

CONSTRUCTION SPECIFICATION

82. PAINTING METALWORK

1 SCOPE

The work shall consist of cleaning metal surfaces and applying paints and protective coatings.

2. PAINT

For the purpose of this specification, paints and coatings shall be designated by types as defined below.

Materials for systems requiring two (2) or more coats shall be supplied by the same manufacturer.

Unless otherwise specified and prior to application, the Contractor shall furnish in writing to the Engineer for approval a plan outlining procedures proposed for painting metalwork and a list of materials including name of manufacturer, pertinent product identification names and numbers and product data sheets. Data shall reflect the requirements set forth in this section.

Type 1 Alkyd Primer. Alkyd based, rust inhibitive primer. Primer shall be lead and chromate free. Primer shall have a minimum of 54 percent solids by volume. Color availability shall be red, gray, and white. Primer shall be able to be applied satisfactory at 2.0 to 3.0 mils dry-film thickness in one coat.

Type 2 Alkyd Enamel (Gloss). Alkyd based enamel shall be lead free. Alkyd enamel shall have a minimum of 49 percent solids by volume. Alkyd enamel shall be able to be applied satisfactory at 2.0 to 3.0 mils dry-film thickness in one coat. Finish shall be gloss.

Type 3 Alkyd Enamel (Semi-gloss). Alkyd based enamel shall be lead free. Alkyd enamel shall have a minimum of 55 percent solids by volume. Alkyd enamel shall be able to be applied satisfactory at 2.0 to 3.0 mils dry-film thickness in one coat. Finish shall be semi-gloss.

Type 4 Epoxy Polyamide Primer. Epoxy polyamide primer shall be lead and chromate free. Epoxy primer shall have a minimum of 56 percent solids by volume. Epoxy primer shall be able to be applied satisfactory at 4.0 to 6.0 mils dry-film thickness in one coat. Color availability shall be red, gray, and white. Epoxy primer shall conform to AWWA Standard C 210 and AWWA Standard D 102.

Type 5 Epoxy Polyamide (intermediate or finish). Epoxy polyamide shall be lead free. Epoxy shall have a minimum of 56 percent solids by volume. Epoxy shall be able to be applied satisfactory at 4.0 to 6.0 mils dry-film thickness in one coat. Finish shall be semi-gloss. Epoxy finish shall conform to AWWA C 210 and AWWA D 102.

Type 6 Acrylic Polyurethane (Gloss). Acrylic polyurethane shall be lead free. Acrylic polyurethane shall have a minimum of 74 percent solids by volume. Polyurethane shall be able to be applied satisfactory at 3.0 to 5.0 mils dry-film thickness in one coat. Finish shall be gloss.

Type 7 Acrylic Polyurethane (Semi-gloss). Acrylic polyurethane shall be lead free. Acrylic polyurethane (semi-gloss) shall have a minimum of 58 percent solids by volume. Polyurethane shall be able to be applied satisfactory at 3.0 to 5.0 mils dry-film thickness in one coat. Finish shall be semi-gloss.

Type 8 Vinyl Acid Wash Treatment. Pre-treatment primer for galvanized and non-ferrous metal. Pre-treatment primer shall have a minimum of 8 percent solids by volume. The applied dry-film thickness of pre-treatment primer shall not exceed 0.5 mil. Steel primed with pre-treatment primer shall be top coated within six to eight hours in humid conditions.

Type 9 Single Package Moisture Cured Urethane Primer. Urethane primer shall have a minimum of 50 percent solids by volume. Primer shall be able to be applied satisfactory at 2.0 to 3.0 mils dry-film thickness in one coat. Color shall be metallic aluminum.

Type 10 Coal Tar Epoxy. Coal tar epoxy shall have a minimum of 75 percent solids by volume and conform to the requirements of NRCS Material Specification 583 Coal Tar Epoxy Paint (Steel Structures Paint Council PS No. 16, Type I). Coal tar epoxy shall be able to be applied satisfactory at 8.0 to 15.0 mils dry-film thickness in one coat.

3. TINTING

Tinting shall not be performed in the field unless otherwise specified.

4. SURFACE PREPARATION

Surfaces to be painted shall be thoroughly cleaned prior to the application of paint or coatings. Surface preparations required by this specification are as designated by SSPC (Steel Structures Painting Council) and are summarized by the Methods listed in this section.

Method 1 Near White Blast (SSPC-SP10). All surfaces to be coated shall be prepared by removing all grease and oil using steam cleaning or solvent cleaning methods per Method 5. After degreasing is completed, sand or grit blasting shall be performed to remove all dirt, rust, mill scale and/or other foreign material or residue. The cleaned, finished surface shall be a minimum of 95 percent free of all visible foreign material and/or residue.

Method 2 Commercial Blast (SSPC-SP6). All surfaces to be coated shall be prepared by removing all grease and oil using steam cleaning or solvent cleaning methods per Method 5. After degreasing is completed, sand or grit blasting shall be

performed to remove all dirt, rust, mill scale or other foreign material or residue. The cleaned, finished surface shall be a minimum of 67 percent free of all visible foreign material or residue.

