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- 1 General
- 1.1 **SECTION INCLUDES**
- .1 Labour, Products, equipment and services necessary for painting work in accordance with the Contract Documents.
- 1.2 **REFERENCES**
- .1 Master Painters Institute (MPI), Painting Specification Manual.
- .2 SSPC Steel Structures Painting Council, Standards.
- 1.3 **SUBMITTALS**
- .1 Product data:
- .1 Submit copies of manufacturer's Product data in accordance with Section 01 10 10 indicating:
- .1 Performance criteria, compliance with appropriate reference standard, characteristics, limitations.
- .2 Product transportation, storage, handling and installation requirements.
- .2 Submit listing of manufacturer's Product types, Product codes, and Product names, number of coats, and dry film thicknesses, corresponding to each Painting Schedule code; submit listing minimum of 8 weeks before materials are required.
- .2 Samples:
- .1 Submit following samples in accordance with Section 01 10 10.
- .1 Three 300 x 150 mm draw downs of each colour minimum 4 weeks before paints are required.
- .2 Identify each sample with Contract number and title, colour reference, sheen, date, and name of applicator.
- .3 Certificates:
- .1 Submit certification from paint manufacturer, on company letterhead, indicating each product proposed for use is Manufacturer's premium grade, first line Product.
- .2 Submit certified documentation to confirm each airless spray painter has minimum of 5 years experience on applications of similar complexity and scope.
- .3 Submit certified documentation to confirm each worker has Provincial Tradesman Qualification certificate of proficiency.
- .4 Reports:
- .1 Submit written field inspection and test report results after each inspection.
- .2 Submit Field Quality Control test result reports for alkali content, substrate moisture, and dry film thickness.
- .3 Submit electronic moisture meter manufacturer's specifications including tolerances. Submit record of latest meter calibration to meet manufacturer's recommendations.

1.4 **QUALITY ASSURANCE**

- .1 Finishing work: Perform work to MPI requirements for premium grade.
- .2 Supervision: Have work supervised by a full-time qualified foreperson who has 10 years minimum experience on Contracts of similar complexity and scope.
- .3 Mock-ups:
 - .1 Refer to Section 01 43 00 for additional information regarding mock-ups pertaining to this Section.
 - .2 Construct three 2 m² mock-ups of different Paint Schedule code systems, selected by Consultant, in locations acceptable to Consultant to demonstrate installation workmanship, colour, and hiding power of Products.
 - .3 Obtain Consultant's acceptance in writing before proceeding with the work of this Section.
 - .4 Mock-ups may remain as part of the Work if acceptable to Consultant and will serve as a standard for similar code systems.
 - .5 Repaint over mock-ups which do not form part of the Work.

1.5 **DELIVERY, STORAGE, AND HANDLING**

- .1 Install correct, safe temporary storage for paint, thinner, solvents, and other volatile, corrosive, hazardous, and explosive materials in accordance with requirements of authorities having jurisdiction.
- .2 Post hazard warning signage in areas of storage and mixing. Install and maintain sufficient CO₂ fire extinguishers of minimum 9 kg capacity, accessible in each storage mixing and storage areas.
- .3 Maintain storage enclosures at minimum 10°C ambient temperature and to manufacturer's instructions.

1.6 **SITE CONDITIONS**

- .1 Apply coatings under the following conditions:
 - .1 Exterior coatings (except Latex): 5° C minimum.
 - .2 Exterior latex coatings: 10°C minimum.
 - .3 24 hours minimum after rain, frost, condensation, or dew.
 - .4 When no condensation is possible (unless specifically formulated against condensation).
 - .5 Interior coatings: 7°C minimum.
 - .6 Relative humidity: 85% maximum.
 - .7 Not in direct exposure to sun light.
- .2 Maintain temperature conditions indicated above for 24 hours before, during and 24 hours after painting.
- .3 Install clean plywood sheets to protect floors and walls in storage and mixing areas, from paint drips, spatters, and spills.

- .4 Apply sufficient masking, clean drop cloths, and protective coverings for full protection of work not being painted including, but not limited to, the following:
 - .1 Light fixtures, fire and smoke detectors.
 - .2 Data cabling and data infrastructure.
 - .3 Sprinkler heads.
 - .4 Prepainted diffusers and registers.
 - .5 Prepainted equipment.
 - .6 Fire rating labels and equipment specification plates.
 - .7 Finished surfaces.

1.7 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

- .1 Provide paint products meeting MPI "Green Performance Standard GPS-1-12".

