

**ITEM 08570.8618nn M - FIELD CLEANING AND PAINTING CHEMICALLY
STRIPPED STEEL - SPRAY PROHIBITED (SSPC-SP11 /
MC URETHANE)**

DESCRIPTION:

The work shall consist of cleaning and applying three (3) full coats of a single-component, moisture-cure urethane paint over surfaces cleaned using power tools and chemical strippers (Peel-Away). Surface preparation shall include the full removal of all existing coatings.

MATERIALS:

A. Paint:

All paint used on any one structure shall be produced by a single manufacturer. The following paint systems are approved for use:

1. Xymax Coatings, Inc., Oakland Park, FL 33311
Primer: Mono-Lock P.P. 2403 (50 µm, DFT)
Intermediate: Mono-Lock P.P. 2403 (50 µm, DFT)
Finish: Bridge Finish 7000 Series (75 µm, DFT)

Note: Recoat time for Xymax primer, intermediate and finish paints shall not be less than four (4) hours nor more than fourteen (14) days. Shelf life will be a maximum of twelve (12) months from date of manufacture.

2. Wasser High-Tech Coatings, Kent, WA 98032
Primer: Wasser MC-Aluminum (50 µm, DFT)
Intermediate: Wasser MC-Ferromastic (75 µm, DFT)
Finish: Wasser MC-Luster (50 µm, DFT)

Note: All Wasser paint supplied for this work shall be formulated with a minimum volume solids of 61.0%, and a maximum VOC content of 335g/L (2.8 lbs/gal). Recoat time for Wasser primer, intermediate and finish paints shall be not less than four (4) hours nor more than fourteen (14) days. Shelf life will be twelve (12) months from the date of manufacture; no exceptions will be made.

3. The Valspar Corporation, Baltimore, MD 21230
Primer: 513-A-101 Bronzed Aluminum (75 µm, DFT)
Intermediate: 541-D-101 Chestnut Brown (75 µm, DFT)
Finish: 540 Series (50 µm, DFT)

Note: Recoat time for Valspar primer, intermediate and finish paints shall not be less than eight (8) hours, nor more than fourteen (14) days. Shelf life will be a maximum twelve (12) months from date of manufacture.

Each single coat of paint shall be a color different from the others. The color of the primer and intermediate paint shall be at the contractor's option, and shall provide contrast with the

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underlying substrate or previously applied paint.

B. Paint Remover:

Chemical stripping materials shall be Peel-Away brand, as manufactured by Dumond Chemicals, New York, New York 10036, or equal, as approved by the Engineer.

Chemical stripper shall be alkaline and/or solvent type removers as determined by the manufacturer through test patches for the project. The use of more than one product may be required. The composition of the paint removers shall be as follows:

1. Alkaline Chemical Paint Remover - 9% Sodium Hydroxide, 16% Magnesium Hydroxide and 21% Calcium Hydroxide (Peel-Away ST-1 or equivalent).
2. Solvent Paint Remover - 10-25% Dibasic Ester, 20-50% N-Methyl-2 Pyrrolidone, 1-5% Nonylphenol Ethoxylate (Peel-Away 7 or equivalent).

C. Basis of Acceptance:

The contractor shall be required to provide a copy of the manufacturer's Technical Data and M.S.D.S. for Peel-Away (or approved equal), as well as for the paint materials being used.

All components of the paint system (primer, intermediate and finish coats), and all chemical stripping materials will be accepted on the basis of the manufacturer's written certification that each batch produced meets their product specification.

Only paint and chemical stripper shall arrive at the work site in new, unopened containers shall be used.

Containers of paint and chemical stripper shall be labeled with the manufacturer's name, product name, component part, batch number, date of manufacture and shelf life date. Paint in containers having expired shelf life dates shall be immediately removed from the work site.

CONSTRUCTION DETAILS:

All structural steel members, railings, fascia, downspouts and other miscellaneous steel items that have been previously painted shall be cleaned to remove all existing paint and rust and then painted three (3) full coats of paint, the primer coat, the intermediate coat and the finish coat.

A. Equipment For Cleaning:

Equipment for removing rust and deteriorated paint shall be vacuum equipped needle guns or vacuum equipped rotary impact flap assemblies that are capable of producing a bare metal surface and of producing a surface profile as required by the paint manufacturer. The vacuum assembly

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shall be capable of containing all visible dust and debris produced by the operation of the cleaning equipment. Air passing through the vacuum assembly shall be exhausted through a HEPA filter.

