

## **GYPSUM BOARD ASSEMBLIES**

---

### **1. GENERAL**

#### **1.1 References**

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM C36/C36M-01, Specification for Gypsum Wallboard.
  - .2 ASTM C475-01, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - .3 ASTM C514-01, Specification for Nails for the Application of Gypsum Board.
  - .4 ASTM C557-99, Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
  - .5 ASTM C840-01, Specification for Application and Finishing of Gypsum Board.
  - .6 ASTM C954-00, Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
  - .7 ASTM C1002-01, Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
  - .8 ASTM C1047-99, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .2 Association of the Wall and Ceilings Industries International (AWEI)
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .4 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102-1988(R2000), Surface Burning Characteristics of Building Materials and Assemblies.

#### **1.2 Delivery, Storage and Handling**

- .1 Deliver materials in original packages, containers or bundles bearing manufacturer's brand name and identification.
- .2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

## **GYP SUM BOARD ASSEMBLIES**

---

- .3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

### **1.3 Site Environmental Requirements**

- .1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.
- .2 Apply board and joint treatment to dry, frost free surfaces.
- .3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

### **1.4 Samples**

- .1 Submit samples in accordance with Section 01300 - Submittals.
- .2 Submit 300 mm long samples of corner and casing beads, insulating strip.

## **2. PRODUCTS**

### **2.1 Materials**

- .1 Standard board: to ASTM C36/C36M regular, and Type X, thickness as indicated, 1200 mm wide x maximum practical length, ends square cut, edges squared.
- .2 Metal furring runners, hangers, tie wires, inserts, anchors:
  - .1 Main carrying channels: minimum 1.62 m galvanized sheet steel; 38 mm x 15 mm size; lengths as required.
  - .2 Furring channels: minimum 1.62 mm gauge galvanized sheet steel; 19 mm x 15 mm; lengths as required.
  - .3 Hangers: of galvanized steel, of size and type to suit application and to rigidly secure gypsum board ceiling system in place with maximum deflection of 1/360.
  - .4 Lateral bracing: minimum 1.62 mm cold rolled steel channels with galvanized coating; 19 mm x 9.5 mm size, maximum practical lengths.
- .3 Nails: to ASTM C514.
- .4 Steel drill screws: to ASTM C1002.
- .5 Stud adhesive: to ASTM C557.
- .6 Laminating compound: as recommended by manufacturer, asbestos-free.

## GYPSUM BOARD ASSEMBLIES

---

- .7 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, ABS, PVC, Zinc, 0.5 mm base thickness, perforated flanges, one piece length per location.
- .8 Sealants: in accordance with Section 07900 - Joint Sealing.
- .9 Acoustic sealant: in accordance with Section 07900 - Joint Sealing.
- .10 Polyethylene: to CAN/CGSB-51.34, Type 2.
- .11 Insulating strip: rubberized, moisture resistant, 3 mm thick cork or closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.
- .12 Joint compound: to ASTM C475, asbestos-free.

### 2.2 Finishes

- .1 Texture finish: asbestos-free standard white texture coating and primer-sealer, recommended by gypsum board manufacturer.

## 3. EXECUTION

### 3.1 Erection

- .1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.
- .2 Install work level to tolerance of 1:1200.
- .3 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles,
- .4 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
- .5 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .6 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .7 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.
- .8 Furr openings and around built-in equipment, cabinets, access panels on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- .9 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

## GYPSUM BOARD ASSEMBLIES

---

- .10 Erect drywall resilient furring transversely across studs, joists, between the layers of gypsum board spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 38 mm common nail] 25 mm drywall screw.
- .11 Install 150 mm continuous strip of 12.7 mm gypsum board along base of partitions where resilient furring installed.

### 3.2 Application

- .1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.
- .2 Apply single, double layer gypsum board to metal furring or framing using screw fasteners or stud adhesive for first layer laminating adhesive or screw fasteners for second layer. Maximum spacing of screws 300 mm on centre.
  - .1 Single-Layer Application:
    - .1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.
    - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
  - .2 Double-Layer Application:
    - .1 Install gypsum board for base layer and exposed gypsum board for face layer.
    - .2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.
    - .3 Apply base layers at right angles to supports unless otherwise indicated.
    - .4 Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.
- .3 Apply 12 mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, in partitions where perimeter sealed with acoustic sealant.
- .4 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .5 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.

## GYPSUM BOARD ASSEMBLIES

---

- .6 Install gypsum board with face side out.
- .7 Do not install damaged or damp boards.
- .8 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

### 3.3 Installation

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre using contact adhesive for full length.
- .2 Install casing beads around perimeter of suspended ceilings.
- .3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
- .4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- .5 Construct slip joints in gypsum board partitions below structural members to allow movement. Install metal casing beads along exposed edges of board.
- .6 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:
  - .1 Levels of finish:
    - .1 Level 0: No tapping, finishing or accessories required.
    - .2 Level 4: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.
  - .7 Finish corner beads, slip joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
  - .8 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
  - .9 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
  - .10 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

---

**GYPSUM BOARD ASSEMBLIES**

---

- .11 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of Substantial Performance.

