Part 1 General

1.1 REFERENCES

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.2 Steel Structures Painting Council (SSPC)

.1 SSPC Specification Title

SP1	Solvent Cleaning
SP2	Hand Tool Cleaning
SP3	Power Tool Cleaning
SP6	Commercial Blast Cleaning
SP7	Brush-off Blast Cleaning
SPI2/NACE No.5	High Pressure Water Jetting
VIS.1	Pictorial Surface Preparation Standards for Painting Steel Structures
VIS.2	Visual Standard No. 2 Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces
PA.1	Paint Application Specification No. 1
PA.2	Measurement of Dry Paint Thickness with Magnetic Gauges

.3 American Society for Testing and Materials (ASTM)

.1 ASTM Specification D1186: Measurement of Dry Film Thickness of Non-magnetic Organic Coatings Applied on a Magnetic Base

.2 ASTM Specification D2200: Pictorial Surface Preparation Standards for Painting Steel Surfaces

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for paint and coating products and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.3 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Provide and maintain dry, temperature controlled, secure storage.

.2 Store painting materials and supplies away from heat generating devices.

.3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.

.4 Fire Safety Requirements:

.1 Supply one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.

.2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

1.4 SITE CONDITIONS

.1 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.

.2 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.

1.5 QUALITY ASSURANCE

.1 Retain purchase orders, invoices and other documents to prove that all materials utilized in this contract meet the requirements of the specifications. Produce documents when requested by the Departmental Representative.

.2 The surface preparation methods as described by the Steel Structures Painting Council (SSPC) are the minimum preparation specifications for each system. Proper surface preparation is essential.

.3 The materials approved in this specification are designed for application by professionally trained personnel, using proper equipment under controlled conditions, and in accordance with SSPC PA.1 Paint Application Spec. No. 1. Before using any of the products, the manufacturer’s product data sheets, application procedures and safety precautions must be read and thoroughly understood.

.4 The surface preparation, primer and finish coats for relatively severe moist salt laden atmosphere for this Work require the cleaning, preparation and painting systems as summarized in below.

.5 All work and materials applied under this specification shall be subject to inspection by the Departmental Representative or his designated representative.

Part 2 Products

2.1 MATERIALS

.1 Supply paint materials for paint systems from single manufacturer.

.2 Conform to latest MPI requirements for painting work including preparation and priming.

.3 Materials in accordance with MPI - Architectural Painting Specification Manual.

.4 Colours:

.1 Submit proposed Colour Schedule to Departmental Representative for review.

.2 Pipelines to be painted off white similar in colour to existing.

.5 Mixing and tinting:

.1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written recommendations. Obtain written approval from Departmental Representative for tinting of painting materials.

.2 Use and add thinner in accordance with paint manufacturer's recommendations.

.1 Do not use kerosene or similar organic solvents to thin water-based paints.

.3 Thin paint for spraying in accordance with paint manufacturer's written recommendations.

.4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.2 Exterior painting:

.1 Surface Preparation: SSPC SP2or SP3 hand/power tool cleaning.

.1 Primer: 1 coat 0.5 mils Polyvinyl-Butyral Wash Primer.

.2 Finish Coat: 1 coat 3 mils low temp cure hi-build epoxy.

.2 Steel pipelines (system 2):

.1 Surface Preparation: SSPC SP2or SP3 hand/power tool cleaning.

.2 Primer: 1 coat 4 mils low temp cure aluminum epoxy mastic.

.3 Finish Coat: 2 coats 8 mils low temp cure hi-build epoxy.

2.3 Execution

2.4 GENERAL

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.

.2 Typical contaminants that shall be removed during surface preparation are moisture, oil, grease, chloride salts, loose paint, rust, loose mill scale, corrosion products and dirt. Tightly adhered or intact mill scale does not have to be removed unless SP6 blast cleaning is specified.

.3 Where high pressure water jetting (hydro blasting) is specified, all surfaces to be re-coated shall be cleaned in accordance with SSPC-SP 12/NACE NO. 5 STANDARDS to WJ-2/SC-2 cleanliness. The method of high-pressure (HP) water jetting (WJ) ultimately selected by the Contractor will be based on the Contractor's confidence in the capabilities of the equipment and its components. A minimum of 34,475 kPa to 137,900 kPa shall be used, unless otherwise authorized in writing.

.4 The WJ-2 surface shall be cleaned to a matte finish with all loose paint and rust blisters removed. The nozzle may include a rotating head and must be held a minimum of 50 mm to a maximum of 254 mm from the surface being cleaned.

.5 All dirt, stones and other debris must be cleaned out of the skid beams of the buildings, from the bases of the horizontal and vertical tanks and from the steel bases of the pipe supports.