B. Application Equipment:

Equipment used for applying and removing the stripper shall be free of lead and other toxic materials when brought on-site and upon removal from the owner's property. The application and removal methods selected shall be approved by the manufacturer of the chemical stripper. Methods include:

1. Application Equipment
 - a. Hand application equipment includes trowels, broad knives and brushes.
 - b. Spray application equipment suitable for the application of heavy mastic-type materials such as Grayco #965-193 for spraying from 18.9 liter (5 gallon) buckets or Grayco Model #965-416 for spraying from 208 liter (55 gallon) drums.
2. Removal and Surface Neutralization/Cleaning Equipment
 - a. Hand tool or vacuum removal of stripper followed by clean-up and neutralization using ice blast equipment. Either method is acceptable. Do not use acid for neutralization.

C. Surface Preparation:

Surfaces to be cleaned shall be identified in the following manner:

1. Surface Condition
 - a. Category I: A surface which has become visibly corroded or upon which the existing paint has peeled, flaked, blistered or otherwise become deteriorated.
 - b. Category II: A surface upon which the existing paint is tightly adhered, and otherwise in good condition. Adherence will be considered satisfactory if the paint cannot be removed by lifting with a dull putty knife.
2. Cleaning Requirements For Category I Surfaces

Surfaces meeting the condition of Category I shall be cleaned to bare metal in accordance with SSPC-SP11, Power Tool Cleaning To Bare Metal after chemical stripping work has been completed on Category II surfaces. Prior to paint application all Category II surfaces

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shall be inspected to ensure no contamination is present as a result of the Category I surface preparation operations. Category I surfaces shall be accepted by visual comparison to a project-prepared standard(s) for each structure. The contractor shall prepare the project standard by power tool cleaning a representative area on the structure that is being prepared for painting. The prepared standard shall generally conform to SSPC-Vis 3, Visual Standard For Power- and Hand-Tool Cleaned Steel", Pictorial Standard E SP11, F SP11 and G SP11, as applicable, and shall be approved by the Engineer before the start of general cleaning work. At least one (1) standard shall be prepared for each structure that is being specified for cleaning. More than one (1) standard may be necessary if the cleaned steel differs significantly from the photographic standards due to surface conditions or other factors. Each standard shall be at least 300 mm x 300 mm in size, and shall be located in an area of the structure that is accessible to, and approved by the Engineer. The contractor shall protect the project standard from corrosion and contamination throughout the duration of work by applying a clear coat of polyurethane. At the completion of cleaning work, the project standard shall be recleaned and painted in accordance with this specification. If in the opinion of the Engineer the project standard becomes deteriorated, or otherwise ineffective, it shall be re-established in accordance with this specification, at no additional cost.

3. Cleaning Requirements For Category II Surfaces

Surfaces meeting the condition of Category II shall have all paint removed using Peel-Away or approved equal chemical stripper.

D. Application and Removal (Chemical Stripping):

1. Peel-Away (or approved equal) Application

- a. At least one member of the crew responsible for applying and removing the material shall have received formal training from the chemical manufacturer.
- b. Unless stipulated otherwise by the manufacturer, the following application conditions shall be maintained. Minimum surface temperatures for the application of chemical or solvent paint removal materials shall be 10°C and rising. Do not apply the materials to substrates that are less than 10°C, or if the surface temperature will drop below 10°C within 12 hours after application. The maximum surface temperatures are ideally maintained below 32°C, but shall not exceed 35°C at the time of application, or within 4 hours after application.
- c. Apply the paint remover using trowels, broad knives, brushes, airless spray or conventional spray in strict accordance with the manufacturer's instructions.
- d. Apply the removers in conjunction with the necessary level of containment to control emissions. Containment criteria for application is found in Section B and

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Table 1.

- e. Apply the removers to the target film thicknesses stipulated by the manufacturer.
- f. Spray application of the chemical stripper is allowed with the spray application cycle as follows: The material should first be applied as a tack coat if required as a result of the stripper manufacturer's patch test. The tack coat should be applied in accordance with the manufacturer's recommended procedures. When the tack coat is dry, the full coat of Peel-Away ST-1 (or approved equal) should be applied.
- g. Material thickness is as follows: Peel-Away ST-1 (or approved equal) should be applied at a wet film thickness of 2000 μm to 2600 μm . The proper thickness should be determined with an accurate patch test. A micron gauge should be used frequently during spray application to insure uniformity.
- h. Weather: Weather is an important factor during a removal process. Peel-Away ST-1 shall not be applied to a wet surface. There must be a minimum of one hour set up time to withstand a rainstorm. If an oncoming storm is in question, spray applications shall be delayed until satisfactory weather is assured.