**3.4 Schedules**

- .1 Construct fire rated assemblies as indicated.

**END OF SECTION**

## **RESILIENT TILE FLOORING**

---

### **1. GENERAL**

#### **1.1 References**

- .1 American Society for Testing and Materials (ASTM International)
  - .1 ASTM F11700-99, Specification for Vinyl Floor Tile.
  - .2 ASTM F1344-00, Specification for Rubber Tile.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-25.20-95, Surface Sealer for Floors.
  - .2 CAN/CGSB-25.21-95, Detergent-Resistant Floor Polish.

#### **1.2 Samples**

- .1 Submit samples in accordance with Section 01300 - Submittals.
- .2 Submit duplicate tile in size specified, 300 mm long base, and nosing.

#### **1.3 Submittals**

- .1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01300 - Submittals.

#### **1.4 Environmental Requirements**

- .1 Maintain air temperature and structural base temperature at flooring installation area above 20°C for 48 hours before, during and for 48 hours after installation.

### **2. PRODUCTS**

#### **2.1 Materials**

- .1 Vinyl tile: to ASTM F1700, Class 111 Type B, 18" x 18 1/4" size, thickness 2.5 mm.
  - .1 Acceptable material: Arteca, Inovation, Glass, GL02 Iced Glass.
- .2 Rubber tile: to ASTM F1344, Class 1 - Homogeneous rubber tile, 3.17 mm base thickness 905 x 905 mm size.
  - .1 Acceptable material: AMTICO Marathon Classic, Lakeland Slate, MLS-334 Granite Falls.

## RESILIENT TILE FLOORING

---

- .3 Resilient base: to rubber, straight, coved, minimum 2400 mm length and 101.6 mm high x 2.03 mm thick, including pre-moulded end stops and external corners for coved base only.
  - .1 Acceptable material: Flexco, colour as indicated.
- .4 Resilient stair nosing: rubber, square nose, 5/16" one-piece length, with a 50 mm wide contrasting coloured nosing (visually impaired) for all nosings.
  - .1 Acceptable material: Flexco River Rock 575, Colour B2-045 with yellow visually impaired strips.
- .5 Primers and adhesives: waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.
- .6 Sub-floor filler and leveller: latex as recommended by flooring manufacturer for use with their product.
- .7 Metal edge strips: aluminum extruded, smooth, with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.
- .8 Sealer: type recommended by flooring manufacturer.
- .9 Wax: type recommended by flooring manufacturer.

### 3. EXECUTION

#### 3.1 Inspection

- .1 Ensure concrete floors are dry, by using test methods recommended by tile manufacturer.

#### 3.2 Sub-Floor Treatment

- .1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .2 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
- .3 Remove or treat old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and/or interfering with the bonding of new adhesives.
- .4 Prime, Seal concrete to flooring manufacturer's printed instructions.

#### 3.3 Tile Application

- .1 Provide a high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to the outside. Do not let contaminated



## RESILIENT TILE FLOORING

---

air recirculate through a district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.

- .2 Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .3 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.
- .4 Install flooring to pattern as indicated.
- .5 As installation progresses, and after installation, roll flooring in 2 directions with 45 kg minimum roller to ensure full adhesion.
- .6 Cut tile and fit neatly around fixed objects.
- .7 Install feature strips and floor markings where indicated. Fit joints tightly.
- .8 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .9 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
- .10 Install metal edge strips at unprotected or exposed edges where flooring terminates.

### 3.4 Stair Application

- .1 Install stair nosings one piece for full width of stair. Adhere over entire surface and fit accurately.

### 3.5 Base Application

- .1 Lay out base to keep number of joints at minimum. Base joints at maximum length available or at internal or pre-moulded corners.
- .2 Clean substrate and prime with one coat of adhesive.
- .3 Apply adhesive to back of base.
- .4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
- .5 Install straight and level to variation of 1:1000.
- .6 Scribe and fit to door frames and other obstructions. Use pre-moulded end pieces at flush door frames.

---

## RESILIENT TILE FLOORING

---

- .7 Cope internal corners. Use pre-moulded corner units for right angle external corners. Use formed straight base material for external corners of other angles, minimum 300 mm each leg. Wrap around toeless base at external corners.
- .8 Install toeless type base before installation of carpet on floors.

### **3.6 Initial Cleaning and Waxing**

- .1 Remove excess adhesive from floor, base and wall surfaces without damage.
- .2 Clean, seal and wax floor and base surface to flooring manufacturer's instructions. In carpeted areas clean, seal and wax base surface before carpet installation.

### **3.7 Protection of Finished Work**

- .1 Protect new floors from time of final set of adhesive until final inspection.
- .2 Prohibit traffic on floor for 48 hours after installation.

