ITEM 91573.9200 M - FIELD CLEANING AND PAINTING - TOTAL REMOVAL WITH WARRANTY
ITEM 91573.9201 M - FIELD CLEANING AND PAINTING - TOTAL REMOVAL WITH WARRANTY (SPRAY PROHIBITED)

DESCRIPTION

This work shall consist of pressure washing, abrasive blast cleaning to remove all paint, rust, millscale, and other corrosion producing contaminants, and painting structural steel surfaces with three (3) full coats of new paint, where indicated by the Contract Documents. A warranty period that will start at the completion of the painting work, and that will extend until April of the calendar year following the calendar year in which painting was completed, will be included.

MATERIALS

1. **Paint and Thinner.** Paint and thinner shall be selected from the Department's Approved List, "Moisture-Curing Urethane Paint Systems". No substitutions will be allowed.

   The shelf life of all paint shall be a maximum of 12 months from the date of manufacture. All acceptances of paint shall expire within 12 months from the date of manufacture.

   All paint (primer, intermediate, and finish coats) used on any one structure shall be produced by the same manufacturer.

   Each single coat of paint shall be a color different from the others. The color of the primer and the intermediate paints shall be at the Contractor's option, and shall provide contrast with the underlying substrate. The color of the finish paint shall be as specified in the Contract Documents, or as ordered by the Engineer.

2. **Water for Washing**. Water for pressure washing shall be clean, fresh water. Cleaners, detergents, or other additives will not be allowed. Salt water will not be allowed.

3. **Abrasive for Blast Cleaning.** Abrasive material for blast cleaning may be selected by the contractor. All abrasive shall be free of lead and corrosion producing contaminants. The abrasive selected for use shall be designed to leave a profile of approximately 40 µm to 65 µm in a dense, uniform pattern of depressions and ridges. Silica sand and other types of non-metallic abrasive containing more than 1.0% crystalline (free) silica, by weight, will not be allowed.

4. **Basis of Acceptance.** All primer, intermediate, and finish paint, and thinner material, shall be accepted on the basis of the manufacturer's name, and the product name, appearing on the Department's Approved List.

   Water for washing and abrasive material for blast cleaning shall be approved by the Engineer.

   Only paint and thinner arriving at the work site in new, unopened containers shall be used.

Containers of paint shall be labeled with the manufacturer's name, product name, batch number, and date of manufacture. Paint that has not been used within 12 months from the date of manufacture shall be removed from the work site.

CONSTRUCTION DETAILS

All structural steel members, railings, downspouts, and other miscellaneous steel items as indicated by the Contract Documents shall be cleaned of all paint, rust, millscale, and corrosion producing products and then painted with three (3) full coats of new paint, the primer coat, the intermediate coat, and the finish coat.

1. **Surface Preparation.** Steel surfaces shall be prepared for painting by a combination of pressure washing and abrasive blast cleaning.

   Pressure washing to remove dirt and debris shall be performed first. Abrasive blast cleaning to remove all paint, rust, and millscale shall be performed second.

   a. Pressure Washing. All steel surfaces to be painted shall first be pressure washed, using equipment operating at a minimum pressure of 21.5 MPa, and with a minimum flow of 9.5 L/minute. The pressure washer shall be operated at a distance of 150 mm to 300 mm from the steel surface. Water may be heated. After washing, the surface shall be allowed to dry before subsequent abrasive blast cleaning work is done.

      Pressure washing shall be performed to remove dirt, dust, animal waste, and water soluble contaminants. Clean, fresh water shall be used with sufficient pressure to remove surface contaminants and loose material. Hand scraping and hand scrubbing with a stiff bristled brush will be required as necessary to remove debris. When necessary, oil and grease shall be removed by hand-wiping, using solvents.

      After pressure washing, the cleaned surfaces shall be visually free of dust, dirt, oil and grease, animal waste, salts, and other debris.

      Pressure washing will only be allowed when ambient air temperatures are greater than 4.5°C and rising. In no case shall pressure washing be performed when in the opinion of the Engineer spent wastewater will freeze on roadway or bridge surfaces, or in any other way create a hazardous situation.

