

**ROOM FINISH SCHEDULE**

No.	NAME	NORTH	EAST	SOUTH	WEST	CEILING (material/finsh/height)	FLOOR (material/finsh/base)	REMARKS
100	vestibule	clip white conc.	glass/entrance door	clip white conc.	glass/entrance door	stretched fabric ceiling-n/a-7'-6"	conic-tile-tile	
101	main library	clip white conc./glass	glass/c.i.p. white conc.	n/a	glass/cip white conc.	exposed space frame-paint-10'-0"	conic-carpet/n/a	
102	multi-purpose	clip white conc.	clip white conc.	clip white conc.	clip white conc./glass	exposed space frame-paint-10'-0"	conic-carpet/n/a	
103	storage	clip white conc.	clip white conc.	clip white conc.	clip white conc.	exposed space frame-paint-10'-0"	conic-carpet/n/a	
104	office	cnru	cnru	glass	n/a	act-n/a-10'-0"	conic-carpet/n/a	
105	tutorial	cnru	cnru	glass	cnru	act-n/a-10'-0"	conic-carpet/n/a	
106	univ. wc	cnru	cnru	clip white conc./tile	cnru/tile	act-n/a-10'-0"	conic-tile-tile	- refer to interior elev. for tile location
107	corridor	cnru	glass	cnru	cnru	act-n/a-10'-0"	conic-tile-tile	
108	men's wc	cnru/tile	cnru/tile	cnru/tile	cnru/tile	act-n/a-10'-0"	conic-tile-tile	
109	women's wc	cnru/tile	cnru	cnru	cnru	act-n/a-10'-0"	conic-tile-tile	- refer to interior elev. for tile location
110	library services	cnru	n/a	n/a	glass	act-n/a-10'-0"	conic-tile-tile	
111	janitor's	cnru	cnru	cnru	cnru	act-n/a-10'-0"	conic-sheet-ryw	
112	janitor's	cnru	cnru	cnru	cnru/tile	act-n/a-10'-0"	conic-sheet-ryw	
113	IT	cnru	cnru	cnru	cnru	act-n/a-10'-0"	conic-sheet-ryw	
114	storage	cnru	cnru	cnru	cnru	act-n/a-10'-0"	conic-sheet-ryw	
115	workroom	cnru	cnru	clip white conc.	cnru	act-n/a-10'-0"	conic-sheet-ryw	
116	staffroom	cnru	cnru	cnru	cnru	act-n/a-10'-0"	conic-sheet-ryw	
117	MHE	cnru	cnru	cnru	cnru	exposed steel decking-paint-13'-6"	conic-paint-n/a	

**NOTES:**

- all exposed structure (beams, joists, stl. decking) to be painted
- all exposed electrical service to be painted
- all exposed mechanical ductwork & plumbing to be painted
- align tile to brick coursings
- all exposed clip white concrete to be lightly sanded to Contract Administrator's approval

**ABBREVIATIONS**

- act - acoustic ceiling tile
- clip - cast-in-place
- cnru - concrete masonry unit
- gob - gypsum ceiling board, typeC where shown in drawings
- n/a - not applicable
- ryw - rubber wall base

## 1. GENERAL

### 1.1. RELATED REQUIREMENTS

- .1 Section 06 10 00 – Rough Carpentry
- .2 Section 07 84 00 – Firestopping
- .3 Section 08 11 00 – Metal Doors and Frames
- .4 Section 08 44 23 – Structural Sealant Glazed Curtain Walls
- .5 Section 09 22 16 – Non-Structural Metal Framing

### 1.2. REFERENCES

- .1 Aluminum Association (AA)
  - .1 AA DAF 45-[03(R2009)], Designation System for Aluminum Finishes.
- .2 ASTM International
  - .1 ASTM C 475-[02(2007)], Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - .2 ASTM C 514-[04(2009e1)], Standard Specification for Nails for the Application of Gypsum Board.
  - .3 ASTM C 557-[03(2009)e1], Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
  - .4 ASTM C 840-[08], Standard Specification for Application and Finishing of Gypsum Board.
  - .5 ASTM C 954-[07], Standard 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.
  - .6 ASTM C 1002-[07], Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
  - .7 ASTM C 1047-[09], Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
  - .8 ASTM C 1280-[99], Standard Specification for Application of Gypsum Sheathing.
  - .9 ASTM C 1177/C 1177M-[08], Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
  - .10 ASTM C 1178/C 1178M-[08], Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
  - .11 ASTM C 1396/C 1396M-[09a], Standard Specification for Gypsum Wallboard.
- .3 Association of the Wall and Ceilings Industries International (AWCI)
  - .1 AWCI Levels of Gypsum Board Finish-[97].
- .4 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-51.34-[M86(R1988)], Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
  - .2 CAN/CGSB-71.25-[M88], Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.
- .5 Green Seal Environmental Standards (GS)
  - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
- .6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
  - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.

- .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .7 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102-[07], Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.
- .8 Canada Green Building Council (CaGBC)
  - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

### **1.3. ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-installation meetings: comply with Section 01 31 19 - Project Meetings. Conduct pre-installation meeting one week prior to commencing work of this Section to:
  - .1 Verify project requirements, including mock-up requirements.
  - .2 Verify substrate conditions.
  - .3 Co-ordinate products, installation methods and techniques.
  - .4 Sequence work of related sections.
  - .5 Co-ordinate with other building sub trades.
  - .6 Review manufacturer's installation instructions.
  - .7 Review warranty requirements.
- .2 Sequencing: sequence with other work in accordance with Section 01 32 16 - Construction Progress Schedules. Comply with manufacturer's written recommendations for sequencing construction operations.
- .3 Scheduling: schedule with other work in accordance with Section 01 32 16 - Construction Progress Schedules.

### **1.4. ACTION SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Provide two copies of Workplace Hazardous Materials Information System (WHMIS) - Material Safety Data Sheets (MSDS)
- .3 Samples:
  - .1 Provide samples in accordance with section 01 33 00 – Submittal Procedures
- .4 Shop Drawings:
  - .1 Provide fire rated partition assemblies, ULC Design No.'s to Contract Administrator for approval.
- .5 Sustainable Design Submittals:
  - .1 LEED Submittals: in accordance with Section 01 35 20 – LEED Sustainable Requirements.

### **1.5. INFORMATION SUBMITTALS**

- .1 Certificates: provide manufacturer's product certificates certifying materials comply with specified requirements.
- .2 Test and Evaluation Reports:
  - .1 Provide certified test reports in accordance with Section 01 29 83 – Payment Procedures and Testing Laboratory Services.
- .3 Installer Instructions: provide manufacturer's installation instructions, including storage, handling, safety and cleaning.
- .4 Manufacturer's Reports: provide written reports prepared by manufacturer's on-site

personnel to include:

- .1 Verification of compliance of work with Contract.
- .2 Site visit reports providing detailed review of installation of work, and installed work.

#### **1.6. CLOSEOUT SUBMITTALS**

- .1 Provide manufacturer's instructions for care, cleaning and maintenance of prefaced masonry units for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

#### **1.7. QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Manufacturer: capable of providing field service representation during construction and approving application method.
  - .2 Drywall Installers: minimum of 5 years experience in performing work of this section, and specialized in installation of work similar to that required for this project.

#### **1.8. 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 Store gypsum board assemblies materials level off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect gypsum board assemblies from nicks, scratches, and blemishes.
  - .3 Protect from weather, elements and damage from construction operations.
  - .4 Handle gypsum boards to prevent damage to edges, ends or surfaces.
  - .5 Protect prefinished aluminum surfaces with [wrapping] [strippable coating]. Do not use adhesive papers or sprayed coatings, which bond when exposed to sunlight or weather.
  - .6 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacture of pallets, crates, padding and packaging materials in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

#### **1.9. AMBIENT CONDITIONS**

- .1 Maintain temperature 10 degrees C minimum, 21 degrees C maximum for 48 hours prior to and during application of gypsum boards and joint treatment, and for 48 hours minimum 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.

### **2. PRODUCTS**

#### **2.1. MATERIALS**

- .1 Gypsum sheathing board: to ASTM C 36/C 36M regular, Type X and thickness as indicated, 12.7 mm/15.9 mm 1200 mm wide x maximum practical length, ends square cut, tapered edges.
- .2 Water-resistant board: to ASTM C 1396/C 1396M regular, 12.7 mm /15.9 mm 1200 mm wide x maximum practical length.
- .3 Fiberglass-mat faced gypsum roof sheathing: to ASTM C 1177/C 1177M, regular, Type X and thickness as indicated, 12.7mm/15.9 mm thick, 1200 mm wide x maximum practical length.

