



**SPECIAL PROVISIONS
FOR
FLUOROPOLYMER PAINT FOR STEEL PEDESTRIAN AND SAFETY HANDRAIL**

**Dickinson County
BRFN-071-9(083)--39-30**

**Effective Date
November 19, 2024**

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

230239.01 DESCRIPTION.

These special provisions describe the removal, surface preparation, shop painting, and reinstallation of 16 inch and 54 inch structural steel pedestrian hand railing on concrete barriers and at the outer edge of the bridge and approaches for the US 71 Bridge over East Okoboji Lake project using a three-coat fluoropolymer paint system.

230239.02 MATERIALS.

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

230239.03 CONSTRUCTION.

The work includes the following items: removal of rail, cleaning of all surfaces to be painted, application of paint, protection, drying of paint coatings, repairing and repainting of coating damaged in the shop or after erection, or both, and reinstallation of railing. Notify the engineer of any missing or broken bolts or nuts during removal and installation. Test existing paint on the railings for the presence of lead. Notify the Engineer of the results of lead testing at least 7 days prior to starting surface preparation.

A. Removal.

1. Prior to removal, catalog the location of railing sections using tags or another approved method so that railing sections can be reinstalled in the same location from which they were removed.
2. Remove and transport railings in a manner to prevent structural damage to railing posts and horizontal and vertical railing members. Use care in removing nuts from the mounting plate to prevent damage to anchor studs.
3. Disassemble railings at joints or bolted connections as necessary during the removal process to allow for transportation. No cutting of railing sections will be allowed.
4. Completely clean and remove spent penetrating oil, grease and other waste materials resulting

from the contractors' operation from bridge deck surfaces, gutter lines, and curbs.

B. Surface Preparation.

1. Complete surface preparation to maintain the integrity of the existing galvanized coatings on the structural steel pedestrian hand railings.
2. Remove oily or greasy residues with solvent according to SSPC-SP1, Solvent Cleaning.
3. Clean all metal surfaces with hand or power tools as described in SSPC SP2 or SP3. Remove loose paint until level with surrounding areas. Take care that the original galvanizing is not removed by the cleaning methods.
4. Power tool clean visible areas of damage in general accordance with SSPC-SP 15, "Commercial Grade Power Tool Cleaning". Do not remove the galvanizing coating from the steel. Remove loose coating immediately prior to spot priming. Apply spot primer within 8 hours of power tool cleaning.
5. Apply spot primer by roller where possible or by brush where roller cannot be used. Primer color shall contrast with existing paint color, with full overcoat bonding primer color, and with the full overcoat finish coat color.
6. Complete additional surface preparation, as needed to remove paint and oxidation, as per the written recommendation of paint manufacturer, in accordance with Article 2509.03, D of the Standard Specifications.
7. Feather the edges of the remaining adherent coating, creating a smooth transition between the coated surface and the exposed galvanized or steel substrate.

C. Painting – General.

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, abrasives, 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. Apply full overcoat finish coat(s). On areas where roller is used, a minimum of 2 finish coats are required.
4. The finished paint surface shall be uniform in color, sheen, texture and hiding across each continuous surface area when viewed in natural daylight at normal viewing angles and from distances not less than 39 inches from surface. Touch up flaws and other non-compliant areas to the satisfaction of the engineer.

D. Paint Application.

1. **General.**
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 steel railing. 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.

2. 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 surface preparation and before formation of any surface rust, and no later than 16 hours after preparing 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 prepared surface 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 dry film thickness 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.

3. 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 dry film thickness 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.

4. 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 dry film thickness 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. Reinstallation.

1. Reinstall railing panels in their original locations based on the cataloging that was completed during removal.
2. Repair/re-install anchor bolts in accordance with the existing bridge plans, as needed, to allow or secure installation of the railing, to the satisfaction of the Engineer.
3. Replace bolts, nuts, and washers on the railings, as necessary. Replacement bolts, nuts, and washers shall be in accordance with ASTM A325.
4. Any damage to the railing or the paint system shall be the responsibility of the contractor. Damages shall be repaired to the satisfaction of the Engineer.
5. **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.

230239.04 METHOD OF MEASUREMENT.

For the removal, surface preparation, shop painting, and reinstallation of 16 inch and 54 inch structural

steel pedestrian hand railing on concrete barriers and at the outer edge of the bridge and approaches, the Contractor will be paid the lump sum contract unit price.

230239.05 BASIS OF PAYMENT.

The lump sum payment is full compensation for all labor, materials, equipment, services, and incidentals necessary to perform the work of this section. When the railing is removed, 10% of the contract unit price will be paid. When the railing is reinstalled, 80% of the contract unit price will be paid. When repairs or touch-up painting specified by the Engineer have been completed, the last 10% of the contract unit price will be paid.