.6 As a general rule, the following SSPC specifications shall be applied to surfaces being prepared for painting:

SSPC SPECIFICATION	DESCRIPTION
SP1 - Solvent Cleaning	Removal of oil, grease, dirt, soil, salts and contaminants by cleaning with solvent, vapour, alkali, emulsion or steam.
SP2 - Hand Tool Cleaning	Removal of loose rust, loose mill scale and loose paint to the degree specified, by hand chipping, scraping and wire brushing.
SP3 - Power Tool Cleaning	Removal of loose rust, loose mill scale and loose paint to the degree specified, by power tool chipping, descaling, sanding, wire brushing and grinding.
SP6 - Commercial Blast Cleaning	Blast clean until at least two-thirds of the surface area is free of all visible residues.
SP7 - Brush-Off Blast Cleaning	Blast clean to remove loose rust, loose mill scale and loose paint to the degree specified, by power tool chipping, descaling, sanding, wire brushing and grinding.
SP12/NACE NO.5 - High Pressure Water Jet Cleaning	Water blast clean to remove all salt, oil, grease, dirt, soil, loose paint scale etc. Water pressure in excess of 5,000 psi is required.

.7 Paint manufacturer to provide minimal allowable remaining surface salt concentrations and make recommendations for methods of verification or testing for salt levels, and cost-effective means of salt removal during the surface preparation phase.

.8 Clean no more surface than can be dried and primed the same day.

.9 Prior to painting, all metal surfaces shall be blown down and free of all surface dust.

.10 Particular attention shall be given to edges, crevices, nuts, bolts, rivets and weld seams.

.11 Tight, inaccessible metal to metal plates, etc. shall be sealed with a compatible joint sealing compound, as approved by the manufacturer.

.12 After cleaning, the steel surfaces shall be primed as soon as possible. If the cleaned steel surfaces become contaminated by flash rust, dirt, grease or oil after the initial cleaning but before the priming paint can be applied, the surfaces shall be re-cleaned to meet the requirements specified for the initial cleaning of the steel. Some light flash rusting is acceptable if cleaning is by water blasting.

.13 Painting shall be carried out only after the surface is clean, dry and free from dust, dirt, oil, grease, peeling or blistering paint, loose rust or loose mill scale. The existing paint film shall be sound and firmly bonded to the substrate and prepared in accordance with this Section.

.14 Piping surfaces:

.1 All piping, valves and fittings shall be cleaned and prepared for painting in accordance with SSPC Surface Preparation Specification SP2 - Hand Tool Cleaning or SP3 - Power Tool Cleaning.

.2 Where severely pitted piping is encountered, the Contractor shall advise the Departmental Representative of the condition of the piping and await further instructions before proceeding with the surface preparation.

2.5 EXAMINATION

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

2.6 PREPARATION

.1 Protection of in-place conditions:

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Departmental Representative.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.2 Surface Preparation:

.1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.

.2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.

.4 Clean and prepare surfaces in accordance with [MPI - Architectural Painting Specification Manual] [MPI - Maintenance Repainting Manual] specific requirements and coating manufacturer's recommendations.

.5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.

.6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

.7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements.

.8 Touch up of shop primers with primer as specified.

2.7 APPLICATION

.1 Painting shall not be carried out:

.1 During a rain if the surface to be painted will be exposed to or is wetted by rain.

.2 When the temperature of the air, product and the steel surface to be painted is lower than 5□C, or when less than 3□C above the dew point, unless approved by the paint manufacturer.

.3 When the relative humidity is greater than 85%, unless approved by the paint manufacturer.

.4 If the atmospheric temperature is expected to drop below 0□C before the paint is dry, unless otherwise recommended by the paint manufacturer.

.5 If agreed upon with the Departmental Representative, and where it is practical to do so, painting may be carried out when the outside temperatures are below the minimum described above, provided that heated shelter conditions are employed in which the paint work is protected from rain, sleet, snow and the temperature of the air and steel substrate, and paint is maintained at not less than the minimum specified above. Open flame heaters shall not be used.

.6 Adequate ventilation shall be supplied in the sheltered areas, so that a buildup of toxic and/or flammable fumes does not occur which would present a fire, explosion or health hazard to the workers.

.7 The shelter conditions shall be maintained during the painting, and for a sufficient length of time after the painting, such that the coatings will have dried or cured sufficiently, that recoating will not produce such deleterious effects as lifting, loss of adhesion, or loss of serviceability.

.8 Information should be obtained from the paint manufacturer concerning the period that his product should be sheltered.

.2 Paint only after prepared surfaces have been accepted by Departmental Representative.

.3 Use method of application approved by Departmental Representative.

.1 Conform to manufacturer's application recommendations.

.4 Apply coats of paint in continuous film of uniform thickness.

.1 Repaint thin spots or bare areas before next coat of paint is applied.

.5 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.6 Sand and dust between coats to remove visible defects.

.7 Mechanical/Electrical Equipment:

.1 Paint all new above ground conduits, piping, hangers and other new mechanical and electrical equipment exposed to match adjacent surfaces, except as indicated.

.2 Do not paint over nameplates.

2.8 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.3 Place paint, primer defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.

END OF SECTION