

SECTION 09991

CLEANING AND REPAINTING STRUCTURAL STEEL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Apply this section when repainting structural steel whose existing paint system does not contain a 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. SSPC-PA 1: Surface Preparation.
- D. SSPC Paint Application Guide No. 3, "A Guide to Safety in Paint Application."
- E. SSPC-SP10: Near White Blast.
- F. SSPC-SP11: Mechanical Cleaning.
- G. SSPC-Vis 1: Visual Standard.

1.3 QUALIFICATION AND EVALUATION

- A. Coating Application Evaluation:
 - 1. Establish a test area approximately 10 feet long, or as determined by the Engineer, and prepare the surfaces of the test area according to the project specifications.

2. Apply the coating using technique and application equipment consistent with the specified coating materials, and with the paint manufacturer's recommendations.
 3. Allow the required drying time as prescribed by these specifications and the manufacturer's recommendations to elapse before taking the dry-film thickness readings.
 4. Treat primer, intermediate, and finish coats as separate applications, allowing the specified drying time to elapse before inspecting each completed coat.
- B. Engineer evaluates painters and blasting operators on:
1. Ability to prepare the surface, apply specified coatings to a uniform dry-film thickness, and use the proper tools and equipment.
 2. Familiarity with the specified coating material and acceptance criteria, and awareness of any difficulties in applying the coating to any specified surface.
- C. 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.
 3. The disqualified person or equipment may be required to re-qualify or be removed from the project site at the option of the Engineer.
- D. Requalification:
1. The Engineer may accept the qualifications of a sandblaster or painter who has been qualified on a previous Department project within the year.
 2. The blasting operator, painter, or both must re-qualify if any materials or equipment changes are made from the original qualification.

1.4 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.

1.5 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.

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). This list may be found at <http://www.state.me.us/planning/products/nepcoat.htm>.

- 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.

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 which 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