### **3.8 Schedule**

- .1 As indicated.

**END OF SECTION**

## FINISH PAINTING

---

### 1. GENERAL

#### 1.1 Quality Assurance/Submittals

- .1 Perform painting work by applicator with minimum 5 years of proven, satisfactory and successful painting experience on projects of similar size and nature. Provide qualified crew of painters and full time review of work by qualified supervisor for duration of work.
- .2 Submit in writing list of proposed materials prepared by paint manufacturer, for approval at least 60 days before materials are required. List shall bear manufacturer's official certification that materials listed meet or exceed requirements specified herein. List shall contain following for record:
  - .1 Manufacturer's product number and application instructions.
  - .2 Finish formula.
  - .3 Product type.
  - .4 CGSB number.
  - .5 Colour number.
  - .6 Maximum VOC classification.
  - .7 Ecologo certification where applicable.
- .3 Samples: Submit at least fifteen days prior to painting Work commencing at the site (and resubmit until approved), two identified (with Project Name, the finish, colour name and number, sheen and gloss values) samples of the following:
  - .1 each specified colour in each specified finish coat material on minimum 150 mm x 300 mm coated stock card
  - .2 each natural wood finish on minimum 150 mm x 300 mm samples of each specified wood species to receive the finish
- .4 Have the paint manufacturer's representative visit Site prior to the commencement of painting operation to discuss painting and finishing procedures to be used, to analyze surface conditions, and to propose alternative recommendations should adverse conditions exist.
- .5 Have the paint manufacturer visit Site at intervals during surface preparation and painting operations to ensure that proper surface preparation is performed, specified paint products are being used, proper number of coats are being applied, agreed finishing procedures are being used.
- .6 Product Manufacturer's Approval of Surfaces To Be Painted: Submit, prior to painting Work commencing, letters signed by the respective manufacturer(s) of products to be used

## FINISH PAINTING

---

stating that the representative has examined the various surfaces prior to application and that the surfaces and the environmental conditions are suitable to receive the specified finishes.

- .7 Product Manufacturer's Certification of Paint Application: Submit, on completion of painting, a letter or letters, signed by the respective manufacturer(s) of products, stating that a manufacturer's representative has inspected (at intervals) the preparation of surfaces and the application of paint products and that paint products have been applied satisfactorily and to the required coverage.

### 1.2 Environmental Requirements

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and material safety data sheets acceptable to Ministry of Labour.
- .2 Provide paint products certified to meet the requirements of the Environmental Choice Program, Department of the Environment. Provide CSA Certification Reports that products proposed for use are certified under the Environmental Choice Program. Water based paints to be certified to ECP-07-89. Solvent based paints to be certified to ECP-12-89.
- .3 Arrange for ventilation system to be operated during application of paint. Ventilate area of work by use of approved portable supply and exhaust fans. Provide continuous ventilation during and after application of paint. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of application of paint. Apply paint finishes only when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations. Substrate and ambient temperature shall be within limits prescribed by manufacturer.
- .4 Maintain minimum interior temperature of 18°C (65°F) during application and drying of paint and maintain until building occupancy occurs. Do not undertake exterior painting if air and surface temperature are expected to fall below 10°C (50°F) before coating has dried. Avoid painting during winds, weather conditions which may affect paint application or following rain. Wait until frost, dew or condensation has evaporated.
- .5 Provide heating to maintain minimum temperatures recommended by manufacturers.
- .6 Apply paint finish only in areas where dust is no longer being generated by related construction operations such that airborne particles will not affect the quality of the finished surface. Apply paint only when surface to be painted is dry, properly cured and adequately prepared.
- .7 Protect floors of storage areas by means of tarpaulins and metal pans.
- .8 Provide a fully charged, ULC 10:BC rated, 9 kg carbon dioxide fire extinguisher immediately adjacent to the storage area for the entire time materials are stored in the area.
- .9 Deposit waste rags in metal containers with tight fitting metal lids and remove from the building at the end of each working shift.

## **FINISH PAINTING**

---

- .10 Keep solvents for brush and roller cleaning in tightly sealed containers when not in use. Do not allow brushes and rollers to stand in solvents in open containers overnight.

### **1.3 Painting and Finishing Work Standards**

- .1 The best practices specified or recommended in CAN/CGSB-85.100 are to govern for painting methods and procedures, unless specified otherwise in this Section.

### **1.4 Colour Selections**

- .1 The Contract Administrator will issue a schedule indicating colour(s), gloss value and sheen. Colour may be selected from the lines of up to 3 manufacturers and an unlimited number of colours and gloss and sheen.

### **1.5 Warranty**

- .1 Warrant work against defects in material and quality of performance for a period of 2 years.