      During washing operations, a containment shall be suspended around and beneath the work area to contain all paint chips, corrosion residue, and other solid particles that become

dislodged by pressure washing (see *Note*[1]). All such solid residue shall be contained, collected, and allowed to air dry for treatment and disposal as hazardous paint removal waste under Item 571.01 M, as directed by the Engineer. The containment provided shall also prevent all spray and residue from falling on or interfering with traffic, pedestrians, or surrounding property, above or below the structure. Extreme care shall be exercised to ensure that vehicles, pedestrians, and property are not exposed to the cleaning process.

All structures over water courses shall be washed during the seasonal periods indicated in the Contract Documents. If no schedule is provided, washing shall occur only when adequate flow in the stream exists to dilute possible contaminants. Operations shall be sequenced so as to clean structures over small bodies of water or small streams in the spring of the year, or in a period when flows are greatest. Streams categorized by the Department of Environmental Conservation (DEC) as "CT(s)", i.e. trout spawning, shall be washed prior to July 1 and bridges located at DEC yearling trout stocking sites shall not be washed during April. When washing operations are performed on bridges over a public water supply, e.g., reservoir, or on bridges in the watershed area of New York City water supply, the spent washwater shall be diverted, or collected, and disposed of on the adjoining land mass, at a location away from the waters edge.

To minimize contamination of the washed surfaces, subsequent cleaning, priming and painting work shall be performed within 14 calendar days of the completion of washing work. If more than 14 days pass by or if the steel surfaces become dirty, they shall be rewashed in accordance with this specification, at no additional cost.

b. Commercial Blast Cleaning

All surfaces shall have all paint, rust and rust scale, mill scale, and other corrosion producing contaminants removed by abrasive blast cleaning to bare metal in accordance with SSPC-SP 6, No. 6, Commercial Blast Cleaning.

The surface of the area blast cleaned in any one day shall be no greater than the surface area of steel that can be prime coated in the same working day.

All equipment and compressors used in the cleaning operation shall be equipped with all necessary filters and traps to prevent moisture, oil, and other contaminants from being deposited on clean surfaces.

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[1] ***Note:*** *The containment for pressure washing is intended to capture solid paint chips and other solid debris that may become dislodged form washing operations. The containment may be constructed of water permeable or water impermeable materials. Spent washwater will not require collection and will be allowed to fall to the underlying road, ground, or waterway, providing the other requirements of this specification are met. The exception for the collection of spent washwater will be for structures over a public water supply. When a bridge crosses a public water supply the spent washwater must be diverted, or collected, and disposed of on the adjoining land mass, at a location away from the waters edge.*

If recyclable abrasive are used they shall be cleaned of all paint, chips, rust, millscale and other foreign material after each use, and prior to reuse. All equipment used for cleaning abrasive shall be specifically designed for this purpose, and approved by the Engineer.

Special attention shall be given to the edges of beam flanges, angles and plates, bearings, rivets, the heads of nuts and bolts, and similar surfaces that are marginally accessible and difficult to clean. These surfaces are often difficult to access, and are labor intensive and hard to clean. To remove heavy deposits of rust and scale, hand pounding using a hammer, or power tool cleaning using a needle gun or de-scaler may be necessary before abrasive blast cleaning work begins.

All fin, tears, slivers, burred and sharp edges that are present or occur during the blasting operation shall be removed by grinding, and then the area shall be reblasted to provide the required 40 µm to 65 µm deep anchor profile.

Throughout abrasive blast cleaning work, care shall be taken to protect newly painted surfaces from the cleaning operations. Tarps, covers, or other devices approved by the Engineer shall be used to protect new paint from damage. Damaged paint shall be thoroughly wire brushed or if visible damage occurs, reblasted to the required condition, and then repainted. All repair to damaged paint surfaces shall be approved by the Engineer.

After cleaning operations are completed, all residue generated by the cleaning work shall be removed by vacuuming using HEPA filtered vacuums. A HEPA filter shall be defined as a filter that is at least 99.97% efficient for particles that are 0.3 µm in diameter, or larger.