- .1 DensDeck Roof Board
- .4 Fiberglass-mat faced gypsum wall sheathing: to ASTM C 1177/C 1177M, regular, Type X and thickness as indicated, 12.7mm/15.9 mm thick, 1200 mm wide x maximum practical
- .1 DensGlass Sheathing/DensGlass Fireguard Sheathing (Type X)
- .5 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.

## 2.2. ACCESSORIES

- .1 Steel drill screws: to ASTM C 1002
- .2 Stud adhesive: to CAN/CGSB-71.25.
- .3 Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.
- .4 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, metal, zinc-coated by hot-dip process 0.5mm base thickness, perforated flanges, one piece length per.
- .5 Corner Beads: GA-216, metal corner bead.
- .6 Edge Trim: GA-216, type L bead.
- .7 Control Joints: Back-to-back, paintable L bead.
- .8 Joint Materials: ASTM C475; reinforcing tape, joint compound, adhesive and water.
- .9 Gypsum Board and Sheathing Fasteners: ASTM C1002, Type S12
- .10 Sealants: in accordance with Section 07 92 00 - Joint Sealants.

## 3. EXECUTION

### 3.1. EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for gypsum board assemblies installation in accordance with manufacturer's written instructions.
  - .1 Inform Contract Administrator of unacceptable conditions immediately upon discovery.
  - .2 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Contract Administrator.

### 3.2. ERECTION

- .1 Do application and finishing of gypsum board to ASTM C 840 except where specified otherwise.
- .2 Do application of gypsum sheathing to ASTM C 1280.
- .3 Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C 840 except where specified otherwise.
- .4 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .5 Install work level to tolerance of 1:1200.
- .6 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.
- .7 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
- .8 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .9 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .10 Install wall furring for gypsum board wall finishes to ASTM C 840, except where specified otherwise.
- .11 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- .12 Furr duct shafts, beams, columns, pipes and exposed services where indicated.
- .13 Erect drywall resilient furring transversely across studs, joists, spaced maximum 600 mm

on center and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25 mm drywall screw.

- .14 Install 150 mm continuous strip of 12.7 mm gypsum board along base of partitions where resilient furring installed.

### 3.3. APPLICATION

- .1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work has been approved.
- .2 Apply gypsum board to wood/metal stud framing using screw fasteners, screw fasteners for second layer, maximum spacing of screws 300 mm on center.
  - .1 Single-Layer Application:
    - .1 Apply gypsum board on ceilings prior to application of walls to ASTM C 840.
    - .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 single layer gypsum board to concrete surfaces, where indicated, using laminating adhesive.
  - .1 Comply with gypsum board manufacturer's recommendations.
  - .2 Brace or fasten gypsum board until fastening adhesive has set.
  - .3 Mechanically fasten gypsum board at top and bottom of each sheet.
- .4 Exterior Soffits and Ceilings: install exterior gypsum board perpendicular to supports; stagger end joints over supports. Install with 6 mm gap where boards abut other work.
- .5 Apply water-resistant gypsum board where wall tiles to be applied and adjacent to slop sinks/janitors closets. Apply water-resistant sealant to edges, ends, cutouts that expose gypsum core and to fastener heads.
- .6 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .7 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.
- .8 Install gypsum board with face side out.
- .9 Do not install damaged or damp boards.
- .10 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

### 3.4. 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
- .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.
- .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 Install access doors to electrical and mechanical fixtures specified in respective sections.

- .1 Rigidly secure frames to furring or framing systems.
- .6 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- .7 Provide continuous polyethylene dust barrier behind and across control joints.
- .8 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- .9 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.
- .10 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .11 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.
- .12 Construct control joints of preformed units two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.
- .13 Locate control joints at changes in substrate construction, at approximate 10 m spacing on long corridor runs, at approximate 15 m spacing on ceilings.
- .14 Install control joints straight and true. Construct expansion joints as detailed at building expansion and construction joists. Provide continuous dust barrier.
- .15 Install expansion joint straight and true.
- .16 Install cornice cap where gypsum board partitions do not extend to ceiling.
- .17 Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300 mm on center.
- .18 Splice corners and intersections together and secure to each member with 3 screws.
- .19 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 1: Embed tape for joints and interior angles in joint compound. Surfaces to be free of excess joint compound; tool marks and ridges are acceptable.
    - .3 Level 2: Embed tape for joints and interior angles in joint compound and apply on separate coat of joint compound over joints, and angles, fastener heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable.
    - .4 Level 3: Embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.
    - .5 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.
    - .6 Level 5: 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; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.
- .20 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- .21 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.
- .22 Mix joint compound slightly thinner than for joint taping.
- .23 Apply thin coat to entire surface using trowel or drywall board knife to fill surface texture differences, variations or tool marks.

.24 Allow skim coat to dry completely.

**3.5. 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.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

**3.6. PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by gypsum board assemblies installation.

**END OF SECTION.**



## **1. GENERAL**

### **1.1. RELATED REQUIREMENTS**

- .1 Section 07 21 13 – Board Insulation
- .2 Section 07 21 29 – Sprayed Insulation
- .3 Section 07 26 00 – Vapour Retarders
- .4 Section 08 11 00 – Metal Doors and Frames
- .5 Section 08 44 23 – Structural Sealant Glazed Curtain Walls
- .6 Section 09 21 16 – Gypsum Board Assemblies

### **1.2. REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM C 645-00, Specification for Nonstructural Steel Framing Members.
  - .2 ASTM C 754-00, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .2 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-1.40-97, Primer, Structural Steel, Oil Alkyd Type.
- .3 Environmental Choice Program (ECP).
  - .1 CCD-047a -98, Paints - Surface Coatings.
  - .2 CCD-048-98, Surface Coatings - Recycled Water-borne.
- .4 Canada Green Building Council (CaGBC)
  - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

### **1.3. SUBMITTAL**

- .1 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

### **1.4. QUALITY ASSURANCE**

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

### **1.5. WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 19 – Waste Management and Disposal.
- .2 Collect and separate for disposal paper, plastic, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .3 Divert unused metal materials from landfill to metal recycling facility approved by Contract Administrator.
- .4 Divert unused materials from landfill to recycling facility approved by Contract Administrator.
- .5 Place materials defined as hazardous or toxic waste in designated containers.
- .6 Ensure emptied containers are sealed and stored safely for disposal away from public.
- .7 Use chemical hardeners that are non-toxic, biodegradable and have zero or low VOC's.
- .8 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

### **1.6. 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. Packages or materials showing evidence of water or other damage will be rejected.
- .3 Packaging Waste Management: remove for reuse and return by manufacture of pallets, crates, padding and packaging materials in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

## **2. PRODUCTS**

### **2.1. MATERIALS**

- .1 Non-load bearing channel stud framing: to ASTM C 645, 152 mm stud size, roll formed from 0.91 mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centers.
- .2 Floor and ceiling tracks: to ASTM C 645, in widths to suit stud sizes, 32 mm flange height. All non-loadbearing fire rated walls to have slotted top track to accommodate movement.
- .3 Metal channel stiffener: of same material as studs, thickness to suit purpose.
- .4 Metal furring hat-shaped Channels: to ASTM C 645, 25 gauge, with G40 hot-dipped galvanized coating per ASTM A 525.
- .5 Acoustical sealant: as specified in 07 92 00 Joint Sealants.
- .6 Insulating strip: rubberized, moisture resistant 3 mm thick foam strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.
- .7 Touch-Up Primer for Galvanized Surfaces: SPCC – Paint 20 zinc rich.

### **2.2. ACCESSORIES**

- .1 Acoustical sealant: to Section 07 92 00 – Joint Sealants.
- .2 Insulating strip: rubberized, moisture resistant 3 mm thick cork foam strip, 12 mm wide, with self-sticking adhesive on one face, lengths as required.
- .3 Dampproof course: closed cell, polyethylene foam, 6.3 mm thick, 89 mm wide.