1.8 MAINTENANCE

- .1 Deliver to Owner's place of storage on completion of work, sealed containers of each finish painting material applied, and in each colour. Label each container as for original, including mixing formula. Provide the following:
 - .1 1 L of extra materials when less than 50 L are used for Project;
 - .2 3.78 L of extra stock when 50 to 200 L are used;
 - .3 7.57 L of extra stock when over 200 L are used.

2 Products

2.1 MATERIALS

- .1 Paint:
 - .1 All materials under work of this Section, including but not limited to, primers, stains, and paints are to have low VOC content limits.
 - .2 Products in accordance with the MPI Painting Specification Manual, Exterior and Interior Systems;
 - .1 For each MPI paint code, manufacture's premium grade, first line Products is to be use.
 - .2 Uniform dispersion of pigment in a homogeneous mixture.
 - .3 Ready-mixed and tinted whenever possible.
 - .3 Products within each MPI paint system code: From single manufacturer.
 - .4 Acceptable manufacturers: Benjamin Moore or approved alternatives by:
 - .1 AkzoNobel.
 - .2 PPG Industries Inc.
 - .3 Sherwin Williams.

- .2 Wood stain system: Three coat wood sealer system as manufactured by Sikkens Wood Coatings or approved alternative. For use at canopy trellis.
 - .1 Wood primer: One coat of acrylic/alkyd translucent primer with blue stain fungi protection, 'Cetol WP 567' by Sikkens Wood Coatings.
 - .2 Wood topcoat: Two coats of 'Duraflex Cetol WF 957' by Sikkens Wood Coatings translucent waterborne acrylic topcoat with UV protection, in colour as selected by the Consultant.

2.2 COLOUR SCHEDULE

- .1 Paint types (PT), general:
 - .1 Gloss sheens are to be selected by the Consultant.
 - .2 Where a colour has not been selected, allow for colour selection beyond paint manufacturer's standard colour range.
 - .3 Paint types as follows:
 - .1 Paint type (PT-1): To match Benjamin Moore colour 'Chantilly Lace (OC-65)', for use on typical drywall.
 - .2 Paint type (PT-2): To match Benjamin Moore black colour with satin finish, for painted finish on metal deck.
 - .3 Paint type (PT-4): To match Benjamin Moore colour 'Chantilly Lace (OC-65)', for epoxy paint on drywall and concrete masonry units as indicated.
- .2 Conform to gloss reflectance definitions listed in MPI Specification Manual.

2.3 PAINTING AND FINISHING SCHEDULE

- .1 Refer to Table 1, MPI Painting and Finishing Schedule coded systems, comply with MPI Painting Specification Manual.

Table 1: Painting and Finishing Schedule				
EXTERIOR SUBSTRATES	Typical substrates (Including but not limited to)	MPI Manual Ref.	MPI Finish System Code	Topcoat
Galvanized steel	HM doors & frames, bollards	EXT 5.3	EXT 5.3L	Pigmented polyurethane
Dimension lumber	Wood canopy trellis	N/A	N/A	See Note 1.
INTERIOR SUBSTRATES	Typical substrates (Including but not limited to)	MPI Manual Ref.	MPI Finish System Code	Topcoat
Concrete, precast concrete walls		INT 3.1	INT 3.1A	Latex

Table 1: Painting and Finishing Schedule				
Concrete floors		INT 3.2	INT 3.2C	Epoxy
Concrete block masonry	Typical	INT 4.2	INT 4.2D	High performance latex
Concrete block masonry	CMU with epoxy paint	INT 4.2	INT 4.2J	Epoxy-modified latex
Structural steel (Factory primed)	Columns, beams	INT 5.1	INT 5.1R	High performance latex
Metal Fabrications (Factory primed)	Steel stairs, ladders	INT 5.1	INT 5.1R	High performance latex
Galvanized steel	Ducts, pipes, metal deck	INT 5.3	INT 5.3A	Latex
Galvanized metal	HM doors & door frames, handrails	INT 5.3	INT 5.3M	High Performance Latex
Dimension lumber	Wood columns, beams and decking	INT 6.2	INT 6.2Q	Poly-urethane, clear, 2 component (WD-1 sealed finish)
Dressed lumber	Doors and frames requiring stain finish	INT 6.3	INT 6.3E	Polyurethane varnish
Wood paneling & casework	Panels	INT 6.4	INT 6.4E	Poly-urethane
Wood paneling & casework	Painted lumber	INT 6.4	INT 6.4S	High Performance Latex
Gypsum board,	Drywall, walls, ceilings	INT 9.2	INT 9.2B	High performance latex
Gypsum board,	Wet areas	INT 9.2	INT 9.2F	Epoxy-modified latex

- .2 Notes:
 - .1 Provide three coat wood sealer system consisting of one coat of the basecoat and two coats of topcoat specified herein in accordance with this specification and the manufacturers directions.

