

**PAINTING EXTERIOR METAL SURFACES**

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**Part 1 General**

**1.1 RELATED SECTIONS**

- .1 City of Winnipeg CWSCS.

**1.2 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM D610-01, Test Method for Evaluating Degree of Rusting on Painted Steel Surfaces.
  - .2 ASTM D2369-03, Test Method for Volatile Content of Coatings.
  - .3 ASTM D2832-92(R1999), Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.
  - .4 ASTM D5326-94a(2002), MPI-9 Test Method for Color Development in Tinted Latex Paints.
- .2 Master Painters' Institute (MPI), Exterior Structural Steel and Metal Fabrications, 03.
  - .1 EXT 5.1, Alkyd.
  - .2 EXT 5.1G, Zinc Rich/Aliphatic Polyurethane.
  - .3 EXT 5.4, Aluminium.
- .3 Environmental Choice Program (ECP).
  - .1 CCD-048-95, Recycled Water-borne Surface Coatings.
  - .2 CCD-047a-98, Paints - Surface Coatings.
- .4 Federal Standard (FS).
  - .1 FS-595B-89, Paint Colours.
- .5 Steel Structures Painting Council (SSPC).
  - .1 SSPC-SP-1-82, Solvent Cleaning.
  - .2 SSPC-SP-2-00, Hand Tool Cleaning.
  - .3 SSPC-SP-3-00, Power Tool Cleaning.
  - .4 SSPC-SP-6/NACE No. 3-00, Commercial Blast Cleaning.
  - .5 SSPC-SP-7/NACE No 4-00, Brush-off Blast Cleaning.
  - .6 SSPC-Vis-1-89, Visual Standard for Abrasive Blast Cleaned Steel (Standard Reference Photographs) Editorial Changes September 1, 2000 (Steel Structures Painting Manual, Chapter 2 - Surface Preparation Specs.).
  - .7 SSPC-SP-10/NACE No. 2-00, Near White Blast Cleaning.
  - .8 SSPC-PA-02, Measurement of Dry Coat Thickness with Magnetic Gauges.
  - .9 SSPC Good Painting Practices, Volume 1, 4th Edition.

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**1.3 SUBMITTALS**

- .1 Product Data.
  - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section CWSCS.
- .2 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.

**1.4 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Disposal.
- .2 Divert unused coating materials from landfill through disposal at a special wastes depot.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Paint.
  - .1 Primer: Intergard 251 or approved equal in accordance with B6.
  - .2 Finish coat: Intergard 475 or approved equal in accordance with B6.
  - .3 Sand for sandblasting: to SSPC (Steel Structures Painting Council).

**Part 3 Execution**

**3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

**3.2 SITE EXAMINATION**

- .1 Precaution should be taken when removing loose and rusted existing paint from metal surfaces.
- .2 Testing of paint has been carried out to determine presence of lead based paint and existing paint shall be considered lead based.

**3.3 PREPARATION**

- .1 New metal surfaces.
  - .1 Clean surfaces of new metal to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and foreign substances in accordance with the following:

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- .1 Commercial blast cleaning: SSPC-SP-6 (Steel Structures Painting Council).
- .2 Metal surfaces to be repainted.
  - .1 Clean surfaces by removing loose, cracked, brittle or non-adherent paint, rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with following.
    - .1 Commercial blast cleaning: SSPC-SP-6. Existing paint has been tested. Concentrations of lead are high enough to be considered lead-based. Abrasive blasting shall be completed within hoarding and in accordance with Workplace Health and Safety Regulations.
    - .2 Commercial blast clean rusted and bare metal surfaces where existing paint system has failed.
    - .3 Brush-off blast clean remaining metal surfaces to be painted.
    - .4 Scrape edges of old paint back to sound material where remaining paint is thick and sound, feather exposed edges.
  - .3 Compressed air to be free of water and oil before reaching nozzle.
  - .4 Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, by blowing with clean dry compressed air, or by vacuum cleaning.
  - .5 Do not apply paint until prepared surfaces have been accepted by Contract Administrator.
  - .6 Prior to commencing paint application the degree of cleanliness of surfaces to be in accordance with SSPC-SP-6.
  - .7 Protection of surfaces.
    - .1 Protect surfaces not to be painted and if damaged, clean and restore such surfaces as directed by Contract Administrator.
    - .2 Apply primer, paint, or pretreatment after surface has been cleaned and before deterioration of surface occurs.
    - .3 Clean surfaces again if rusting occurs after completion of surface preparation.
    - .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats of paint. Remove contaminants from surface and apply paint immediately.
    - .5 Protect cleaned and freshly painted surfaces from dust.
  - .8 Mixing paint.
    - .1 In accordance with manufacturer's recommendations.
  - .9 Number of paint coats.
    - .1 New metal surfaces.
      - .1 Field: one coat to minimum dry film thickness of 60 microns.