### **1.6 Extra Stock**

- .1 At date of Total Performance, supply and deliver to a designated storage area at the site, sealed, original, fresh containers of each paint and finish product applied, and in each colour, all labelled as specified in this Section.
- .2 Supply one litre of extra stock for products for which less than forty-five litres were used, four litres of extra stock when from forty-five to one hundred and eighty litres were used, and ten litres of extra stock when in excess of one hundred and eighty litres were used.

## **2. PRODUCTS**

### **2.1 Painting, Finishing and Coating Products**

- .1 Unless otherwise specified, painting and protective coating products are specified in PART 3 of this Section and are the products of ICI/Glidden.
- .2 Painting and protective coating products fully equivalent to the ICI/Glidden products specified and supplied by the following manufacturers are acceptable:
  - .1 Sherwin Williams
  - .2 Benjamin Moore
  - .3 Pittsburgh Paints
- .3 Finishing products such as oils or putties not specified in this Section are to be premium quality and as recommended by the manufacturer of the paint or finish product it is associated with.

## FINISH PAINTING

---

- .4 Unless otherwise specified, paint is to be ready-mixed. Where site mixing is required for certain products, mix in strict accordance with the manufacturer's instructions to produce smooth flowing materials with an easy-brushing consistency.
- .5 Gloss value will be determined in accordance with ASTM D523, Tentative Method of Test for 60 Deg. Specular Gloss. Gloss values for terminology specified are as follows:
  - .1 Flat - less than 8
  - .2 Eggshell - 25 to 35
  - .3 Semi-gloss - 45 to 55
  - .4 Gloss - in excess of 85
- .6 On walls, no defects shall be visible from a distance of 1000 mm at 90 degree to surface. On ceilings, no defects shall be visible from floor to surface when viewed using final lighting source. Final coat shall exhibit uniformity of colour and uniformity of sheen across full surface area.
- .7 Paint colours will be selected by Contract Administrator from the manufacturer's full colour range, including light, dark and accent tones, and the Contract Administrator will issue a schedule indicating the colours, locations, gloss value and sheen. Note that products of more than one manufacturer may be selected.

### 3. EXECUTION

#### 3.1 Examination of Substrate

- .1 Examine surfaces to receive paint or protective coating to ensure that they are in the proper condition to be painted or coated. Commencement of painting and protective coating Work will be interpreted as acceptance of the surface to receive the Work. Correction of defective painting or protective coating Work resulting from application to unsatisfactory surfaces will be the responsibility of the painting contractor.

#### 3.2 Special Conditions

- .1 Post "No Smoking" signs and ensure that spark-proof electrical equipment is used in areas where flammable painting products are applied or stored.
- .2 Post "Wet Paint" signs throughout freshly finished areas and remove when finishes are dry.
- .3 Prohibit traffic where possible, from areas where painting is being carried out until paint is cured.
- .4 Provide adequate ventilation. Where building is occupied, provide necessary air barrier to prevent fumes from entering occupied areas.

## FINISH PAINTING

---

- .5 Prior to the application of special finishes, arrange for a meeting at the site with the Contract Administrator and a representative of the special finishes manufacturers to discuss the condition of surfaces to receive painting, special finish, and application procedures.

### 3.3 Protection

- .1 Cover or mask surfaces adjacent to those receiving treatment and finishing to protect the Work of others from damage and soil. Mask instruction and specification plates and controls attached to equipment being painted.
- .2 Take particular care in storage and mixing areas to ensure that tarpaulins and metal pans protect floors.
- .3 Co-ordinate with the appropriate trades for the removal from finished surfaces, storage and reinstallation after finish Work is completed of finish hardware, switch and receptacle plates, escutcheons, luminarie frames and similar items.

### 3.4 Preparation of Surfaces

- .1 General
  - .1 Vacuum clean areas inside the building(s) immediately prior to commencing finishing work.
  - .2 Scrub mildewed surfaces with a solution of trisodium phosphate, bleach with a solution of one part sodium hydrochlorite (Javex) to three parts water, and rinse with clear water.
  - .3 Arrange for finishing hardware, electrical plates, accessories, and similar removable fittings on surfaces to be finished to be removed. Mask any other Work that is not removable.
  - .4 Prepare surfaces to be painted or coated such that the surfaces are thoroughly dry and free of chemicals, mortar splatters, organic matter, oil, grease, rust, scale, loose paint, and any other material, and such that the surfaces are in a proper condition to receive paint, stain, or other specified coating.
- .2 Cleaning Procedures
  - .1 Surface preparation methods shall remove any contaminant that will interfere with full adhesion of protective painting and coating systems. Level of cleaning shall be based on Steel Structures Paining Council's (SSPC), recommended designations of metal cleaning procedures specified.
  - .2 SSPC-SP1 (Solvent Cleaning): Use of solvents (such as mineral spirits, xylene, toluene) or cleaning action to remove oil, grease, and soil drawing and cutting compounds or similar solvent soluble contaminants. Do not use gasoline or benzene.

