

## SECTION 09991

# CLEANING AND REPAINTING STRUCTURAL STEEL

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Clean and repaint existing structural steel surfaces including all bearing units for existing paint systems that have red lead primer.
- B. Remove existing paint from existing structural steel surfaces.
- C. Prepare existing steel surface for repainting, and paint the cleaned structural steel surfaces.

#### 1.2 REFERENCES

- A. ASTM E 11: Wire Cloth and Sieves For Testing Purposes
- B. Federal Standard No. 595: Color
- C. The Society for Protective Coatings (SSPC) Guidelines

#### 1.3 SUBMITTALS

- A. The Contractor or the subcontractor must submit a written compliance program indicating that they have the equipment, training, containment, and monitoring system to comply with OSHA's standard on lead exposure in construction, as published in Federal Register, Section 29 CFR 1926.62, May 4, 1993.

## **1.4 PAINTER AND SANDBLASTER QUALIFICATIONS**

- A. Responsible Parties:
  - 1. Contractors and subcontractors performing surface preparation or coatings applications in the field:
    - a. Certification required prior to contract award by The Society for Protective Coatings to the requirements of SSPC QP 2 Category A.
    - b. Remains certified for the duration for the project.
  - 2. Fabricators, painting contractors, and painting subcontractors:
    - a. Do not perform work if certification has expired.
    - b. Requests for time extension for any delay to the completion of the project due to an inactive certification will not be considered and liquidated damages applies.
- B. Disqualification:
  - 1. Engineer may withdraw qualification for questionable performance of the painter, blasting operator, or the equipment.
  - 2. Disqualification results from inadequate surface preparation, improper profile, runs, sags, overspray, thin film thickness, excessive film build-up, uneven coating, nonuniform color, improper curing, or any other defect in the coating system.

## **1.5 REQUIREMENTS FOR COATING APPLICATION**

- A. Have the painter, the blasting operator, or both consult with the manufacturer's technical representative for answers to technical questions relating to the application of the specified coating materials.
- B. Obtain surface preparation approval from the Engineer before applying paint.
- C. Use equipment capable of taking dry-film thickness readings on all portions including nuts and bolts.

## **1.6 PROJECT CONDITIONS/WEATHER LIMITATIONS**

- A. If weather conditions require paint thinning, follow the manufacturer's recommendations.
- B. Apply paint only when the following weather conditions exist:
  - 1. The temperature of the air and the steel: above 40 degrees F.

2. The relative humidity:
  - a. Less than 85 percent, or such that the combination of temperature and humidity conditions inhibits surface condensation.
  - b. To test humidity, apply a thin film of water to a small area. If the film evaporates within 15 minutes, the surface may be painted.
  - c. Steel temperature a minimum of 5 degrees F above dew point.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- A. Blasting abrasive: type and size as specified.
- B. Solvent: type and source as required.
- C. Coating materials:
  1. Mix properly following manufacturer's recommendations and project specifications.
  2. Use necessary equipment for the proper application of the specified coating.

### **2.2 COATING SYSTEM**

- A. Select a complete 3-part coating system consisting of a Zinc primer, Epoxy or Urethane intermediate coat, and aliphatic urethane top coat as approved by the New England Protective Coating Specification Criteria (NEPCOAT). Refer to <http://www.udot.utah.gov/index.php/m=c/tid=719> for a link to this list.
- B. Use manufacturer's information regarding the specified coating materials, including required wet- and dry-film thickness, project safety data, thinning recommendations, temperature requirements, profile recommendations, mixing and application procedures, and required equipment.
- C. Use coating materials properly mixed meeting the manufacturer's recommendations and project specifications.
- D. Paint Color: Federal Standard No. 595.
  1. Field coat: Color # 26293.
  2. Top coat: Color # 26306.