Corroded and deteriorated surfaces that have been cleaned to bare metal by abrasive blasting shall be accepted by visual comparison to a project prepared standard(s) for each structure. The contractor shall prepare a project standard by abrasive blast cleaning a representative area on the structure that is being prepared for painting. The prepared standard shall generally conform to SSPC VIS 1-89, "Visual Standard For Abrasive Blast Cleaned Steel," Pictorial Standard B SP 6, C SP 6, and D SP 6, as applicable, and shall be approved by the Engineer before the start of general cleaning work. At least one standard shall be prepared for each structure that is being specified for cleaning. More than one 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 work 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.

2. **Painting.** Painting shall consist of striping and then applying three full coats of new paint to all surfaces cleaned to bare metal. The first full coat shall be primer, followed by the application of a full coat of intermediate paint, and a full coat of finish paint, to all steel surfaces designated to be painted.

a. Material Storage. Paint in storage shall be protected from damage and maintained between 4.5°C and 29.5°C.

b. Specifications and Inspection Equipment. Prior to the start of and throughout the duration of work the contractor shall supply the Engineer with the following specifications and equipment.. *No work shall begin until these materials have been delivered to, and accepted by the Engineer.*

1. One bound copy of the Steel Structures Painting Council surface preparation specification, SSPC-SP 6 - Commercial Blast Cleaning.

2. One bound each of the Steel Structures Painting Council pictorial standards, SSPC-VIS 1-89, Visual Standard For Abrasive Blast Cleaned Steel.

3. One bound copy of the Steel Structures Painting Council method SSPC-PA2, Paint Application Specification No. 2 - Measurement of Dry Film Thickness With Magnetic Gages.

4. One Air Thermometer, pocket type, -10°C to +40°C.

5. One Surface Thermometer, -10°C to +40°C.

6. One Magnetic Dry Film Thickness Gage, Type 2 (fixed probe), with a digital readout display capable of measuring 1 µm to 1500 µm in 1 µm increments.

7. Two Wet Film Thickness Gages, Prong Type, capable of measuring 25 µm to 125 µm in 25 µm increments.

c. Atmospheric Conditions. No paint shall be applied when the receiving surface and ambient temperatures are less than 1.5°C or greater than 38°C. No paint shall be applied unless the receiving surface is absolutely dry, but there will be no restriction for humidity or dew point - temperature differential..

In general, no paint shall be applied in the months of December, January, February, or March. If the contractor requests approval to apply paint in winter months, and if in the Engineer's opinion satisfactory results can be achieved, then the substrate shall be enclosed, painted under cover, and protected from the surrounding air. The interior of the enclosure shall be heated and the steel painted when the surface temperature is 10°C or greater. Direct application of heat to the steel surface will not be allowed. The painted steel shall remain enclosed and heated for a minimum of eight hours, or until the applied coating is dry, whichever is longer. No additional payment will be made for the cost of enclosing, heating and protecting paint that has been applied in conditions of cool weather.

When painting inside an enclosure adequate mechanical ventilation shall be supplied to meet OSHA regulations for worker exposure to solvents, fumes, lead and other provisions. When mechanical ventilation is provided, filtration of the exit air will not be required. No additional payment will be made for the cost of ventilation.

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

e. Solvents and Thinners. Paint may be thinned if recommended by the manufacturer and only if approved by the Engineer. Only approved thinner shall be used and added up to a maximum of 60 ml/L.

Thinning shall be performed by pouring one-half of the thoroughly mixed paint into a empty, clean container. The required thinner is then added to one of the half-size portions, and the two portions are remixed to obtain a homogenous mixture.

The paints specified for this work have a limited pot life because of their reaction with the moisture in the atmosphere. The paint will gel when it nears the end of its pot life. Thinning to reduce the viscosity of gelled paint will not be allowed. The pot life of this paint can be extended by covering open containers to reduce exposure to moisture, and by keeping containers of paint cool.

Unauthorized use of solvents and thinners shall result in recleaning and repainting of the surface in accordance with this specification, at the contractors expense.

f. Paint Application. No painting shall begin until cleaned surfaces have been inspected and approved by the Engineer. The contractor shall provide safe, stable, and direct access to the work area for the Engineer's inspection.