## FINISH PAINTING

---

- .3 SSPC-SP2 (Hand Tool Cleaning for mild exposure conditions): Use of scrapers, sandpaper, wire brushing or hand impact tools to remove loose mill scale, non-adherent rust and scaling paint or other foreign matter. Do not use hand tool cleaning procedure for areas subject to corrosive environment or on surfaces for vinyl chloride top coating. Remove weld flux and spatter to avoid localized paint failure.
  - .4 SSPC-SP3 (Power Tool Cleaning for use under severe exposure conditions or immersion applications): Use power sanders and wire brushes, impact tools, grinders and power chipping hammers to remove loose mill scale, loose rust, paint or other foreign matter. Do not allow excessive power tool cleaning.
  - .5 SSPC-SP5 (White Metal Blast Cleaning): Use when protective coating or environment is such that no rust, mill scale or other foreign matter can be tolerated on steel surface. Prime cleaned surfaces before any rusting occurs.
  - .6 SSPC-SP6 (Commercial Blast Cleaning): Use for moderate exposure conditions where high but not perfect degree of blast cleaning is required. Prime blast cleaned surfaces as soon as possible.
  - .7 SSPC-SP7 (Brush-Off Blast Cleaning): Use for ordinary exposure where environment is mild to permit tight mill scale, paint and minor amounts of rust to remain on surface. An effective means to clean rusty galvanized metal siding and old finishes in poor condition.
- .3 Perform surface preparation work as follows:
- .1 Shop Finished Metal Work: SSPC-SP1, SSPC-SP2, or SSPC-SP3 as required.
  - .2 Shop Prime Coated Carbon Steel: SSPC-SP1, SSPC-SP2, or SSPC-SP3 as required.
  - .3 Shop Prime Coated Cast Iron and Centrifugally Cast Ductile Iron: SSPC-SP6.
  - .4 Non-Prime Coated Carbon Steel: SSPC-SP1 using Oakite 31 or equal, SSPC-SP2, or SSPC-SP3 as required.
  - .5 Non-Prime Coated Cast Iron and Centrifugally Cast Ductile Iron - SSPC-SP6.
  - .6 Submerged Carbon Steel, Black or Galvanized: SSPC-SP1 using Oakite 31 or equal, SSPC-SP2 or SSPC-SP3 as required.
  - .7 Submerged Cast Iron or Centrifugally Cast Ductile Iron: SSPC-SP6.
  - .8 Galvanized Metal and Aluminum Above Grade: SSPC-SP1 using Oakite 31 or equal, and CAN/CGSB-85.10.
  - .9 Cut Surfaces of Field Cut Galvanized Metal: SSPC-SP3.
  - .10 Copper - SSPC-SP1.



## FINISH PAINTING

---

- .11 Bitumen or Tar Coated Surfaces - SSPC-SP1 and SSPC-SP2 as required.
- .12 Surfaces Subjected to High Heat Condition (140 Degrees C and Up): SSPC-SP5.
- .13 Canvas Insulation Jacket: SSPC-1.
- .14 Aluminum, Stainless Steel, And Carbon Steel Underground: In accordance with paint or coating manufacturer's recommendations.
- .15 Ferrous Metal: Solvent clean to SSPC-SP1. Remove loose rust and prime bare metal with rust inhibitive steel primer. Touch-up damaged shop applied primer using compatible product. Provide full coat primer only if damage is extensive. Treat all weld areas with phosphoric acid (5% solution).
- .16 Structural Steel/Miscellaneous Steel (Previously Painted And Exposed By Alterations Work): Remove oil, grease, dirt, rust scale, loose mill scale, loose paint or coating by brush-off blast cleaning to SSPC-SP7 or by water blasting at minimum 1379 kPa (200 psi) at minimum flow rate of 0.25 l/sec (4 gal/min).
- .17 Metal Stacks, Breeching, and Piping: Blast clean to 37-50  $\mu\text{m}$  (1.5-2 mil) profile using grit abrasive to SSPC-SP6.
- .18 Aluminum: On exterior products, allow to weather for 4 to 6 weeks and high-pressure steam or solvent wash to remove surface contamination. Remove thin oxide film or corrosion by power cleaning or hand clean such as sanding or scraping. For interior application, solvent clean to SSPC-SP1 to remove oil, grease, dirt, oxides and other foreign material.
- .19 Galvanized Steel (weathered): Remove dust, dirt, grease, oxides and other foreign material and clean to SSPC-SP1 prior to coating.
- .20 Hot Dipped Galvanized Steel (unweathered): Allow to weather minimum of 26 weeks and Xylene clean to SSPC-SP1 prior to coating to remove dust, dirt, grease, oxides and other foreign material. Remove silicates or similar surface treatments or any deposits of white rust by sanding or similar abrasive methods (bronze wool). Use of acetic acid to prepare galvanized surfaces is not acceptable.
- .21 Woodwork for Painting: Seal all knots and sapwood in surfaces to receive paint with alcohol-based primer-sealer. Sand smooth rough surfaces of all woodwork to be finished and clean surfaces free of dust before applying first coat. Fill nail holes, splits and scratches with non-shrinking filler after first coat are dry. Remove salt deposits that may appear on wood surfaces treated with fire retarder.
- .22 Plastic (PVC): Solvent clean to SSPC SP1. Sand lightly with No. 120 sandpaper and remove dust.
- .23 Concrete Horizontal Surfaces: If concrete is less than 26 weeks old or has been previously painted, clean surface and etch with muriatic acid with extenders. Rinse out