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- .2 Repainting existing metal surfaces.
  - .1 One primer coat to minimum dry film thickness of 60 microns to bare and commercial sand blasted areas.
- .3 Finish Coat
  - .1 One coat to a minimum dry film thickness of 200 microns.

**3.4 APPLICATION**

- .1 Apply coating in accordance with manufacturer's recommendations.
- .2 Where surface to be painted is not under cover, do not apply paint when:
  - .1 Air temperature is below 5 degrees C or when temperature is expected to drop to 0 degrees C before paint has dried.
  - .2 Temperature of surface is over 40 degrees C unless paint is specifically formulated for application at high temperatures.
  - .3 Fog or mist occur at site; it is raining or snowing; there is danger of rain or snow; relative humidity is above 85%.
  - .4 Surface to be painted is wet, damp or frosted.
  - .5 Previous coat is not dry.
- .3 Provide cover when paint must be applied in damp or cold weather. Protect, shelter, or heat surface and surrounding air to comply with temperature and humidity conditions specified in 3.2.4. Protect until paint is dry or until weather conditions are suitable. Minimum temperature during application and first 48 hours after application shall be 10°C.
- .4 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.
- .5 Apply each coat of paint as continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Brush application.
  - .1 Work paint into cracks, crevices and corners and paint surfaces not accessible to brushes by spray, daubers or sheepskins.
  - .2 Brush out runs and sags.
  - .3 Remove runs, sags and brush marks from finished work and repaint.
- .7 Spray application.
  - .1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
  - .2 Provide traps or separators to remove oil and water from compressed air and drain periodically during operations.
  - .3 Keep paint ingredients properly mixed in spray pots or containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

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- .4 Apply paint in uniform layer, with overlapping at edges of spray pattern.
- .5 Brush out immediately runs and sags.
- .6 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray. In areas not accessible to spray gun, use brushes, daubers or sheepskins.
- .7 Remove runs, sags and brush marks from finished work and repaint.
- .8 Shop painting.
  - .1 Do shop painting after fabrication and before damage to surface occurs from weather or other exposure.
  - .2 Spray paint contact surfaces of field assembled, bolted, friction type joints with primer coat only. Do not brush primer after spraying.
  - .3 Do not paint metal surfaces which are to be embedded in concrete.
  - .4 Paint metal surfaces to be in contact with wood with either full paint coats specified or three shop coats of specified primer.
  - .5 Do not paint metal within 50 mm of edge to be welded. Give unprotected steel one coat of boiled linseed oil or other or approved primer protective coating after shop fabrication is completed.
  - .6 Remove weld spatter before painting. Remove weld slag and flux by methods as specified in paragraph 3.1.2 Metal Surfaces to be Repainted.
  - .7 Protect machine finished or similar surfaces that are not to be painted but that do require protection, with coating of rust inhibitive petroleum, molybdenum disulphide, or other coating approved by Contract Administrator.
  - .8 Copy previous erection marks and weight marks on areas that have been shop painted.
- .9 Field painting.
  - .1 Paint steel structures as soon as practical after erection.
  - .2 Touch up metal which has been shop coated with same type of paint and to same thickness as shop coat. This touch-up to include cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas.
  - .3 Field paint surfaces (other than joint contact surfaces) which are accessible before erection but which are not to be accessible after erection.
  - .4 Do not apply final coat of paint until concrete work is completed, except as directed by Contract Administrator. If concreting or other operations damage paint, clean and repaint damaged area. Remove concrete spatter and droppings before paint is applied.
  - .5 Where painting does not meet with requirements of specifications, and when so directed by Contract Administrator remove defective paint, thoroughly clean affected surfaces and repaint in accordance with these specifications.
- .10 Handling painted metal.
  - .1 Do not handle painted metal until paint has dried, except for necessary handling for painting or stacking for drying.
  - .2 Scrape off and touch up paint which is damaged in handling, with same number of coats and kinds of paint as were previously applied to metal.

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**3.5 FIELD QUALITY CONTROL**

- .1 Site Tests, Inspections.
  - .1 Upon completion of the painting procedures test for dry film reading and evaluate the results as per SSPC PA 2.

**3.6 CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**