Note: A wet surface also includes the possibility of dew that might have formed on the surface at any time.

2. Peel-Away Removal

- a. Solids Removal: In general, it can be expected that a first application of Peel-Away will be required to remain overnight, before removal can begin. After Peel-Away ST-1 has been allowed to react for a sufficient amount of time, it will be removed manually using broad knives or thin blade scrapers. Typically, the removal process will begin at the top of the bridge beam and continue down the web to the lower flange. This sequence shall then be repeated along the length of the beam where material is to be removed.
- b. Residue Removal: Removal of the remaining residue shall be accomplished immediately after scraping the solids using the ice blast cleaning process.

All residue shall be removed from the structure to prevent adhesion impedance via ice-blast removal techniques.

Ice blast cleaning shall be done after step (2a) is completed using ICE BLAST equipment (or approved equal). ICE BLAST equipment is produced by the following manufacturer:

Ice Blast International, Inc.

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1801 130th Ave. NE
Bellevue, WA 98005
Telephone No. (206) 883-1470

The ice blast cleaning process shall be operated in accordance with manufacturer's recommended procedures.

- c. Supplemental Residue Removal: For residue removal where ice blast cleaning may be difficult to access, removal shall be accomplished with any airless paint pump which can operate using a fan tip nominally #617 or #620. Wet sponges and hand squirt bottles shall also be used with all residue contained and discarded as in step (2b). Supplemental removal techniques are intended only for small areas and are not intended to replace the ice blast cleaning process as a removal method.
- d. All residue and wash water shall be contained and discarded in accordance with all of Section 571 and Item No. 08570.16XXXX M - Class 2c - Containment System for Paint Removal Using Chemical Stripping. In general, both items (2b) and (2c) are used in conjunction with each other.

The following replaces 571-3.05 for this contract: The contractor is responsible for notifying the waste disposal facility about the nature of this waste and performing any additional tests such as moisture content, characteristic hazardous waste testing, or the Toxicity Characteristic Leaching Procedures (EPA Method 1311) that the facility may require prior to acceptance. All penalties and costs associated with the refusal of a disposal facility to accept waste not meeting its requirements will be borne by the contractor.

- e. Remove the material and softened paint from the surface by methods, which when used in conjunction with the appropriate containment system, will properly control emissions to avoid contaminating surrounding surfaces, the environment or impact the health and welfare of the public and other workers. Containment shall be paid for under Item No. 18574.1010 M, Class B Containment.
- f. Upon completion of removal, verify that the surface is clean and dry, free of any visible residues of paint or cleaning solutions. Test the surface to assure that the pH is neutral (pH 7) or is within the pH range specified by the manufacturer of the coating system to be applied. No paint shall be applied until proper pH is attained in accordance with the paint manufacturer.
3. Multiple Applications
- a. The use of more than one product application may be required, if necessary, to

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remove all coats to the substrate.

- b. If the paint was not removed to the substrate using a single process, repeat the sequence as required to achieve a surface that is free of any visible residues of coating.

E. Painting:

1. Manufacturer's Instructions

At least five (5) working days prior to the start of work the contractor shall provide the Engineer with one (1) copy of the paint manufacturer's current Technical Data and Material Safety Data Sheets for the paint materials being furnished.

2. Material Storage

Paint in storage shall be protected from damage and maintained between 4.5°C and 29.5°C. Paint not used before the shelf life expiration date shall be immediately removed from the project site.

3. Specifications and Inspection Equipment

Prior to the start of and throughout the duration of work, the contractor shall supply the Engineer with the following:

- a. One (1) bound copy each of the Steel Structures Painting Council surface preparation specifications, SSPC-SP1, Solvent Cleaning and SSPC-SP11, Power Tool Cleaning To Bare Metal.
- b. One (1) bound copy of the Steel Structures Painting Council pictorial standard, SSPC-Vis 3, Visual Standard For Power- and Hand-Tool Cleaned Steel.
- c. One (1) bound copy of the Steel Structures Painting Council method SSPC-PA2, Paint Application Specification No. 2 - Measurement of Dry Film Thickness With Magnetic Gages.
- d. One (1) Air Thermometer, pocket type, -10°C to +40° C.
- e. One (1) Surface Thermometer, -10°C to +40°C.
- f. One (1) Magnetic Dry Film Thickness Gage, Type 2 (fixed probe), with a digital readout display capable of measuring 0µm to 1500µm in 1µm increments.