## **3. EXECUTION**

### **3.1. ERECTION**

- .1 Align partition tracks at floor and ceiling and secure at 600 mm on center maximum.
- .2 Allow minimum deflection gap of 16.5 mm for double track or slotted single top track.
- .3 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- .4 Place studs vertically at 400 mm on center and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
- .5 Erect metal studding to tolerance of 1:1000.
- .6 Attach studs to bottom and ceiling track using screws.
- .7 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .8 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .9 Provide two studs extending from floor to ceiling at each side of openings wider than stud centers specified. Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
- .10 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
- .11 Frame openings and around built-in equipment, cabinets, access panels, on four sides.

Extend framing into reveals. Check clearances with equipment suppliers.

- .12 Provide 40 mm stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.
- .13 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .14 Extend partitions to ceiling height except where noted otherwise on drawings.
- .15 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.
- .16 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .17 Install two continuous beads of acoustical sealant under studs and tracks around perimeter of sound control partitions.

### **3.2. HAT CHANNEL FURRING**

- .1 Attach hat-shaped furring channels either vertically or horizontally with fasteners through alternate wing flanges (staggered).
- .2 Space furring channels at 600 mm on center, unless otherwise indicated. Where furring is indicated to receive backer board, water resistant gypsum board with ceramic tile, or veneer plaster, space at 400 mm on center.
- .3 Install furring channels within 100 mm of the floor line and ceiling line.

### **3.3. 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.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

## **1. GENERAL**

### **1.1. RELATED REQUIREMENTS**

- .1 Section 03 30 00 – Cast-in-Place Concrete
- .2 Section 04 22 00 – Concrete Unit Masonry

### **1.2. REFERENCES**

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
  - .1 ANSI A108.1-[99], Specification for the Installation of Ceramic Tile. (includes ANSI A108.1AC, 108.4.13, A118.1.10, ANSI A136.1)
  - .2 CTI A118.3-[92], Specification for Chemical Resistant Water Cleanable Tile Setting and Grouting Epoxy. (included in ANSI A108.1)
  - .3 CTI A118.6-[92], Specification for Ceramic Tile Grouts. (included in ANSI A108.1)
- .2 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-75.1-[M88], Tile, Ceramic.
  - .2 CAN/CGSB-25.20-[95], Surface Sealer for Floors. Environmental Choice Program (ECP).
- .3 Canada Green Building Council (CaGBC)
  - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

### **1.3. SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Assembled samples, 300 mm x 450 mm, with grouted joints, for each type and composition of tile and for each color and finish required.
- .3 Submit WHIMIS MSDS – Material Safety Data Sheets in accordance with Section 01 33 Shop Drawings, Product Data, and Samples, with the VOC levels highlighted
- .4 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

### **1.4. QUALITY ASSURANCE**

- .1 Manufacturer must have experience in the manufacturing of specified flooring.
- .2 Installer must have performed installations of the same scale in the last three (3) years.
- .3 Installation of mock-up is required and must be deemed acceptable by Contract Administrator. Mock-up is to be installed following the same procedures and utilizing the same specified materials that will be used for the actual project.
- .4 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

### **1.5. AMBIENT CONDITIONS**

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after, installation.
- .2 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.
- .3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

### **1.6. WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 19 – Waste Management and Disposal.
- .2 Collect and separate for disposal paper, plastic, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .3 Divert unused materials from landfill to recycling facility approved by Contract

- .4 Place materials defined as hazardous or toxic waste in designated containers.
- .5 Ensure emptied containers are sealed and stored safely for disposal away from public.
- .6 Use chemical hardeners that are non-toxic, biodegradable and have zero or low VOC's.
- .7 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

## 1.7. MAINTENANCE

- .1 Extra materials:
  - .1 Provide maintenance materials in accordance with Section 01 78 00 Closeout Submittals.
  - .2 Provide minimum 2% of each type and colour of tile required for project maintenance use.
  - .3 Maintenance material same production run as installed material.
  - .4 Store where directed by Contract Administrator.

## 2. PRODUCTS

### 2.1. TILE MATERIAL

- .1 Ceramic tile to CAN/CGSB-75.1
- .2 Wall tile
  - .1 Manufacturer: Centura Tile
  - .2 Type: Matte White 16 x 4 wall tile
    - .1 Size: 400 mm x 100 mm x 7.7 mm
    - .2 Pattern: Stack bond, align to masonry block module as indicated on drawings
    - .3 Colour: matte white
    - .4 Grout: colour to match tile, epoxy grout to ANSI A118.3
- .3 Floor tile (100, 101 see plan, 106, 107, 108, 109)
  - .1 Manufacturer: Mirage Granito Ceramico
  - .2 Supplier: Centura Tile
  - .3 Type: Mashup
    - .1 Size: 600 mm x 600 mm x 9.5 mm
    - .2 Pattern: Stack bond, layout as indicated on drawings
    - .3 Colour: MP 04 Road
    - .4 Grout colour: to match tile
- .4 Trim shapes, conform to applicable requirements of adjoining floor and wall tile.

### 2.2. MORTAR AND ADHESIVE MATERIALS

- .1 Cement: to CSA-A5, type 10.
- .2 Sand: to ASTM C 144, passing 16 mesh.
- .3 Hydrated lime: to ASTM C 207
- .4 Latex additive: formulated for use in cement mortar and thin set bond coat.
- .5 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

### 2.3. BOND COAT

- .1 Dry set cement mortar: to ANSI A108.1.
- .2 Organic adhesive: to CGSB 71-GP-22M, Type [1] [2]
  - .1 Maximum VOC limit [65] g/L [to SCAQMD Rule 1168].
- .3 Latex Cement mortar: to ANSI A108.1, two-component universal dry-set mortar.
- .4 Epoxy bond coat: non-toxic, non-flammable, non-hazardous during storage, mixing, application, and when cured. To produce shock and chemical resistant mortars having the following physical characteristics:

- .1 Compressive Strength: 246 kg/cm<sup>2</sup>.
- .2 Bond Strength: 53 kg/cm<sup>2</sup>.
- .3 Water Absorption: 4.0% Max.
- .4 Flame Contribution Factor: 0.
- .5 Finished mortar and grout to be resistant to urine, dilute acid, dilute alkali, sugar, brine and food waste products, petroleum distillates, oil and aromatic solvents.
- .6 Bond Coat: maximum VOC limit [65] g/L [to SCAQMD Rule 1168].
- .5 Chemical-Resistant Bond Coat:
  - .1 Epoxy Resin Type: CTI A118.3.
  - .2 Furan Resin Type: CTI A118.5.
  - .3 Bond Coat: maximum VOC limit [65] g/L [to SCAQMD Rule 1168].

#### 2.4. GROUT

- .1 Colouring Pigments:
  - .1 Pure mineral pigments, limeproof and nonfading, complying with ASTM C 979.
  - .2 Colouring pigments to be added to grout by manufacturer.
  - .3 Job coloured grout are not acceptable.
  - .4 Use in Commercial Cement Grout, Dry-Set Grout, and Latex Cement Grout.
- .2 Cement Grout: to ANSI A108.1.
  - .1 Use one part white cement to one part white sand passing a number 30 screen.
- .3 Latex Cement Grout: to ANSI A108.1, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, unsanded mix for walls and floors with polished tiles commercial tile grout.
- .4 Chemical-Resistant Grout:
  - .1 Epoxy grout: to ANSI A108.1, having quality, colour and characteristics to match epoxy bond coat. Adhesive and grout by same manufacturer.
  - .2 Furan grout: to CTI A118.5.

#### 2.5. ACCESSORIES

- .1 Reinforcing mesh: 50 x 50 x 1.6 x 1.6 mm galvanized steel wire mesh, welded fabric design, in flat sheets.
- .2 Cleavage plane: polyethylene film to CGSB 51-34
- .3 Metal lath: to ASTM C 847 [galvanized] [painted] finish, 10 mm rib at 2.17 kg/m<sup>2</sup>.
- .4 Transition Strips: purpose made metal extrusion; anodized aluminum type.
- .5 Reducer Strips: purpose made metal extrusion; anodized aluminum type; maximum slope of 1:2.
- .6 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.
- .7 Sealant: in accordance with Section [07 92 00 - Joint Sealants].
  - .1 Sealants: maximum VOC limit [250] g/L [to SCAQMD Rule 1168].
- .8 Floor sealer and protective coating: [to CAN/CGSB-25.20, Type to tile and grout manufacturers recommendations]

#### 2.6. MIXES

- .1 Cement:
  - .1 Scratch coat: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water, [and latex additive where required]. Adjust water volume depending on water content of sand.
  - .2 Slurry bond coat: cement and water mixed to creamy paste. Latex additive may be included.
  - .3 Mortar bed for floors: 1 part cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. [Latex additive may be included].