Paint may be applied using brush, roller or spray methods, unless spray painting is prohibited by the Contract Documents. When spray painting is prohibited, paint shall be applied using

brushes or rollers only. All paint shall be applied so as to produce a uniform, even coating free of runs, sags, drips, ridges or other defects.

To ensure adequate paint film thickness, stripe painting using primer shall be required on the following surfaces: all welds, rivets, bolts, nuts, and edges of plates, angles, bearings, lattice pieces or other shapes, and corners and crevices. To provide contrast, paint for stripe coating shall be a color that is different than the color of the receiving surface. The stripe coat may be applied before or after the first full coat of primer is applied. Such striping shall extend a minimum of 25 mm from the edge. To prevent removal of the stripe paint by the following coat of paint, the stripe coat shall be allowed to set-to-touch before the next paint coat is applied. However, on bare metal surfaces the stripe coat shall not be permitted to dry for a period long enough to allow rusting of the unprimed steel.

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.

g. Paint Film Thickness. Paint shall be applied in such a quantity so as to produce the minimum specified dry film thickness for the type of paint material being used (see Approved List - Moisture-Curing Urethane Paint Systems).

The dry film thickness shall be determined in accordance with SSPC-PA 2, Paint Application Specification No. 2 - Measurement of Dry Film Thickness with Magnetic Gages, using a Type 2 fixed probe magnetic gages, equipped with a digital readout display.

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.

h. Painting Schedule. Primer shall be applied to bare metal surfaces within twelve hours of the cleaning operation and before visible rust appears on the cleaned surface. Failure to apply primer to a bare metal surface within twelve hours or before the appearance of visible rust shall result in recleaning the surface in accordance with this specification, at no additional cost.

All coats of paint shall be overcoated with the subsequent coat in accordance with the time period specified for the paint material that is being used (see Approved List - Moisture-Curing Urethane Paint Systems). To prevent intercoat adhesion failure, recoating with the next coat of primer, intermediate, and finish paint, must be performed within the maximum specified time period, or 14 days, whichever is shorter. If the contractor fails to recoat within the specified time period the surface to be painted shall be recleaned by abrasive blast

cleaning to bare metal, and repainted in accordance with this specification, at the contractors expense.

METHOD OF MEASUREMENT

Payment shall be made at the lump sum price bid.

The completed painting work will be inspected during and following installation to determine conformance with this specification. In addition, the painting work will be inspected following a warranty period that will start at the completion of the painting and extend until April of the calendar year following the calendar year in which painting was completed. Notwithstanding the foregoing provisions of this section, if this Contract is terminated in accordance with §105-07 of the Standard Specifications, the project warranties with respect to all work performed under this Contract by the Contractor prior to such termination shall be deemed to commence on the day immediately preceding the effective date of such termination.

For the warranty period, the Contractor shall provide a Faithful Performance Bond and Labor and Material Bond. These bonds shall conform to the requirements of §103-04, shall be for the full value of the items which constitute the warranty work, and shall be in effect until the final inspection and acceptance of the warranty work. The warranty shall consist of all materials, labor, and equipment necessary to correct deficiencies in the paint work, as stated in this section, including but not limited to surface cleaning and preparation, repainting, worker protection, environmental protection, waste removal and disposal, maintenance and protection of traffic, and all other efforts necessary to complete said work in compliance with the requirements of the Contract, or as directed by the Engineer. All costs for the Faithful Performance Bond and Labor and Material Bond shall be included in the bid price for this work.

The warranty period shall not delay acceptance of the entire contract and final payment if the Contractor provides the Department with the required Bonds.

Any Statute of Limitations or Notice provision relative to claims other than warranty work shall commence on the date of the check for the final estimate for the work that is issued. Any Statute of Limitations or Notice provision relative to project warranty work claims shall commence on the date of acceptance of the project warranty work.

The Contractor shall guarantee and warrant any work which includes the performance of a subcontractor and/or supplier. Upon receipt from the Department of a notice of rejection of any of the work, to satisfy any warranty work performed by a subcontractor or supplier, the Contractor shall be responsible for enforcing or performing any such warranty or guarantee. Until the termination of the warranty period, the cost of any labor, equipment, materials, including re-engineering or rework, supervision or overhead shall be the responsibility of the Contractor, and the Contractor shall be required to replace or repair defective materials or workmanship furnished by subcontractors or suppliers at no additional cost to the State. The Department shall inspect all work covered by this warranty not later than April 30 of the calendar year following the calendar year in which painting of the structure was completed.