4. Atmospheric Conditions

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No surface preparation (cleaning) or painting shall be performed unless all of the following conditions are met.

- a. The receiving surface is dry.
- b. The receiving surface and ambient air temperature shall be as recommended by the paint manufacturer, except that in no case shall cleaning or painting work be performed when the surface and ambient temperatures are less than 1.5°C or greater than 38°C.
- c. With the paint materials specified in this specification, there will be no restriction for humidity or for dew point temperature differential. However, the receiving surface must be dry.

5. **Mixing Paint**

All paint shall be thoroughly mixed with mechanical mixers in accordance with the manufacturer's recommendations. After mixing the bottom, the container shall have no unmixed pigment.

6. **Solvent Restrictions**

No thinning of paint by use of solvents or other material shall be allowed, and painters shall not carry or in any other way have access to containers of solvent when painting. Unauthorized use of solvents shall result in recleaning and repainting of the surface in accordance with this specification, at the contractor's expense.

7. **Visual Inspection**

Prior to paint application, a visual inspection shall be made by the Engineer to insure surfaces are ready for coating application. Surfaces shall be free of all previous coatings and other surface contaminants, including potential resins following chemical removal which may interfere with adhesion. This would include any areas which are visually obvious. A hands-on inspection for chemical residue and previous coating remnants is sufficient on areas not readily visible. Remaining blotches or streaks of lead-based or non-lead based primers may remain, as long as they are not loose, flaky or resemble a complete film. Allowable remnants would appear as slight overspray or freckles.

8. **Paint Application**

Paint coatings may be applied using brush or roller.

Stripe painting with primer shall be required on all welds, rivets, bolts, nuts and edges of plates, angles, lattice pieces or other shapes, and corners and crevices before the prime

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coat is applied. All stripe painting will be performed using a brush only. No other method of paint application will be allowed for stripe painting.

Complete protection against paint spatter, spillage, overspray, wind blown paint or similar releases of paint shall be provided. Covers, tarps, mesh and similar materials shall be placed around the work area to protect public and private property, pedestrian, vehicular, marine or other traffic, all portions of the bridge, highway appurtenances, waterways and similar surrounding areas and property, upon, beneath or adjacent to the structure.

9. Number of Coats

Engineer approved cleaned surfaces shall be painted with one coat of primer. After the primer has dried, all surfaces shall be painted with two (2) full coats of paint, the intermediate and the finish coat.

10. Film Thickness

Individual coats shall be applied in sufficient quantity so that the following minimum dry film thicknesses (DFT) result unless a different film thickness is required by the plans, manufacturer, or noted on the Approved List:

<u>Primer</u>	<u>Intermediate</u>	<u>Finish</u>
100 µm	100 µm	75µm

Note: The wet film thickness required to obtain the required DFT is dependent upon the percent solids by volume of the paint. This will vary somewhat for each system.

DFT determinations will be made by the Engineer or Inspector in accordance with SSPC-PA2, Paint Application Specification No. 2, Measurement of Dry Paint Thickness with Magnetic Gages.

11. Painting Schedule

Primer shall be applied within twelve (12) hours of the cleaning operation and before rusting occurs to the cleaned surface. Failure to apply primer to a cleaned surface within twelve (12) hours shall result in recleaning the surface in accordance with this specification at no additional cost to the State.

The intermediate paint shall be applied to the receiving surface within the manufacturer's recommended schedule for recoating.

The finish paint shall be applied to the receiving surface within the manufacturer's

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recommended schedule for recoating.

12. Recoating and Overcoating

Areas failing to meet the specified minimum dry film thickness shall be overcoated with the same type of paint to produce at least the total dry film thickness required. Paint applied containing thinners, paint applied to contaminated surfaces, and paint applied contrary to this specification shall result in recleaning and repainting the surface. The work of recleaning, repainting or overcoating, if required, shall be done by the contractor to the satisfaction of the Engineer at no additional cost to the State.

METHOD OF MEASUREMENT:

This work will be measured as a lump sum for the work required in this specification.

BASIS OF PAYMENT:

The lump sum price bid shall include the cost of all labor, materials and equipment necessary to complete the work. The cost of providing protection against damage during paint application shall be included in the price bid. Progress payments will be made based on the percentage of the structure cleaned and primed and painted two full coats of paint in accordance with this specification.

Note: "nn" denotes serialized pay item. See SS 101-53.