- .4 Mortar bed for walls and ceilings: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand and 1 part water. Adjust water volume depending on water content of sand. [Latex additive may be included].
- .5 Levelling coat: 1 part cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.
- .6 Bond or setting coat: 1 part cement, 1/3 part hydrated lime, 1 part water.
- .7 Measure mortar ingredients by volume.
- .2 Dry set mortar: mix to manufacturer's instructions.
- .3 Organic adhesive: pre-mixed.
- .1 Adhesives: maximum VOC limit [65] g/L [to SCAQMD Rule 1168].
- .4 Mix bond and levelling coats, and grout to manufacturer's instructions.
- .5 Adjust water volumes to suit water content of sand.

### **2.7. CLEANING COMPOUNDS**

- .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.
- .2 Materials containing acid or caustic material are not acceptable.

### **3. EXECUTION**

#### **3.1. MANUFACTURER'S INSTRUCTIONS**

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

#### **3.2. WORKMANSHIP**

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007, "Ceramic Tile", except where specified otherwise.
- .2 Apply tile or backing coats to clean and sound surfaces.
- .3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
- .4 Maximum surface tolerance [1:800].
- .5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .6 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .8 Make internal angles square, external angles rounded
- .9 Allow minimum 24 hours after installation of tiles, before grouting.
- .10 Clean installed tile surfaces after installation and grouting cured.
- .11 Make control joints where indicated. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07 92 00 - Joint Sealants. Keep building expansion joints free of mortar and grout.

#### **3.3. CLEANING**

- .1 Upon completion of installation proceed in accordance with 01 74 00 – Cleaning

**END OF SECTION.**

## **1. GENERAL**

### **1.1. RELATED REQUIREMENTS**

- .1 Section 04 22 00 – Concrete Unit Masonry
- .2 Section 13 32 13 – Metal Space Frames

### **1.2. REFERENCES**

- .1 ASTM International:
  - .1 ASTM C423 – Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
  - .2 ASTM C635 – Standard Specification for Metal Suspension Systems for Acoustic Tile and Lay-in Panel Ceilings
  - .3 ASTM E84 – Test Method for Surface Burning Characteristics of Building Materials
  - .4 ASTM E119 – Fire Test of Building Construction and Materials
  - .5 ASTM E1264 – Classification for Acoustic Ceiling Products
  - .6 ASTM E1414 – Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
- .2 Canadian General Standards Board (CGSB):
  - .1 CAN/CGSB-92.1, Sound Absorptive Prefabricated Acoustical Units.
- .3 Ceilings and Interior Systems Construction Association (CISCA):
  - .1 CISCA Code of Practices.
- .4 Canada Green Building Council (CaGBC)
  - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

### **1.3. SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data: Submit manufacturer's product data, maintenance and installation instructions.
- .3 Shop Drawing Submittals: in accordance with Section 01 33 00 – Submittal Procedures.
  - .1 Indicate details of Construction, profiles, fastening, panel layout, and other related details.
- .4 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

### **1.4. QUALITY ASSURANCE**

- .1 Installer must have performed installations of the same scale in the last three (3) years.
- .2

### **1.5. AMBIENT CONDITIONS**

- .1 Maintain a uniform air temperature above 15 degrees C and humidity of 20-40% for 48 hours before, during, and 48 hours after, installation.
- .2 Permit wet work to dry before commencement of installation.

### **1.6. WARRANTY**

- .1 Provide manufacturer's warranty against defects in materials.
  - .1 Warranty shall provide material and labour to repair or replace defective materials.
- .2 Manufacturer's warranty shall cover a period of one (1) year from date of substantial completion.

### **1.7. WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .3 Divert unused metal materials from landfill to metal recycling facility approved by Contract



- .4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

### 1.8. 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. Packages or materials showing evidence of water or other damage will be rejected.
- .3 Packaging Waste Management: remove for reuse and return by manufacture of pallets, crates, padding and packaging materials in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

### 1.9. MAINTENANCE

- .1 Extra materials:
  - .1 Provide maintenance materials in accordance with Section 01 78 00 Closeout Submittals.
  - .2 Provide acoustical units amounting to 5% of gross ceiling area for each pattern and type required for project.
  - .3 Extra materials to be from same production run as installed materials.
  - .4 Clearly identify each type of acoustic unit, including colour and texture.
  - .5 Deliver to Contract Administrator, upon completion of the work of this section.
  - .6 Store where directed by Contract Administrator.

## 2. PRODUCTS

### 2.1. ACOUSTIC CEILING UNITS

- .1 Acoustic Ceiling Panel
  - .1 Manufacture: CertainTeed Ceilings Corporation
  - .2 Product: Performa Symphony m (1222BF-IOF-1)
  - .3 Panel Shape: Square
  - .4 Size: 609 mm x 609 mm x 19 mm (24" x 24" x 3/4")
  - .5 Edges: Narrow Reveal Beveled Corner for 9/16" grid
  - .6 Colour: White
  - .7 Recycled Content: 63%
    - .1 Post consumer content: 4%
    - .2 Pre-consumer content: 59%
  - .8 Mold/Mildew Inhibitor: BioShield
  - .9 Performance:

Flame spread	Class A	ASTM E84
Noise Reduction Coefficient	.70	ASTM C423
Light Reflectance	.90	ASTM E1477
- .2 Fire Rated Acoustic Ceiling Panel
  - .1 Manufacture: CertainTeed Ceilings Corporation
  - .2 Product: Performa Protectone Vantage 10 (VAN-150)
  - .3 Panel Shape: Square
  - .4 Size: 609 mm x 609 mm x 15.8 mm (24" x 24" x 5/8")
  - .5 Edges: Reveal Beveled Corner for 15/16" grid
  - .6 Colour: White
  - .7 Recycled Content: 45%
    - .1 Post consumer content: 8%
    - .2 Pre-consumer content: 37%
  - .8 Mold/Mildew inhibitor: BioShield

- .9 Underwriters Laboratories, Inc. Fire-resistance Time-rated Assemblies
  - .1 Protectone Vantage 10: P204
- .10 Performance:

Flame spread	Class A	ASTM E84
Noise Reduction Coefficient	.55	ASTM C423
Light Reflectance	.83	ASTM E1477

## 2.2. ACCESSORIES

- .1 Suspension System:
  - .1 Manufacture: CertainTeed Ceilings Corporation
  - .2 Product: Elite Narrow Stab
    - .1 Double web design manufactured of hot-dipped galvanized steel
  - .3 Flange Size: 14 mm (9/16")
  - .4 Colour: White
  - .5 Components
    - .1 Main runner length: 3 658 mm (12')
    - .2 Cross tee length: 609 mm (2')
- .2 Fire Rated Suspension System:
  - .1 Manufacture: CertainTeed Ceilings Corporation
  - .2 Product: FireSecure Stab
  - .3 Flange Size: 24 mm (15/16")
  - .4 Colour: White
  - .5 Components
    - .1 Main runner length: 3 658 mm (12')
    - .2 Cross tee length: 609 mm (2')
- .3 Attachment Devices: Anchors sufficient for five-times design load indicated in ASTM C635 (table 1). Wire for hangers of size and type to suit intended application, complying with ASTM C641, Class 1 zinc coating, not less than 12 gauge.

## 3. EXECUTION

### 3.1. MANUFACTURER'S INSTRUCTIONS

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

### 3.2. EXAMINATION

- .1 Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- .2 Inform Contract Administrator of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval from Contract Administrator.
- .4 Coordinate work with other sections to ensure installation as per specifications and drawings.

### 3.3. INSTALLATION

- .1 Install suspension system at manufacture's instructions.
- .2 Lay out system according to architectural drawings.
- .3 Ensure suspension system is co-ordinated with location of related components.
- .4 Completed suspended system to support super-imposed loads, such as lighting fixtures, diffuser grills, etc.
- .5 Install components plumb, level, and rigid in accordance with approved shop drawings and product data.

