

**ITEM 574.9456XX25 - SURFACE PREPARATION AND COATING APPLICATION FOR CALCIUM SULFONATE PAINT SYSTEM ON BRIDGES**

**1. DESCRIPTION:**

- 1.01 This work shall consist of surface preparation by high pressure water jetting and application of a calcium sulfonate paint system to the steel.
- 1.02 **Contractor Qualifications:** The Contractor or Subcontractor shall have a minimum of five (5) years of previous experience in surface preparation and coating application. The Contractor or Subcontractor who will perform the cleaning and painting shall be, at the time bids are received and for the duration of the Contract, certified in accordance with SSPC-QP1 and QP2.
- 1.03 The following SSPC specifications form a part of this specification:
- A. SSPC-SP1 – “Solvent Cleaning”
  - B. SSPC-SP2 – “Hand Tool Cleaning”
  - C. SSPC-SP3 – “Power Tool Cleaning”
  - D. SSPC-SP12 – “Surface Preparation and Cleaning of Steel and Other Hard Materials by High and Ultrahigh Pressure Water Jetting”
  - E. SSPC-Vis 4 – “Guide and Reference Photographs for Steel Surfaces Prepared by Water Jetting”
  - F. SSPC Paint Application Specification No. 1 – “Shop, Field, and Maintenance Painting” (SSPC-PA1)
  - G. SSPC-PA2 – “Measurement of Dry Paint Thickness with Magnetic Gages”
  - H. SSPC-QP1 – “Standard Procedure for Evaluating Qualifications of Painting Contractors: Field Application to Complex Structures”
  - I. SSPC-QP2 – “Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint”

**2. MATERIALS:**

- 2.01 Paint shall be a calcium sulfonate paint system. The following are acceptable materials:

Chemotex Bridgecote 4100 Shot Prime  
Chemotex Bridgecote 4100 Finish

Manufactured by:  
CPC Corporation  
[REDACTED]

TR 2100 Spot Prime  
TR 2100 Finish

Manufactured by:  
Termarust Technologies  
[REDACTED]

Prax-Ten Spot Prime  
Prax-Ten Finish

Manufactured by:  
Praxis Technologies  
[REDACTED]

- 2.02 Clean, fresh water shall be used for water jetting operations.
- 2.03 Pressure washing equipment shall achieve a pressure of 5000 psi at the nozzle and have a zero degree oscillating tip.
- 2.04 Thinners shall be those recommended by the paint manufacturer.

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**3. CONSTRUCTION DETAILS:**

3.01 **Surface Preparation:** All surfaces shall be cleaned by high pressure water jetting at a minimum pressure of 5000 psi in accordance with SSPC-SP12. On surfaces with rust scale build up, the rust scale shall be removed by power tool cleaning in accordance with SSPC-SP3 prior to water jetting.

A. Existing tightly adhered paint may remain after high pressure water jetting. Rusted areas shall conform to SSPC-SP12 WJ3(M) as per SSPC-Vis 4. Reduction of chloride contamination levels on the steel to  $5\Phi\text{g}/\text{cm}^2$  will be required, as per the provisions of Subsection 3.01 B of this specification.

**B. Remediation of Chloride Salts**

1. The Contractor shall propose surface preparation procedures and processes which will remove chloride and iron salts from the surfaces.
2. Methods of salt removal may include, but are not limited to, steam cleaning or pressure washing after power tool cleaning, or vacuum blast cleaning with blends of fine and coarse abrasives (e.g., 50/50 blend of G25 and G80 grit).

The proposed procedures for chloride remediation shall be explained in detail in the Surface Preparation/Painting Plan.

When remediation methods include water and salt reducing additive, the Contractor will be required to show that the additive will not be detrimental to the coating system that will be applied.

3. Upon completion of surface preparation, use the Bresle Cell Kit, or approved equal, to test representative surfaces which were previously rusted (i.e., pitted steel) for the presence of remaining salts. A minimum of 3 such tests shall be utilized in each representative area.
4. If chlorides are detected at levels greater than  $5\Phi\text{g}/\text{cm}^2$ , continue to clean the affected areas until acceptable results are achieved.
5. Following successful salt testing, reclean the surface to achieve the required surface preparation criteria.

3.02 Thinning of paints is permitted only if recommended by the manufacturer. Only those types and brands of thinner recommended by the coating manufacturer shall be used. The amount of thinning shall be in accordance with the manufacturer's requirements, and shall be limited to the amount necessary to facilitate application. THINNING SHALL NOT CAUSE THE MATERIAL TO EXCEED ALLOWABLE VOC LEVELS.

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**3. CONSTRUCTION DETAILS:** (cont'd)

- 3.03 Paint shall not be applied at surface and air temperatures below 35°F, unless the manufacturer's recommendations allow for a lower application temperature. Surface and air temperature must be at least 5°F higher than the dew point. Relative humidity shall be no greater than 99% when applying paint. Coating shall not be applied to surfaces containing frost or applied in rain, fog or similar conditions.
- 3.04 Application shall be by brush, roller or spray, as recommended by the coating manufacturer. If conventional spray is used, the air shall be clean and dry as verified in accordance with ASTM D4285. All coatings shall be applied without runs, drips or sags.
- 3.05 After the steel is dry and the surface preparation is accepted by the Engineer, a spot prime coat of calcium sulfonate paint shall be applied to all bare steel surfaces at a dry film thickness of 5-7 mils. After application of the spot primer coat, a full finish coat shall be applied to all surfaces at a dry film thickness of 5-7 mils.
- 3.06 The thickness of the paint shall be measured using non-destructive dry film thickness gages. The calibration of the gages and frequency of thickness measurements on steel substrates shall be in accordance with SSPC-PA2. In the case of a dispute regarding the coating thickness applied, a Tooke Gate (destructive scratch gage) can be used, but only to the extent required to resolve the problem. Damage to the coating created by the Tooke Gage shall be clearly marked and identified for touch-up by the Contractor. If allowable as per the manufacturer's recommendations and if the Contractor elects to apply the finish coat on the wet spot primer, wet film thickness measurements will be used to estimate the coating thickness, and dry film thickness measurements will be taken to gauge the total film build after the coating has cured.

**4. METHOD OF MEASUREMENT:**

- 4.01 Payment will be made at the lump sum price bid.

**5. BASIS OF PAYMENT:**

- 5.01 The lump sum price bid shall include the cost of all labor, materials and equipment necessary to complete the work. All work shall be done in a manner satisfactory to the Engineer.
- 5.02 For the purpose of progress payments, the lump sum price bid for the item shall be apportioned as noted below:
  - A. Payments will be made for each stage satisfactorily completed in accordance with this Specification as follows:
    - 1. Stage 1, Surface Preparation. Fifty (50) percent of the lump sum price bid will be paid for satisfactorily preparing all of the surfaces.
    - 2. Stage 2, Coating Application. Fifty (50) percent of the lump sum price bid will be paid for satisfactorily performing all coating applications to all surfaces.
- 5.03 For progress payment purposes only, within each stage the lump sum price shall be distributed on a per span basis adjusted for the relative estimated square feet of each span.