3 Execution

3.1 EXAMINATION

- .1 Verify condition of previously installed work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 PREPARATION

- .1 General:
 - .1 Clean substrate surfaces free from, dust, grease, soiling, or extraneous matter, which are detrimental to finish.
 - .2 Patch, repair, and smoothen minor substrate defects and deficiencies e.g. machine, tool and sand paper marks, shallow gouges, marks, and nibs.
 - .3 Clean, sweep, and vacuum floors and surfaces to be painted, debris and dust-free prior to painting.
 - .4 Refer to MPI Painting Specification Manual for surface preparation requirements of substrates not listed here.
- .2 Where finish hardware has been installed remove, store, re-install finish hardware, to accommodate painting. Do not clean hardware with solvent that will remove permanent lacquer finishes.
- .3 Alkali content tests and neutralization:
 - .1 Test for ph level using litmus paper on dampened substrate.
 - .2 Neutralize surfaces over 8.5 ph with 4% solution of Zinc Sulphate for solvent based systems and tetrapotassium pyrophosphate for latex based systems, to below 8.0 ph, and allow to dry.
 - .3 Brush-off any residual Zinc Sulphate crystals.
 - .4 Coordinate paint system primer / sealer to be alkali-resistant.
- .4 Substrate moisture tests:
 - .1 Test for moisture content over entire surface to be painted, minimum one test/ 2 m² in field areas and one test/600 mm along inside corners including at ceiling to wall juncture.
 - .2 If any test registers above 10% allow entire substrate surfaces, within the plane, to dry further before paint system application. Install temporary drying fans if necessary.
 - .3 Re-test employing same criteria.
- .5 Mildew removal: Scrub with solution of trisodium phosphate and sodium hypochlorite (Javex) bleach, rinse with water, and allow to dry completely.

- .6 Cementitious and masonry (concrete, block):
 - .1 Allow 28 days cure before painting.
 - .2 Coordinate repair of protrusion-chipping and grinding, and honeycomb filling with responsible trades.
 - .3 Remove dirt, loose mortar, scale, powder, efflorescence, and other foreign matter.
 - .4 Remove form oil and grease with trisodium phosphate, rinse, and allow to dry thoroughly.
 - .5 Remove rust stains with solution of sodium metasilicate after thorough wetting; allow to dry thoroughly.

- .7 Concrete floors:
 - .1 Allow 28 days cure before painting.
 - .2 Remove contamination, acid etch, rinse with water, and allow to dry completely. Test and adjust for neutral ph.

- .8 Galvanized steel sheet:
 - .1 Z275 (Satin & Spangled Sheet): SSPC SP7 brush blast.
 - .2 ZF075 (Wiped Coat): Remove contamination, wash with Xylene solvent.
 - .3 Touch-up damaged galvanized areas with organic zinc rich primer.

- .9 Galvanized iron and steel: Prepare galvanized and ungalvanized metal surfaces as follows:
 - .1 Unpassivated, unweathered and weathered: Remove contamination, wash with Xylene or Toluol solvent, allow to dry thoroughly. Make paint system primer/sealer an etching type primer.
 - .2 Manufacturer pre-treated (including passivated): SSPC SP7.
 - .3 Touch-up damaged galvanized areas with organic zinc rich primer.

- .10 Structural steel and miscellaneous metal fabrications:
 - .1 Coordinate the following with the responsible trades:
 - .1 Rust, mars, mill scale, and weld-burn touch-ups.
 - .2 Oil, grease, weld flux and other residue removal.
 - .2 Prime paint items, not otherwise indicated to be primed as part of another Section.
 - .3 Touch-up damaged galvanized areas with organic zinc rich primer.

- .11 Wood and millwork:
 - .1 Wood surfaces to be clean and dry with a moisture content of less than 15%.
 - .2 Remove foreign matter prior to prime coat; spot coat knots, pitch streaks and sappy sections with sealer.
 - .3 Fill nail holes and fine cracks after primer has dried.
 - .4 Backprime interior and exterior woodwork.

- .12 Factory primed surfaces:
 - .1 Touch up damaged areas.
 - .2 Clean as required for top coat.

- .13 Gypsum board:
 - .1 Apply primer/sealer paint to reveal defects and deficiencies and to equalize absorption areas.
 - .2 Coordinate repairs and touch-ups with the responsible trade.
 - .3 Re-prime repairs.
- .14 Coordinate with other trades to prevent:
 - .1 Damage, and inadvertent activation of fire and smoke detectors.
 - .2 Odour and dust distribution by permanent HVAC systems including fouling of ducts and filters.
- .15 Field-mix Products in accordance with manufacturer's written instructions.