## FINISH PAINTING

---

etching compound with clean water and tri-sodium-phosphate (TSP) to neutralize acidity of surface (pH 6.5-7.5). Rinse out with clean water 2 to 3 times and allow to dry. Verify that moisture content is less than 12% before proceeding with painting.

- .24 Concrete Vertical Surfaces: Use sand blasting, high pressure water blasting, high pressure water blasting with abrasives, vacuum blasting with abrasives or alternatively, needle guns or power grinders equipped with suitable grinding stone, to remove concrete, loose mortar, fins, projections and surface contaminants. Vacuum or blow down and remove dust and loose particles from surface.

### 3.5 General Application of Paint and Finishes

- .1 Verify by review of other Sections of this Specification, the extent of surfaces primed as part of the Work of other Sections, and include for priming of unprimed surfaces which are scheduled or specified to be painted.
- .2 Back prime fitments and similar Work as soon as it is delivered and before it is installed. Use exterior primer compatible with the finish coat for exterior Work, and enamel undercoat for interior Work to receive paint or enamel finishes. Prevent primer from running over faces.
- .3 Unless otherwise specified, apply paint by brush or rollers. Spray paint ceilings and exposed areas above the ceiling only when requested or approved by the Contract Administrator, and in other areas only when restricted to access and approved by the Contract Administrator. Discontinue spaying if prohibited by the Contract Administrator, because of inadequate coverage, overspray, paint fog drift, or disturbance to other work.
- .4 Use only brushes for enamels for painting wood.
- .5 Provide finish uniform in sheen, colour and texture, free from streaks, shiners and brush or roller marks or other defects. Apply materials in accordance with manufacturer' directions and specifications. Do not use adulterants.
- .6 Finishes and number of coats specified hereinafter in Finish Schedule are intended as minimum requirements guide only. Refer to manufacturer's recommendations for exact instructions for thickness of coating to obtain optimum coverage and appearance. Some materials and colours may require additional coats and deeper colours may require use of manufacturers' special tinted primers. Unless otherwise specified, provide 3 coats finish as minimum finish. Obtain colour chart giving colour schemes and gloss value for various areas from Contract Administrator. Colour chart shall give final selection of colours and surface textures of all finishes, and whether finishes are transparent (natural) or opaque (paint).
- .7 Advise when each applied paint coat can be inspected. Do not recoat without inspection. Tint each coat slightly to differentiate between applied coats. Sand smooth enamel and varnish undercoats prior to recoating. Apply primer coat soon after surface preparation is completed to prevent contamination of substrate.

## FINISH PAINTING

---

- .8 Read Mechanical and Electrical Specifications for instruction on painting Mechanical and Electrical work and perform such work under supervision of respective Mechanical and Electrical Divisions. Finish paint primed mechanical equipment: heaters, convectors, radiators, wall fin perimeter induction units, fan coil units, and similar items. Prime and paint exposed, unfinished electrical raceways, fittings, outlet boxes, junction boxes, pull boxes, and similar items. Keep sprinkler heads free of paint. Take steps to protect gauges, identification plates and similar items from being painted over or paint splattered. Remove grilles, covers, and access panels for mechanical and electrical systems from installed location and paint separately, if these items are not factory finished, Paintwork to match surfaces they are seen against unless directed otherwise. Paint interior surfaces of air ducts visible through grilles and louvres, with one coat of flat black metal paint to limit of sight line.
- .9 Maintain at the site at all times until the Work is completed, a moisture meter, hygrometer, and thermometer to verify surface and environmental conditions.
- .10 Perform painting and coating Work under supervision of an experienced foreman using clean equipment designed for the purpose used.
- .11 Unless otherwise specified, follow the specific instructions of the manufacturer(s) of the products used.
- .12 Apply finishing products to provide full coverage at a rate not to exceed that stated by the manufacturer for applicable surface, free from perceptible defects, and with even colour, sheen and texture. Vary the tone of each coat slightly to permit supervision identity.
- .13 Make clean, true junctions with no overlap between adjoining applications of finish coatings.
- .14 Leave all parts of mouldings and ornaments clean and true to details with no undue amount of coating in corners and depressions.
- .15 Use products of a single manufacturer in each coating application.
- .16 Apply each coat only after the preceding coat is dry and hard, or as otherwise directed by the product manufacturer.
- .17 Sand wood and metal surfaces lightly with No. 00 sandpaper between coats.
- .18 Use paint or finish thinners only where specified or directed by the paint manufacturer.
- .19 Apply paint and coatings only when the ambient temperature and the temperature of the surface to be painted exceed 4.4 degrees C., except for materials and locations listed below where ambient and surface temperatures must exceed the temperatures stated:
  - .1 Latex paint for surfaces inside the building - 7 degrees C.
  - .2 Latex paint for surfaces outside the building - 10 degrees C.
  - .3 Enamels for all surfaces - 21 degrees C.