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Contractor's warranties in respect to the warranty work are as follows: The Contractor warrants to the Department that, at the conclusion of the warranty period, the project shall be fit for its intended purposes, that the work shall be free of defects as listed in this section, that materials, supplies, and equipment furnished under this Contract shall be of good quality, that all work has been performed in a workmanlike manner, and that all work shall be free from defects (both latent and patent) and that all work shall meet all of the requirements of this Contract.

The following are the conditions which the Department shall consider defective in the warranty work:

1. The occurrence of visible rust, blisters, or peeling paint.

2. The discovery of paint applied over dirt, debris, paint waste and blasting debris, or rust products not removed during cleaning.

3. Incomplete coating application, or coating thickness less than the specified minimums.

4. Damage to the coating system caused by the contractor.

The Department will notify the Contractor whether the work covered by the warranty is acceptable. If the work covered by the warranty is found to be defective, the Department's Engineer-In-Charge and Regional Structures Engineer or their designees, and representatives of the Contractor, shall meet within 10 work days of such notice to inspect the defective work. The Department has ultimate authority to decide whether the work is to be rejected.

The Contractor shall correct work rejected by the Department for any of the defective conditions stated in this specification. The Contractor shall bear any and all costs associated with correcting such rejected work, including any independent testing necessary to resolve disputes.

All repair or replacement work necessitated by the above conditions shall be performed in accordance with this specification, or as directed by the Engineer, and all provisions of the Standard Specifications, and §107-09 (Damage). Repair work shall commence within 60 calendar days of notification by the Department, and shall be completed no later than 150 calendar days of said notification.

If the Contractor does not use his best efforts to proceed to complete said corrective work within the time agreed to, or should the Contractor and the Department fail to reach an agreement as to timing or manner of repair within 10 days of the meeting to inspect the defective work, the Department, after notice to the Contractor, shall request the surety pursuant to the terms of the Faithful Performance Bond to perform such corrective work. If the surety fails to do so, the Department shall have the work performed by its forces or another contractor and such costs shall be the responsibility of the Contractor and its surety.

The project warranties of this section are in addition to the warranties and guarantees of §104-08 of the Standard Specifications.

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In the event the Contractor disagrees with the basis of the Department's rejection of work covered by the warranty, the Contractor shall follow the process outlined in §105-14 Dispute Resolution and Disputed Work Provisions. If the warranty period extends beyond final payment for the work phase of the Contract, the Department cannot make any additional payments to the Contractor, and any payment provisions of §105-14 are not applicable. However the parties shall use the process contained therein to resolve issues regarding rejected work. Notwithstanding the provisions of §107-06 Insurance, and §103-04 Bonds, the Contractor's insurance and bonds shall remain in effect throughout the duration of any subsequent corrective work.

All insurance policies that are required by §107-06 shall be reinstated prior to the start of corrective work, with all required certificates provided to the Commissioner prior to the start of said work and termination upon acceptance by the Department of the corrective work.

Upon completion of the inspection of the corrective work, or after satisfactory completion of any necessary corrections, the Engineer will notify the contractor or surety in writing within 10 calendar days, of release from further responsibility, under the Faithful Performance Bond.

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 pressure washing and paint application shall be included in the bid price. Payment for the containment and disposal of dust and paint waste generated by surface preparation work will be paid for under other items, however, payment for the accumulation of paint removal waste for deposition in the paint removal containers shall be included in this item. Progress payments will be made based on the percentage of the structure cleaned and primed and painted with two full coats of paint in accordance with this specification.

Payment will be made under:

Item No.	Item	Pay Unit
91573.9200 nn M	Field Cleaning and Painting - Total Removal With Warranty	Lump Sum (for each structure)
91573.9201 nn M	Field Cleaning and Painting - Total Removal With Warranty (Spray Prohibited)	Lump Sum (for each structure)

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