- .6 Install ceiling system in accordance with ASTM C636
- .7 In fire rated ceiling systems, secure lay-in panels with hold-down clips and protect over light fixtures, diffusers, air return grilles and other appurtenances according to Certification Organizations design requirements.

**3.4. CLEANING**

- .1 Upon completion of installation proceed in accordance with 01 74 00 – Cleaning
- .2 Clean exposed surfaces of acoustical ceiling, trim, edge moldings and suspension members to comply with manufacturer's instructions for cleaning.
- .3 Touch up any minor finish damage and to be approved by Contract Administrator.
- .4 Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

**3.5. PROTECTION**

- .1 Protect installed work from damage due to subsequent construction activity, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the completion of construction.
- .2 Replace any and all damaged ceiling system components.

**END OF SECTION.**

## **1. GENERAL**

### **1.1. RELATED REQUIREMENTS**

- .1 Section 04 22 00 – Concrete Unit Masonry
- .2 Section 13 32 13 – Metal Space Frames

### **1.2. REFERENCES**

- .1 ASTM International:
  - .1 ASTM C423 – Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
  - .2 ASTM C635 – Standard Specification for Metal Suspension Systems for Acoustic Tile and Lay-in Panel Ceilings
  - .3 ASTM E84 – Test Method for Surface Burning Characteristics of Building Materials
  - .4 ASTM E119 – Fire Test of Building Construction and Materials
  - .5 ASTM E1264 – Classification for Acoustic Ceiling Products
  - .6 ASTM E1414 – Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
- .2 Canadian General Standards Board (CGSB):
  - .1 CAN/CGSB-92.1, Sound Absorptive Prefabricated Acoustical Units.
- .3 Ceilings and Interior Systems Construction Association (CISCA):
  - .1 CISCA Code of Practices.
- .4 Canada Green Building Council (CaGBC)
  - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

### **1.3. SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data: Submit manufacturer's product data, maintenance and installation instructions.
- .3 Shop Drawing Submittals: in accordance with Section 01 33 00 – Submittal Procedures.
  - .1 Indicate details of Construction, profiles, fastening, panel layout, and other related details.
- .4 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

### **1.4. QUALITY ASSURANCE**

- .1 Installer must have performed installations of the same scale in the last three (3) years.

### **1.5. MOCK-UPS**

- .1 Mock-ups: Construct mock-ups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution in accordance with Section 01 45 00 Quality Control for mock-ups and as follows:
  - .1 Build mock-up of typical panel within irregular truss space, incorporating the panel and finish along with fastening method.
- .2 Notify Contract Administrator a minimum seven days prior to mock-up construction.
- .3 Review and acceptance of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless Contract Administrator specifically notes such deviations in writing.
- .4 Once reviewed by Contract Administrator, acceptable mock-up can form a permanent part of the Work, and will form the basis for acceptance for the remainder of the project.
- .5 Remove and replace materials found not acceptable at no additional cost to the contract.

### **1.6. AMBIENT CONDITIONS**

- .1 Maintain a uniform air temperature above 15 degrees C and humidity of 20-40% for 48 hours before, during, and 48 hours after, installation.
- .2 Permit wet work to dry before commencement of installation.

#### **1.7. WARRANTY**

- .1 Provide manufacturer's warranty against defects in materials.
  - .1 Warranty shall provide material and labour to repair or replace defective materials.
- .2 Manufacturer's warranty shall cover a period of one (1) year from date of substantial completion.

#### **1.8. WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .3 Divert unused metal materials from landfill to metal recycling facility approved by Contract Administrator.
- .4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

#### **1.9. 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. Packages or materials showing evidence of water or other damage will be rejected.
- .3 Packaging Waste Management: remove for reuse and return by manufacture of pallets, crates, padding and packaging materials in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

#### **1.10. MAINTENANCE**

- .1 Extra materials:
  - .1 Provide maintenance materials in accordance with Section 01 78 00 Closeout Submittals.
  - .2 Provide acoustical units amounting to 5% of gross ceiling area for each pattern and type required for project.
  - .3 Extra materials to be from same production run as installed materials.
  - .4 Clearly identify each type of acoustic unit, including colour and texture.
  - .5 Deliver to Contract Administrator, upon completion of the work of this section.
  - .6 Store where directed by Contract Administrator.

### **2. PRODUCTS**

#### **2.1. ACOUSTIC FABRIC-FACED PANELS**

- .1 Acoustic Fabric-Faced Ceiling Panel
  - .1 Manufacturer: Sound Concepts, 599 Henry Ave., Winnipeg, MB, 866-525-4496, [www.soundconceptscan.com](http://www.soundconceptscan.com)
  - .2 Construction: 1/2" MDF core, 1" 6.0 pcf fiberglass cores on either side
  - .3 Panel Shape: Custom triangulation to fit into space frame truss
  - .4 Fabric: Guilford of Maine FR701 style 2100, White 2100-224
  - .5 Fastening: 1" velcro hook tab @ 12" o/c to truss member c/w self-adhered strip to member, see drawings for details

### **3. EXECUTION**

**3.1. MANUFACTURER'S INSTRUCTIONS**

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

**3.2. EXAMINATION**

- .1 Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- .2 Inform Contract Administrator of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval from Contract Administrator.
- .4 Coordinate work with other sections to ensure installation as per specifications and drawings.
- .5 All spaces in truss to be filled with panels to be templated on site to suit openings.

**3.3. INSTALLATION**

- .1 Install acoustical system as per manufacture's instructions.
- .2 Lay out system according to architectural drawings.
- .3 Ensure acoustical system is co-ordinated with location of related components.
- .4 Install components rigid in place tight to space frame members in accordance with approved shop drawings, product data and mockup.

**3.4. CLEANING**

- .1 Upon completion of installation proceed in accordance with 01 74 00 – Cleaning
- .2 Clean exposed surfaces of acoustical system to comply with manufacturer's instructions for cleaning.
- .3 Touch up any minor finish damage and to be approved by Contract Administrator.
- .4 Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

**3.5. PROTECTION**

- .1 Protect installed work from damage due to subsequent construction activity, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the completion of construction.
- .2 Replace any and all damaged panel system components.

**END OF SECTION.**

## **1. GENERAL**

### **1.1. RELATED REQUIREMENTS**

- .1 Section 04 22 00 – Concrete Unit Masonry
- .2 Section 13 32 13 – Metal Space Frames

### **1.2. REFERENCES**

- .1 ASTM International:
  - .1 ASTM E84 – Test Method for Surface Burning Characteristics of Building Materials
- .2 Ceilings and Interior Systems Construction Association (CISCA):
  - .1 CISCA Code of Practices.
- .3 Canada Green Building Council (CaGBC)
  - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

### **1.3. SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data: Submit manufacturer's product data, maintenance and installation instructions.
- .3 Certified Test Reports: Submit test data from independent testing agency, acceptable to authorities having jurisdiction, evidencing that ceiling assembly complies with requirements indicated for fire performance characteristics.
  - .1 Each ceiling must carry the UL label.
- .4 Shop Drawing Submittals: in accordance with Section 01 33 00 – Submittal Procedures.
  - .1 Indicate details of construction, profiles, fastening, panel layout, and other related details.
- .5 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

### **1.4. QUALITY ASSURANCE**

- .1 Installer must have performed installations of the same scale in the last three (3) years.
- .2 Membrane shall be stretched over the subsurface and hooked into the aluminum rails without glue or clips.
- .3 The stretch ceiling shall be removable by hand and approved tools, to provide access above ceiling and to provide subsequent re-installation.
- .4 The membrane shall not be less than 17/100mm thick and shall not weigh more than 20g per square foot.
- .5 All membranes/sheets shall be washable and antibacterial.

### **1.5. PROJECT CONDITIONS**

- .1 Do not begin installation until spaces to receive stretched ceilings have been enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead mechanical and electrical work is completed, tested and approved.
- .2 Permit wet work to dry prior to commencement of installation.
- .3 Maintain uniform temperatures and humidity prior to, during and after installation.

### **1.6. WARRANTY**

- .1 Provide manufacturer's warranty against defects in product, harpoon welds, sheet welds and colorfastness for a period of ten years and workmanship for a period of two years.