## FINISH PAINTING

---

.20 Do not:

- .1 Apply finishes in direct sunlight that raises surface temperature above that required for proper application and drying
- .2 Apply exterior finishes in rainy, foggy or windy weather
- .3 Apply exterior finishes when relative humidity exceeds 85 percent, when condensation has formed or is likely to form on the surface, nor immediately following rain, frost, or formation of dew
- .4 Apply finishes when dust is being raised
- .5 Apply finishes to cement board products, pipe and/or duct and/or equipment insulation, concrete or masonry surfaces that contain in excess of 12 percent moisture, or to wood products that contain in excess of 15 percent moisture except where the wood product would normally contain in excess of 15 percent moisture

.21 Paint the following items.

- .1 Areas and surfaces indicated to be painted on finish schedules
- .2 Areas and surfaces indicated to be painted on detail drawings
- .3 Exposed exterior and interior ferrous metal (black or galvanized steel, cast and ductile iron), including structural steel, miscellaneous metal work, hollow metal doors and frames, piping, ductwork, conduit and similar metal raceway, non-prefinished metal, flashing, hangers and supports
- .4 Concealed or exposed ferrous metal (black or galvanized) built into or fixed to dissimilar materials inside or outside building(s)
- .5 Exterior and interior wood surfaces where exposed
- .6 Interior surfaces of poured concrete where exposed
- .7 Interior and exterior machinery, equipment, supports and accessories, pump mechanisms, engine-generator set(s) and similar equipment and accessories, including shop finished items
- .8 Exposed insulated piping, ductwork, and equipment and accessories
- .9 Exposed copper, brass, plastic, and FRP unless otherwise specified
- .10 Back surfaces of aluminum and stainless steel when in contact with concrete and/or steel
- .11 Steel and copper piping (whether insulated or not) concealed behind false work or ceilings, etc. To receive at least one prime coat

## FINISH PAINTING

---

- .12 All existing surfaces disturbed by work of this contract or contractor's forces
- .13 Prime paint as minimum walls etc. before installing electrical panels
- .22 Unless otherwise specified, DO NOT apply paint or finish to the following:
  - .1 Finishing hardware.
  - .2 Equipment nameplates and other such identification.
  - .3 Switch, receptacle and other electrical device faceplates except if constructed of prime coat painted or galvanized steel, in which case they are to be painted.
  - .4 Lighting fixtures.
  - .5 Stainless steel.
  - .6 Chrome plated surfaces, and polished or lacquered brass or bronze surfaces.
  - .7 Underground piping and accessories.
  - .8 Surfaces factory coated with baked epoxy or enamel.
  - .9 Plastic laminate surfaces.
  - .10 Manhole and catch basin covers.
  - .11 Covers or strainers associated with floor drains, cleanout terminations, and similar equipment.
  - .12 Recessed electrical boxes and similar recessed equipment unless they are not prime coat painted or galvanized.
  - .13 Piping, ductwork, conduit and similar mechanical and electrical materials where concealed inside building(s) (except steel and copper pipe).
  - .14 Valve handles.
  - .15 Control panels.
  - .16 Circuit breakers, switches, receptacles, and similar electrical devices.
  - .17 Caulked joints.
  - .18 Prefinished sheet metal flashing.
  - .19 Prefinished exterior wall louvres.
  - .20 Prefinished exterior metal soffit.