Method 3 Brush-off Blast Cleaning (SSPC-SP7). All surfaces to be coated shall be prepared by removing all grease and oil using steam cleaning or solvent cleaning methods per Method 5. After degreasing is completed, and or grit blasting shall be performed to remove dirt, rust, mill scale or other foreign material or residue. Tightly adherent mill scale, rust and paint are considered tightly adherent if they cannot be removed by lifting with a dull putty knife.

Method 4 Hand Tool Cleaning (SSPC-SP2). All surfaces to be coated shall be prepared by removing all oil or grease using steam cleaning or solvent cleaning methods per Method 5. After degreasing is completed, non-power hand tools shall be used to remove loose, detrimental foreign material. Adherent mill scale, rust and paint need not be removed.

Method 5 Solvent Cleaning (SSPC-SP1). Surfaces to be coated shall be prepared by removing all visible oil, grease, soil, drawing and cutting compounds and other soluble contaminants from surfaces with solvents or commercial cleaners using various methods of cleaning such as wiping, dipping, steam cleaning or vapor degreasing.

5. PAINT SYSTEMS

For the purposes of this specification, systems of painting and coating metalwork will be designated as defined in this section.

Paint System A shall consist of the application of one (1) primer coat of Type 1 and two (2) or more coats of Type 2 (gloss) or Type 3 (semi-gloss) to provide a minimum dry-film thickness of 6.0 mils.

Paint System B shall consist of the application of one (1) primer coat of Type 9 and two (2) or more coats of Type 2 (gloss) or Type 3 (semi-gloss) to provide a minimum dry-film thickness of 6.0 mils.

Paint System C shall consist of the application of one (1) coat of Type 4 and one (1) or more coats of Type 5 to provide a minimum dry-film thickness of 8.0 mils.

Paint System D shall consist of the application of one (1) coat of Type 4 primer, one (1) coat of Type 5 and one (1) coat of Type 6 (gloss) or Type 7 (semi-gloss) to provide a minimum dry-film thickness of 11.0 mils.

Paint System E shall consist of the application of one (1) coat of Type 9 and one (1) coat of Type 6 (gloss) or Type 7 (semi-gloss) to provide a minimum dry-film thickness of 5.0 mils.

Paint System F shall consist of the application of two (2) coats of Type 10 at a dry-film thickness of 8.0 mils. per coat. Total system shall provide a minimum dry-film thickness of 16.0 mils.

Paint System G shall consist of the application of two (2) coats of Type 4 and two (2) coats of Type 9 paint. Total system shall provide a minimum dry-film thickness of 14.0 mils.

6. APPLICATION OF PAINT

Surfaces shall be painted immediately after preparation or within the same day as prepared with a minimum of one (1) coat of the primer type specified. Remaining surfaces not required to be painted shall be protected against contamination and damage during the cleaning and painting operation.

Paints shall be thoroughly mixed immediately prior to application.

After erection or installation of the metalwork, all damage to shop applied coating shall be repaired and all bolts, nuts, welds and field rivet heads shall be cleaned and painted with one coat of the specified priming paint.

Except on surfaces accessible only to spray equipment, initial priming coats shall be applied by brush. All other coats may be applied by brush or spray. Each coat shall be applied in such a manner as to produce a paint film of uniform thickness with a rate of coverage within the guidelines and limits recommended by the paint manufacturer and as outlined in Section 2 of this specification.

The drying time between coats shall be as prescribed by the paint manufacturer, but not less than that required for the paint film to thoroughly dry. The elapsed time between coats in Paint System F shall not exceed 24 hours. If for any reason the critical re-coat time is exceeded, the coated surface shall be treated with the manufacturer's recommended tackifier solvent or brush blasted to roughen the surface.

The finished surface of each coat shall be free from runs, drops, ridges, laps or excessive brushmarks and shall present no variation in color, texture and finish.

The surface of each dried coat shall be cleaned as necessary before application of the next coat.

7. ATMOSPHERIC CONDITIONS

Paint application shall not be performed when the temperature of the item to be painted or the surrounding air is less than 50° F. Painting shall be performed only when the humidity and temperature of the surrounding air and the temperature of the metal surfaces are such that evaporation rather than condensation will result during the period of time required for application and drying. The surface shall be dry and a minimum of 5° F above the dew point. Surfaces protected from adverse

atmospheric conditions by special cover, heating or ventilation shall remain so protected until the paint is thoroughly dry.

8. TESTS

Dry-film thickness on ferrous metal shall be determined by the use of a non-destructive magnetic instrument such as an Elcometer or Mikrotest gauge. Instruments shall have been calibrated within one month prior to use. Film thickness on non-ferrous metal shall be determined with film gauges during the application process. Systems with film thickness less than specified shall be brought into conformance by the application of one or more additional coats of the specified material.

9. PAYMENT

For items of work for which lump sum prices are established in the contract, payment will be made as the work proceeds, after presentation of invoices by the Contractor supporting actual related costs and evidence of the charges of suppliers, subcontractors, and other for supplies furnished and work completed. If the total of such payments is less than the lump sum contract price for this item, the unpaid balance will be included in the next appropriate contract payment. Payment of the lump sum contract price will constitute full compensation for completion of the work.

Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section 10 of this specification.