### **1.7. WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

- .2 Collect and separate for disposal paper, plastic, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .3 Divert unused metal materials from landfill to metal recycling facility approved by Contract Administrator.
- .4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

**1.8. 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. Packages or materials showing evidence of water or other damage will be rejected.
- .3 Packaging Waste Management: remove for reuse and return by manufacture of pallets, crates, padding and packaging materials in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

**2. PRODUCTS**

**2.1. STRETCH CEILING**

- .1 Manufacturer: Barrisol Normalu S.A., 68680 Kembs, France
  - .1 Local Dealer: 1-800-370-2949, info@barrisol.ca
  - .2 Construction: stretch PVC
  - .3 Panel Shape: custom fit to vestibule ceiling, approx. 10'-0" x 10'-0"
  - .4 Finish: BEL 02 Equinox
  - .5 Aluminum rail: BS 350/01
  - .6 Seams/Welds: seams lapped and factory welded, seam location to be specified by Architect.

**3. EXECUTION**

**3.1. MANUFACTURER'S INSTRUCTIONS**

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

**3.2. EXAMINATION**

- .1 Examine substrates and conditions, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- .2 Inform Contract Administrator of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval from Contract Administrator.
- .4 Take exact field measurements for custom production of ceiling membrane.
- .5 Coordinate work with other sections to ensure installation as per specifications and drawings.

**3.3. INSTALLATION**

- .1 Field measure each space with a stretch ceiling.
- .2 Fasten the rails at the perimeter of each room using mitered cut corners and the appropriate fixing technique for each type of surface as recommended by manufacturer.
- .3 Heat the ceiling membrane to release the sheet for installation purposes.
- .4 Extend the membrane into the rails with the appropriate manufacturers tools.
- .5 After the membrane is completely secured, the heating source should be removed to allow the membrane to recover to its designated size, free of wrinkles.



- .6 Make all required penetrations for lights, HVAC, sprinkler systems, etc. and secure the opening with a manufacturers reinforcement ring or square using the appropriate technique for each item as recommended by manufacturer.

**3.4. CLEANING**

- .1 Upon completion of installation proceed in accordance with 01 74 00 – Cleaning
- .2 Clean the complete ceiling installation and adjoining construction as required.
- .3 Provide a written recommendation for cleaning and maintenance. Procedure including a list of approved cleaning products.
- .4 Touch up any minor finish damage and to be approved by Contract Administrator.
- .5 Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

**3.5. PROTECTION**

- .1 Protect installed work from damage due to subsequent construction activity, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the completion of construction.
- .2 Replace any and all damaged components.

**END OF SECTION.**

## **1. GENERAL**

### **1.1. RELATED REQUIREMENTS**

- .1 Section 03 30 00 – Cast-in-Place Concrete
- .2 Section 04 22 00 – Concrete Unit Masonry

### **1.2. REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM F 1303-[04], Standard Specification for Sheet Vinyl Floor Covering with Backing.
  - .2 ASTM D 2047: Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
  - .3 ASTM D 5116: Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.
  - .4 ASTM E 1745: Standard Specification for Water Vapor Retarders Used in Contact with Soil Or Granular Fill under Concrete Slabs.
  - .5 ASTM F 710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
  - .6 ASTM F 1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
  - .7 ASTM F 1344: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHIMIS)
  - .1 Material Safety Data Sheets (MSDS)
- .3 GreenGuard Environmental Institute (GEI)
  - .1 GreenGuard Indoor Air Quality Certified.
  - .2 GreenGuard Children and Schools Certified.
- .4 National Fire Protection Association
  - .1 NFPA 101: Life Safety Code.
- .5 International Organization for Standardization (ISO)
  - .1 ISO 9001: Quality Management Systems – Requirements.
  - .2 ISO 14001: Environmental Management Systems – Requirements with Guidance for Use.
- .6 Canada Green Building Council (CaGBC)
  - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

### **1.3. SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
  - .1 Submit 300mm x 300mm sample pieces of sheet material, 300mm long cover former and capping strip.
- .2 Submit WHIMIS MSDS – Material Safety Data Sheets in accordance with Section 01 33 Shop Drawings, Product Data, and Samples, with the VOC levels highlighted
- .3 Provide maintenance data for resilient flooring for incorporation into manual specified in 01 78 00 Closeout Submittals.
- .4 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

### **1.4. QUALITY ASSURANCE**

- .1 Manufacturer must have experience in the manufacturing of specified flooring.
- .2 Installer must have performed installations of the same scale in the last three (3) years and possess valid compliance with ISO 9001.
- .3 Installation of mock-up is highly recommended and must be deemed acceptable by

Contract Administrator. Mock-up is to be installed following the same procedures and utilizing the same specified materials that will be used for the actual project.

**1.5. AMBIENT CONDITIONS**

- .1 Maintain air temperature and structural base temperature at flooring installation area above 20 degrees C for seven days before, during, and seven days after, installation.

**1.6. WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

**1.7. MAINTENANCE**

- .1 Extra Materials
  - .1 Provide 2% extra of each colour required for project for maintenance use.
  - .2 Extra materials to be one piece and from same run as installed materials.
  - .3 Store where directed by Contract Administrator.

**1.8. ENVIRONMENTAL REQUIREMENTS**

- .1 The VOC content of the adhesives, sealants, and sealant primers used must be less than the VOC content limits of the State of California's South Coast Air Quality Management District (SCAQMD) Rule #1168 (effective date of January 2007).

**2. PRODUCTS**

**2.1. SHEET MATERIAL**

- .1 Sheet vinyl to ASTM F 1913-04, commercial.
  - .1 Manufacturer: GerFlor Group
  - .2 Type: Mipolam Symbioz
    - .1 Size: 200 cm wide rolls
    - .2 Thickness: 2.0 mm
    - .3 Weight: 2580 gr/m<sup>2</sup>
    - .4 Fire rating: CAN/ULC S102.2
    - .5 Joints: Welded
    - .6 Colour: 6059 Black Diamond
    - .7 Finish: Matt Evercare surface treatment

**2.2. RESILIENT BASE**

- .1 Johnsonite Vinyl Wall Base
  - .1 Thickness: 0.080" (2mm)
  - .2 Height: 2 1/2" (64mm)
  - .3 Colour: 40-Black
  - .4 Outside/Inside corners: preformed
  - .5 Adhesive: Use water-resistant type recommended by manufacturer to suit product and substrate.

**2.3. COVING**

- .1 Johnsonite Cove Cap SCC-XX-B
  - .1 Colour: 40-Black
- .2 Gerflor Cove Former 0478
  - .1 Colour: 6512-Black

### **3. EXECUTION**

#### **3.1. MANUFACTURER'S INSTRUCTIONS**

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

#### **3.2. PREPARATION**

- .1 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.
- .2 Prime concrete slab to resilient flooring manufacturer's printed instructions.

#### **3.3. APPLICATION: FLOORING**

- .1 Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through 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. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .3 Lay flooring with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material.
- .4 Run sheets in direction of traffic. Heat weld according to manufacturer's printed instructions.
- .5 Heat weld seams of vinyl sheet flooring in accordance with manufacturer's printed instructions.
- .6 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.
- .7 Cut flooring around fixed objects.
- .8 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .9 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.

#### **3.4. APPLICATION: BASE**

- .1 Comply with manufacturer's written instructions for installing resilient base.
- .2 Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- .3 Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- .4 Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- .5 Do not stretch resilient base during installation.
- .6 On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- .7 Preformed Corners: Install preformed corners before installing straight pieces.
- .8 Job-Formed Corners:
  - .1 Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends.
  - .2 Inside Corners: Use straight pieces of maximum lengths possible.
- .9 Sheet flooring in staff washroom to be taken up wall 2 1/2" using cove former and cove cap as per manufacturer's printed instructions.

#### **3.5. CLEANING**

- .1 Upon completion of installation proceed in accordance with 01 74 00 – Cleaning
- .2 Comply with manufacturer's written instructions for cleaning and protection of resilient
- .3 products.
- .4 Perform the following operations immediately after completing resilient product installation:
  - .1 Remove adhesive and other blemishes from exposed surfaces.
  - .2 Sweep and vacuum surfaces thoroughly.
  - .3 Damp-mop surfaces to remove marks and soil.
- .5 Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- .6 Cover resilient products until Substantial Completion.