## FINISH PAINTING

---

### 3.6 Paint Formula:

- .1 Apply paint to surfaces with the following:
  - .1 Shop Finished Metal Work: Paint, unless otherwise specified, all shop finished metal cabinets, panels, equipment, machinery and similar items with one coat of semi-gloss alkyd melamine thermosetting metal finishing enamel or a similar semi-gloss thermosetting or air dried enamel approved by the Contract Administrator. Paint colour of electrical components, unless otherwise specified, is to be white to U.S. Federal Standard 595B with all paint from the same batch to ensure a uniform colour throughout. Standard shop colours will not be acceptable unless approved in writing by the Contract Administrator.
  - .2 Shop Primed Carbon Steel, Black and Cast or Ductile Iron Above Ground:
    - .1 One coat of Glid-Guard Tank and Structural Primer 4160.
  - .3 Non-Primed Black Carbon Steel, Black, and Cast or Ductile Iron Above Ground:
    - .1 One coat of Oakite surface preparation.
    - .2 Two coats of Devran 4170 Corrosion Resistant Epoxy Primer 3.0 to 4.0 mils DFT.
  - .4 Submerged Ferrous Metal Including Cast or Ductile Iron and Black or Galvanized Carbon Steel: Prime and Paint as follows:
    - .1 SSPC-SP-10 Near White Sandblast.
    - .2 One coat Bar-Rust 235 Advanced Epoxy Technology at 5.0 to 6.0 mils DFT.
    - .3 One coat Bar-Rust 235 Advanced Epoxy Technology at 5.0 to 6.0 mils DFT.
  - .5 Galvanized Metal or Aluminum Above Ground: Prime and Paint as follows:
    - .1 One coat of Oakite surface preparation.
    - .2 DevGuard 4120 All Purpose Metal and Galvanized Primer at 1.5 to 2.0 mils DFT.
    - .3 DevGuard 4308 Alkyd Industrial Gloss Enamel at 1.5 to 2.0 mils DFT.
  - .6 Galvanized Metal Field Cut Surfaces:
    - .1 Prime with one coat of Catha-Coat 326 Organic Zinc Rich Epoxy Primer at 2.0 mils DFT.
  - .7 Bitumen and/or Tar Coated Surfaces: Prime and Paints follows:
    - .1 Two coats Glidden Stain Jammer # 200 at 1.0 to 1.5 mils DFT.

## **FINISH PAINTING**

---

- .2 Two coats DevGuard 4308 Alkyd Industrial Gloss Enamel at 1.5 to 2.0p mils DFT.
- .8 Metal Surfaces Designated for High Heat Condition:
  - .1 One coat Catha-Coat 304 Ethyl-Silicate Inorganic Zinc at 1.5 to 2.5 mils DFT.
  - .2 Two coats Devoe HT-10 Modified Silicone High Heat Coating at 1.0 mils DFT.
- .9 Wood, Including Plywood for Paint Finish:
  - .1 One coat Glidden Alkyd Enamel Undercoat # 9431 at 1.0 to 1.5 mils DFT.
  - .2 Two coats DevGuard 4308 Alkyd Industrial Gloss Enamel at 1.5 to 2.0 mils DFT.
- .10 Canvas Insulation Jacket:
  - .1 One prime coat Glidden Ultra Latex Sealer # 36600 at 1.0 to 1.5 mils DFT.
  - .2 Two coats DevGuard 4308 Alkyd Industrial Gloss Enamel at 1.5 to 2.0 mils DFT.
  - .3 Colours to be selected by the Contract Administrator from the U.S. Federal Standard 595B.

### **3.7 Adjustment and Cleaning**

- .1 Touch up and refinish minor defective Work. Refinish the entire surface where the finish is damaged or not acceptable, including areas exhibiting incomplete or unsatisfactory coverage. Patching will not be permitted.
- .2 Remove spilled or splattered finish materials from surfaces of Work performed under other Sections. Do not mar surfaces while removing.
- .3 Clean and make good surfaces soiled or otherwise damaged in connection with work of this Section. Pay the cost of replacing finishes or components that cannot be satisfactorily cleaned.
- .4 Upon completion, remove masking and clean adjacent surfaces free of over spray spatters, drips, smears and over spray.

### **3.8 Disposal of Paint Waste**

- .1 Be responsible for removal and disposal of material and waste generated by this Section.
- .2 Remove empty and partly used containers from Site and recycle or dispose of as Hazardous Waste in accordance with local municipal, provincial and federal environmental regulations. Provide proof of such action in form of receipts of tipping fees, disposal fees or bills of lading, as applicable.

---

**FINISH PAINTING**

---

- .3 Remove from Site peripheral items, such as clean up solvents, paintbrushes, rags, and similar items and dispose of where necessary in accordance with local municipal, provincial and federal environmental regulations.
- .4 Do not rinse off latex paints from brushes and rags under running water tap. While work is ongoing, whether using latex or alkyd products, rinse off all brushes and rags in container with appropriate solvent (water or paint thinner). Leave such container in well-lit and well-ventilated area, away from any flammable conditions. Dispose of emulsion created in accordance with local municipal, provincial and federal environmental regulations.
- .5 Wipe or drain clean empty containers. Allow remaining film to dry before disposal. Recycle metal containers and dispose of containers which are not recyclable. Ensure non-recyclable containers are acceptable to disposal recipient authority.
- .6 Dispose paint that cannot be recycled as hazardous waste. Generators of Hazardous Waste shall be registered and disposal shall be in accordance with regulations of authorities. When handling coating materials, approved vapour/particulate respirator shall be worn as protection from solvent vapours; dust respirators are not acceptable.
- .7 Remove clean-up solvents and recycle if possible.
- .8 Treat non-recyclable thinners and paint sludge as hazardous waste.

**END OF SECTION**