## **2.3 MIXING**

- A. Mix the paint to a lump-free consistency with a high shear mixer (such as a Jiffy mixer), according to the producer's directions.
  - 1. Do not use paddle mixers or paint shakers.
  - 2. Keep paint in the original containers and mix until all the metallic powder or pigment is suspended.
  - 3. Continue mixing until all solids that may have settled to the bottom of the container are thoroughly dispersed.
- B. Strain the paint through a screen having openings no larger than those specified for a No. 50 sieve. ASTM E 11.
- C. Continuously agitate the strained, mixed material up to and during the time of application.

## **2.4 QUALITY CONTROL**

- A. Sampling:
  - 1. Take samples from each batch or lot of paint to be tested.
  - 2. Test the samples using infrared and gas chromatography techniques prior to use.
  - 3. Reject paint that does not match the standard. The prints must match the spectrum samples on file in the Central Laboratory.

## **PART 3 EXECUTION**

### **3.1 PREPARATION**

- A. Clean surfaces, including bearing units, of all oil, grease, and dirt with clean petroleum solvents or steam cleaning prior to blasting operation. SSPC-SP10.
- B. Blast surfaces clean to near white with 0.5 to 2 mil profile.
- C. Discoloration, light shadows, or slight streaks caused by stains of rust is not allowed on more than 5 percent of surface area.
- D. Define acceptable surface preparation using SSPC-Vis 1.
- E. Use SSPC-SP-11 to clean areas such as backside of base plates, corners, etc., that cannot otherwise be cleaned.

- F. Prime the surface within 24 hours from blasting.
- G. Do not prime the surface if rust has started to form. Clean the surface again before applying the prime coat.
- H. Protection:
  - 1. Fully contain all material resulting from paint overspray.
  - 2. Enclosure system must withstand extreme high winds.
  - 3. Protect all portions of the structure that will not be painted.
- I. Recover a minimum of 95 percent of debris from cleaning operation.
  - 1. Sample debris from cleaning operation. Submit samples to UDOT Materials and an independent accredited Materials Testing Lab for composition and disposal evaluation.
  - 2. Place reclaimed waste paint in EPA-USDOT approved containment. Store at the project site.
  - 3. The Engineer tests the waste paint who then contacts the UDOT chemist at 965-4298. Submit paint composition and disposal evaluation results from the independent materials testing lab. Disposition will be given to the contractor within 30 days. Dispose of waste paint as directed by the Engineer, submit disposal certificates for all waste paint.

### **3.2 APPLICATION**

- A. Conform to Field Inspection Provisions:
  - 1. Do not apply paint until the Engineer approves the prepared surface.
  - 2. Use rubber rollers or other approved protective devices on scaffold fastenings.
  - 3. Do not use metal rollers, clamps, and other types of fastenings that mar or damage freshly coated surfaces.
- B. Apply paint with spray nozzles at pressures recommended by the producer of the coating system.
- C. Prime Coat:
  - 1. Maintain the dry-film thickness of the prime coat between 2.5 and 6.0 mils.
  - 2. Apply two or more coats without producing runs, bubbles, or sags if the required film thickness cannot be obtained by one coat.
  - 3. Scrape any coat that produces “mud-cracking” or adds more than 7.0 mils to a soundly bonded coating or bare steel. Re-coat the surface.
  - 4. Thoroughly clean areas having deficient primer thickness with power washing equipment to remove all dirt. Wire-brush, vacuum, and re-coat the area.

- D. Intermediate Coat: Paint as described in the standard specifications to produce a uniform, even coating which bonds to the underlying surface. SSPC-PA 1.
  - 1. Use the coating type and minimum dry-film thickness specified.
  - 2. Produce a dry-film thickness of the intermediate coat greater than 4 mils.
- E. Finish coat: Keep the dry-film thickness greater than 2 mils.
- F. Use wet and dry-film thickness gauges for testing the coating thickness during and after application.
- G. Painting Safety: Follow SSPC Paint Application Guide No. 3, "A Guide to Safety in Paint Application."

END OF SECTION