**END OF SECTION.**

## **1. GENERAL**

### **1.1. RELATED REQUIREMENTS**

- .1 Section 03 30 00 – Cast-in-Place Concrete
- .2 Section 04 22 00 – Concrete Unit Masonry

### **1.2. REFERENCES**

- .1 American Association of Textile Chemists and Colorists (AATCC)
  - .1 AATCC Test Method 16-[2004], Colorfastness to Light.
  - .2 AATCC Test Method 23-[2005], Colorfastness to Burn Gas Fumes.
  - .3 AATCC Test Method 129-[2005], Colourfastness to Ozone in the Atmosphere Under High Humidities.
  - .4 AATCC Test Method 134-[2006], Electrostatic Propensity of Carpets.
  - .5 AATCC Test Method 171-[2005], Carpets: Cleaning of; Hot Water Extraction Method.
  - .6 AATCC Test Method 175-[2008], Stain Resistance: Pile Floor Coverings.
  - .7 AATCC Test Method 189-[2007], Fluorine Content of Carpet Fibers
- .2 ASTM International
  - .1 ASTM D 297-[93(2006)], Standard Test Methods for Rubber Products-Chemical Analysis.
  - .2 ASTM D 1335-[05], Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings.
  - .3 ASTM D 2661-[08], Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings.
  - .4 ASTM D 1667-[05], Standard Specification for Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
  - .5 ASTM D 3574-[08], Standard Test Methods for Flexible Cellular Materials - Slab, Bonded, and Molded Urethane Foams.
  - .6 ASTM D 3936-[05], Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering.
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-4.2 No. 22-[2004], Textile Test Methods - Colourfastness to Rubbing (Crocking).
  - .2 CAN/CGSB-4.2 No.27.6M-[2004], Textile Test Methods - Flame Resistance - Methemine Tablet Test for Textile Floor Coverings.
  - .3 CAN/CGSB-4.2 No. 76-[94]/ISO 2551: [1981] , Textile Test Methods - Machine-Made Textile Floor Coverings - Determination of Dimensional Changes Due to the Effects of Varied Water and Heat Conditions.
  - .4 CAN/CGSB-4.2 No.77.1-[94]/ISO 4919:[2000] , Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.
  - .5 CAN/CGSB-4.129-[93(R1997)], Carpets for Commercial Use.
- .4 Canada Green Building Council (CaGBC)
  - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

### **1.3. SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
  - .1 Submit samples for review and acceptance of each unit.
- .2 Provide maintenance data for tile carpeting for incorporation into manual specified in 01 78 00 Closeout Submittals.
- .3 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

### **1.4. QUALITY ASSURANCE**

- .1 Manufacturer must have experience in the manufacturing of specified flooring.
- .2 Installer must have performed installations of the same scale in the last three (3) years.

**1.5. SITE CONDITIONS**

- .1 Ensure substrate is within moisture limits and alkalinity limits as recommended by manufacturer.
- .2 Maintain ambient temperature of not less than 18 degrees C for 48 hours before, during, and 48 hours after, installation.
- .3 Maintain relative humidity between 10% and 65% for 48 hours before, during, and 48 hours after, installation.

**1.6. WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

**1.7. MAINTENANCE**

- .1 Extra Materials
  - .1 Provide 2% excess tiles of each colour required for project for maintenance use.
  - .2 Extra materials to be one piece and from same run as installed materials.
  - .3 Store where directed by Contract Administrator.

**2. PRODUCTS**

**2.1. MATERIALS**

- .1 Carpet tile, commercial.
  - .1 Manufacturer: Interface Flooring
  - .2 Product: Cubic Colours
    - .1 Size: 50cm x 50cm
    - .2 Total Thickness: 6.98mm
    - .3 Density: 254.3 g/m<sup>3</sup>
    - .4 Static Generation: less than 3.0 kV per AATCC 134
    - .5 Stain Protection: Protekt<sup>2</sup>
    - .6 Construction: Tufted textured loop
    - .7 Total Recycled Content: 62%
    - .8 Indoor Air Quality: Green Label Plus #GLP0820
    - .9 Warranty: 15 year standard, non-prorated
    - .10 Installation Method: non directional
    - .11 Colour: 7262 Orange

**3. EXECUTION**

**3.1. MANUFACTURER'S INSTRUCTIONS**

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

**3.2. PREPARATION**

- .1 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.
- .2 Prepare concrete slab to tile carpeting manufacturer's printed instructions.

**3.3. INSTALLATION**

- .1 Install carpet tiles in accordance with manufacturer's written instructions, and CRI Carpet Installation Standard and co-ordinate with Section [01 73 00 - Execution].
- .2 Co-ordinate tile carpeting work with work of other trades, for proper time and sequence to avoid construction delays.
- .3 Install carpet tile after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets are installed.
- .4 Install carpet tile as per manufacturer's recommendation in non directional pattern.
- .5 Snugly join carpet tiles in completed installation.
  - .1 Measure distance covered by 11 carpet tiles (10 joints) and ensure distance is in compliance with manufacturer specifications.
  - .2 Do not trap yarn between carpet tiles.
- .6 Apply thin film of pressure-sensitive adhesive according to manufacturer's recommendations.
- .7 Ensure finished installation presents smooth wearing surface free from conspicuous seams, burring and other faults.
- .8 Use material from same dye lot.
  - .1 Ensure colour, pattern and texture match within visual areas.
  - .2 Maintain constant pile direction.
- .9 Fit around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections
- .10 Extend carpet tiles into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- .11 Install carpet tiles smooth and free from bubbles, puckers, and other defects.

**3.4. CLEANING**

- .1 Upon completion of installation proceed in accordance with 01 74 00 – Cleaning
- .2 Vacuum carpets clean immediately after completion of installation.
- .3 Prohibit traffic on floor for 24 hours after installation until adhesive is cured

**END OF SECTION.**



## **1. GENERAL**

### **1.1. RELATED REQUIREMENTS**

- .1 Section 03 30 00 – Cast-in-Place Concrete
- .2 Section 06 10 00 – Rough Carpentry
- .3 Section 09 21 16 – Gypsum Board Assemblies

### **1.2. REFERENCES**

- .1 American Society for Testing and Materials (ASTM):
  - .1 ASTM F 2034 Standard Specification for Linoleum Sheet Floor Covering
  - .2 ASTM F 1861 Standard Specification for Resilient Wall Base
  - .3 ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
- .2 National Fire Protection Association (NFPA):
  - .1 NFPA 255 Standard Test Method for Surface Burning Characteristics of Building Materials
- .3 Standards Council of Canada
  - .1 CAN/ULC S102 Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
- .4 Canada Green Building Council (CaGBC)
  - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

### **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, labeled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in a dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect materials from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

### **1.4. SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
  - .1 Submit samples for review and acceptance of each unit.
- .2 Provide maintenance data for wall covering for incorporation into manual specified in 01 78 00 Closeout Submittals.
- .3 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.

### **1.5. MAINTENANCE**

- .1 Extra Materials:
  - .1 Furnish quantity of material units equal to 5% of amount installed.
  - .2 Extra materials to be one piece and from same run as installed materials.
  - .3 Store where directed by Contract Administrator.

### **1.6. WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste

**1.2. QUALITY ASSURANCE**

- .1 Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
- .2 Must be a Forbo Certified Installer.
- .3 Proof of valid certification must be submitted to the GC and verified by Forbo Flooring Systems prior to the start of the project.
- .4 The Forbo Certified Installer must manage and be on site during installation at all times.

**1.3. PROJECT CONDITIONS**

- .1 Environmental Requirements/Conditions: In accordance with manufacturer's recommendations, areas to receive material should be clean, fully enclosed and weathertight. The permanent HVAC must be fully operational, controlled and set at a minimum of 20 degrees C for a minimum of seven days prior to, during, and seven days after the installation. The material should be conditioned in the same manner for at least 48 hours prior to the installation. Areas to receive material shall be adequately lighted to allow for proper inspection of the substrate, installation and seaming, and for final inspection.
- .2 Temperature Requirements: Maintain air temperature in spaces where products will be installed for time period before, during, and after installation as recommended by manufacturer.
  - .1 Temperature Conditions: 20 degrees C for a minimum of seven days prior to, during, and seven days after the installation.
- .3 Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

**2. PRODUCTS**

**2.1. CORK WALL COVERINGS**

- .1 Manufacturer: Forbo Flooring Inc.
  - .1 Product: Bulletin Board Sheet and Adhesive
    - .1 Description: Homogeneous tackable surface material made of primary natural materials consisting of linseed oil, cork, rosin binders and dry pigments mixed and calendared onto a natural jute backing. The uni-color extends throughout the thickness of the material.
    - .2 Width: 122cm (48")
    - .3 Length: 27 Meters (90 Linear Feet)
    - .4 Gauge: 6.0mm (1/4")
    - .5 Backing: Jute
    - .6 Pattern and Color: 2211 Tangerine Zest
    - .7 Adhesive: Forbo L 910W Adhesive

**3. EXECUTION**

**3.1. MANUFACTURER'S INSTRUCTIONS**

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

**3.2. EXAMINATION**

- .1 Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of

- work.
- .2 Inform Contract Administrator of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval from Contract Administrator.
- .4 Coordinate work with other sections to ensure installation as per specifications and drawings.

