no later than 16 hours after blasting the surface.
- b. Apply the primer as recommended by the manufacturer in a single application to obtain a dry film thickness (DFT) as listed in the manufacturer's product data sheet for the primer material. Apply the primer above the blast profile, so that a uniform appearance is obtained after the coating is cured.
- c. Apply a stripe coat by brush to edges, welds, crevices, bolt heads, and other surface irregularities when applying the primer coat. The stripe coat may be applied to the surface by spray as long as it is immediately and thoroughly worked into these areas by brush.
- d. Allow the prime coat to cure according to the coating manufacturer's recommendations before the intermediate coat, when designated, is applied.
- e. Perform repairs or build-up of the paint film as soon as possible, and no later than 24 hours from the initial application.
- f. Completely reblast and repaint steel members with coating areas measuring less than the manufacturer's minimum recommended DFT that have not been corrected within 24 hours.
- g. Correct, to the Engineer's satisfaction, all defects in application such as runs, sags, mud cracking, over-spray, and dry spray.
- h. Excessive coating thickness is as equally undesirable as unacceptably thin coating thickness, and both will be sufficient cause for rejection. Excessive thickness will be evaluated on a case-by-case basis in consultation with the coating manufacturer.

**4. Intermediate Coat.**

- a. When designated by the contract documents, shop apply the intermediate coat of the approved fluoropolymer paint system to all primed surfaces, except faying surfaces, which will be primed only.
- b. Apply the intermediate coat as recommended by the manufacturer in a single application to obtain a DFT as listed in the manufacturer's product data sheet for the material. Apply the intermediate coat over the primer, so that a uniform appearance is obtained after the coating is cured. Use a color that contrasts with the primer and top coat.
- c. Apply a stripe coat by brush to edges, welds, crevices, bolt heads, and other surface irregularities when applying the primer coat and intermediate second coat. The stripe coat may be applied to the surface by spray as long as it is immediately and thoroughly worked into these areas by brush.
- d. Allow the intermediate coat to cure according to the coating manufacturer's recommendations before the finish coat, when designated, is applied.
- e. Where galvanized fasteners are used, paint according to Article 2408.02, Q, 2, b, 5 of the Standard Specifications, after bolting. It is recommended that application be initiated with a mist coat applied prior to full coat application. To avoid moisture condensation, keep the intermediate coat under a roof, protected from dirt, dust, and moisture, in an area where the temperature is maintained above 40°F for a minimum 24 hours after painting is completed.

**5. Top Coat.**

- a. When designated by the contract documents, shop apply the fluoropolymer top coat of the approved fluoropolymer paint system to all painted surfaces, except faying surfaces.
- b. Apply the top coat as recommended by the manufacturer in a single application to obtain a DFT as listed in the manufacturer's product data sheet for the material. Apply the top coat over the intermediate coat, so that a uniform appearance is obtained after the coating is cured.
- c. Apply a stripe coat prior to full top coat application by brush to edges, welds, crevices, bolt heads, and other surface irregularities when applying the primer coat and intermediate

second coat. The stripe coat may be applied to the surface by spray as long as it is immediately and thoroughly worked into these areas by brush.

- d. Where galvanized fasteners are used, paint according to Article 2408.02, Q, 2, b, 5 of the Standard Specifications, after bolting. It is recommended that application be initiated with a mist coat applied prior to full coat application. To avoid moisture condensation, keep the top coat under a roof, protected from dirt, dust, and moisture, in an area where the temperature is maintained above 40°F for a minimum 24 hours after painting is completed.
  - e. For the inspection walkway portion of the upper arch rib (as shown in the plans), broadcast slip-resistant grit in the intermediate or top coat as recommended by the coating manufacturer. Submit the recommended products and procedures as endorsed by the coating manufacturer for Engineer review.
  - f. Top coat colors shall be as specified in the plans. Submit two painted steel plates for each color, minimum size 4 inches by 6 inches, prepared and painted in accordance with these Special Provisions, to the Iowa DOT Office of Materials for review and approval prior to production painting. Submit an additional painted steel plate that includes the slip-resistant coat in the applicable color(s).
- 6. Field Repair and Painting.**
- a. Apply paint in the field only when environmental conditions conform to SSPC guidelines and the manufacturer's recommendations.
  - b. After erection, repair and repaint damage to the paint system due to transportation, handling, or construction activities.
  - c. Field paint any exposed primer at faying surfaces using the intermediate coat and top coat.
  - d. Allow only painters who are trained and certified by the paint manufacturer for the type of work performed to apply the paint. Use the primer, intermediate coat and top coat, as applicable, from the approved fluoropolymer paint system for all repairs. The intermediate coat must be a different color than both the primer and top coat. Use the primer for priming un-galvanized fasteners, and any coating damage to galvanized fasteners.
  - e. When the damage extends to bare steel or bare steel is exposed, clean the surface according to SSPC-SP 10 or SSPC-SP 11 as approved by the Engineer. When the damage does not expose the underlying steel, clean the surface according to SSPC-SP 3 to remove damaged and loose coating, and re-apply the affected coats. If, in the opinion of the Engineer, the damage is too extensive for localized power tool cleaning, clean the surface according to SSPC-SP 7 to remove all loose and damaged material, and reapply the affected coats. For all repairs, roughen the coating in damaged areas to ensure good adhesion of the repair material to the underlying coating. Feather the surrounding coating to expose a minimum of 1 inch of each coat and to provide a smooth transition into intact, adherent material, for all coats.
  - f. Ensure areas to be repaired and repainted are clean, dry, and free from grease, oil, corrosion products, and other detrimental materials. Do not apply paint to surfaces unless they are free from moisture or frost. If the paint manufacturer's repair procedures conflict with this section, or require additional cleaning, submit recommendations to the Engineer for approval.
  - g. Shield concrete at all junction points of concrete and steel so that application of paint on steel is complete without overspray on the concrete.

**7. Cleaning of Paint Surfaces.**

Upon completion of concrete placement, clean exposed structural steel surfaces to remove all concrete and laitance before the concrete sets up.

**150415.04 METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

The work described in these Special Provisions will not be measured or paid for separately, but shall be considered incidental to the bid item, Structural Steel.