3.3 APPLICATION

- .1 Apply painting systems in accordance with the MPI Painting Specification Manual. Apply each Product to manufacturer's recommended dry film thickness.
- .2 Painting systems listed are required minimal, apply additional coats if necessary to obtain substrate hiding acceptable to the Consultant.
- .3 Tint intermediate coats lighter than final top coats for identification of each succeeding coat and to facilitate inspections. Include only manufacturer's recommended reducing and tinting accessories. Do not add adulterants.
- .4 Primer to be specialized primer coating system as required by manufacturer for selected colour. Standard primer being tinted shall be tinted to a maximum of 1.5% by volume.
- .5 Sand lightly between coats to achieve a tooth or anchor for subsequent coats.
- .6 Apply paint uniformly in thickness, colour, texture, and gloss, as determined by the Consultant under adequate illumination and viewed at a distance of 1500 mm. Apply finishes free of defects in materials and application which, in the opinion of the Consultant, affect appearance and performance. Defects include, but are not limited to:
 - .1 Improper cleaning and preparation of surfaces.
 - .2 Entrapped dust, dirt, rust.
 - .3 Alligatoring, blisters, peeling.
 - .4 Scratches, blemishes.
 - .5 Uneven coverage, misses, drips, runs, and poor cutting in.
- .7 Do not apply coatings on substrates which are not sufficiently dry. Unless indicated otherwise, allow each painting system coat to cure dry and hard before following coats are applied.
- .8 Repaint entire areas of damaged or incompletely covered surfaces, to the nearest inside or outside corner; patching will not be permitted.

- .9 Miscellaneous painting requirements:
 - .1 Paint projecting ledges, and tops, bottoms and sides of doors both above and below sight lines to match adjacent surfaces.
 - .2 Paint door frames, access doors and frames, door grilles, prime coated butts, and prime coated door closers to match surface in which they occur.
 - .3 Paint interior columns to match walls of room.
 - .4 Unless otherwise indicated, allow for:
 - .1 2 wall colours per room, one ceiling colour per room.
 - .2 Different door colours in each functionally different area.
 - .3 Different colours on both sides of same door.
- .10 Mechanical, electrical and other painting coordination:
 - .1 Paint following items unless specified or indicated on drawings not to be painted.
 - .2 Paint mechanical services in accordance with Mechanical Identification Division 21, 22 and 23.
 - .3 Coordinate painting of pipes, ducts, and coverings with the work of Division 21, 22 and 23 to precede pipe colour banding, flow arrows, and other pipe identification labeling installation.
 - .4 Paint exposed conduit, pipes, hangers, ductwork, grilles, gratings, louvres, access panels, fire hose cabinets, registers, convector and radiator covers, enclosures, and other mechanical and electrical equipment including services concealed inside cupboard and cabinet work; apply colour and sheen to match adjacent surfaces, except as noted otherwise.
 - .5 Paint portions of surfaces such as duct interiors, piping, ductwork, hangers, insulation, walls, and similar items, visible through grilles, louvres, convector covers etc., matte black in colour.
 - .6 Remove the following to accommodate painting, carefully store, clean, then re-install on completion of each area and when dry:
 - .1 Switch and receptacle plates, fittings and fastenings, grilles, gratings, louvres, access panels, convector covers, and enclosures.

3.4 FIELD QUALITY CONTROL

- .1 Dry film thickness tests:
 - .1 Test for film thickness over entire surface to be painted, minimum one test/2 m² in field areas and one test/600 mm along inside corners including at ceiling to wall juncture.
 - .2 If any test registers below specified thickness, re-apply paint to entire surface to nearest inside and outside corners.
 - .3 If test registers more than 50% above specified thickness, consult with paint manufacturer, determine if problem exists, offer solutions to Consultant, and repair as directed.
 - .4 Re-test employing same criteria after repair.

3.5 CLEANING

- .1 Remove spilled, splashed, and spattered paint promptly as work proceeds and on completion of work. Clean surfaces soiled by paint spillage and paint spatters. Repair or replace damaged work, as directed by Consultant.

3.6 **PROTECTION**

- .1 Post Wet Paint signs during drying and restrict or prevent traffic where necessary.

- .2 Post sign, after Consultant's inspection and acceptance of each room, reading:
PAINTING COMPLETE - NO ADMITTANCE WITHOUT CONTRACTOR'S
PERMISSION.

END OF SECTION