### **3.3. INSTALLATION**

- .1 Material Installation: Cut required length from roll, allowing 2-3 inches overlap. Lay sheets flat to acclimate, preferably 48 hours prior to installation. Back roll sheets once in reverse direction to release roll stretch. Remove the factory edge from both sides of the material. Apply adhesive and place sheet into wet adhesive and roll with a three-section wall roller.
- .2 Adhesive Installation: Use trowel as recommended by manufacturer for specific adhesive (1/8" x 1/8" x 1/16" V notch trowel). Spread rate is approximately 90 ft<sup>2</sup>/gallon.
- .3 Installation Techniques:
  - .1 Apply the material to substrate without producing open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed installation.
  - .2 Use adhesive applied to substrate in compliance with manufacturer's recommendations, including those for mixing, trowel notch, and adhesive open and working times.
- .4 Roll material as required by manufacturer.

### **3.4. CLEANING**

- .1 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 – Cleaning
- .2 Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to turnover of the project. Remove construction debris from project site and legally dispose of debris.
  - .1 Remove visible adhesive and other surface blemishes using cleaning methods recommended by manufacturer.
  - .2 Dust or wipe with a damp cloth.

### **3.5. PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by installation.

**END OF SECTION.**

## 1. GENERAL

### 1.1. RELATED REQUIREMENTS

- .1 Section 04 22 00 – Concrete Unit Masonry
- .2 Section 05 12 23 – Structural Steel for Buildings
- .3 Section 05 31 00 – Steel Decking
- .4 Section 05 50 00 – Metal Fabrications
- .5 Section 05 51 29 – Metal Stairs & Ladders
- .6 Section 08 11 00 – Metal Doors and Frames
- .7 Section 09 21 16 – Gypsum Board Assemblies
- .8 Section 13 32 13 – Metal Space Frames

### 1.2. REFERENCES

- .1 Environmental Protection Agency (EPA)
  - .1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings).
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .3 The Master Painters Institute (MPI)
  - .1 Architectural Painting Specification Manual - [February 2004].
  - .2 Standard GPS-1-[05], MPI Green Performance Standard for Painting and Coatings.
- .4 National Fire Code of Canada.
- .5 Society for Protective Coatings (SSPC)
  - .1 Systems and Specifications, SSPC Painting Manual [2005].
- .6 Canada Green Building Council (CaGBC)
  - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

### 1.3. QUALITY ASSURANCE

- .1 Qualifications:
  - .1 Contractor: to have a minimum of five years proven satisfactory experience. When requested, provide list of last three comparable jobs including, job name and location, specifying authority, and project manager.
  - .2 Qualified journeypersons as defined by local jurisdiction to be engaged in painting work
  - .3 Apprentices: may be employed provided they work under direct supervision of qualified journeyperson in accordance with trade regulations.
  - .4 Conform to latest MPI requirements for exterior painting work including preparation and priming.
  - .5 Materials: in accordance with MPI Painting Specification Manual "Approved Product" listing and from a single manufacturer for each system used.
  - .6 Paint materials such as linseed oil, shellac, and turpentine to be highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and to be compatible with other coating materials as required.
  - .7 Retain purchase orders, invoices and documents to prove conformance with noted MPI requirements when requested by the Contract Administrator.
- .8 Standard of Acceptance:
  - .1 Walls: No defects visible from a distance of 1000 mm at 90 degrees to surface.
  - .2 Soffits: No defects visible from floor at 45 degrees to surface when viewed using final lighting source.
  - .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

**1.4. PERFORMANCE REQUIREMENTS**

- .1 Environmental Performance Requirements:
  - .1 Provide paint products meeting MPI "Environmentally Friendly" E2 ratings based on VOC (EPA Method 24) content levels.
  - .2 Green Performance in accordance with MPI Standard GPS-1.

**1.5. SCHEDULING**

- .1 Submit work schedule for various stages of painting Contract Administrator for approval. Submit schedule minimum of 48 hours in advance of proposed operations.
- .2 Obtain written authorization from Contract Administrator for changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants in and about building.

**1.6. ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.
- .3 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 00 - Hazardous Materials.
- .4 Upon completion, submit records of products used. List products in relation to finish system and include the following:
  - .1 Product name, type and use.
  - .2 Manufacturer's product number.
  - .3 Colour numbers.
  - .4 MPI Environmentally Friendly classification system rating.
  - .5 Manufacturer's Material Safety Data Sheets (MSDS).
- .5 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Submit 200 x 300 mm sample panels of each paint, stain, clear coating, special finish with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards submitted on the following substrate materials:
    - .1 3 mm plate steel for finishes over metal surfaces.
    - .2 13 mm birch plywood for finishes over wood surfaces.
    - .3 50 mm concrete block for finishes over concrete or concrete masonry surfaces.
    - .4 13 mm gypsum board for finishes over gypsum board and other smooth surfaces.
  - .2 When approved, samples shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.
  - .3 Submit full range of available colours where colour availability is restricted.

**1.7. MAINTENANCE**

- .1 Extra Materials:
  - .1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Submit one, four litre can of each type and colour of primer, stain, finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

**1.8. DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements, supplemented as follows:.

- .1 Deliver and store materials in original containers, sealed, with labels intact.
- .2 Labels: to indicate:
  - .1 Manufacturer's name and address.
  - .2 Type of paint or coating.
  - .3 Compliance with applicable standard.
  - .4 Colour number in accordance with established colour schedule.
- .3 Remove damaged, opened and rejected materials from site.
- .4 Provide and maintain dry, temperature controlled, secure storage.
- .5 Observe manufacturer's recommendations for storage and handling.
- .6 Store materials and supplies away from heat generating devices.
- .7 Store materials and equipment in well-ventilated area with temperature range 7 degrees C to 30 degrees C.
- .8 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
- .9 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Contract Administrator. After completion of operations, return areas to clean condition to approval of Contract Administrator.
- .10 Remove paint materials from storage only in quantities required for same day use.
- .11 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- .12 Fire Safety Requirements:
  - .1 Provide one 9 kg Type ABC 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 the National Fire Code of Canada.
- .2 Waste Management and Disposal:
  - .1 Separate waste materials for reuse and recycling.
  - .2 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
  - .3 Material, which cannot be reused, must be treated as hazardous waste and disposed of in an appropriate manner.
  - .4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
  - .5 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into the ground the following procedures shall be strictly adhered to:
    - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
    - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
    - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
    - .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
    - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
  - .6 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
  - .7 Close and seal tightly partly used sealant and adhesive containers and store protected

in well-ventilated fire-safe area at moderate temperature.

### 1.9. AMBIENT CONDITIONS

- .1 Heating, Ventilation and Lighting:
  - .1 Do not perform painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
  - .2 Where required, provide continuous ventilation for seven days after completion of application of paint.
  - .3 Co-ordinate use of existing ventilation system with General Contractor and ensure its operation during and after application of paint as required.
  - .4 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
  - .5 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities to be provided by General Contractor.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
  - .1 Unless specifically pre-approved by specifying body, Paint Inspection Agency and, applied product manufacturer, perform no painting work when:
    - .1 Ambient air and substrate temperatures are below 10 degrees C.
    - .2 Substrate temperature is over 32 degrees C unless paint is specifically formulated for application at high temperatures.
    - .3 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.
    - .4 Relative humidity is above 85 % or when dew point is less than 3 degrees C variance between air/surface temperature.
    - .5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.
  - .2 Perform no painting work when maximum moisture content of substrate exceeds:
    - .1 12% for concrete and masonry (clay and concrete brick/block).
    - .2 15% for wood.
    - .3 12% for plaster and gypsum board.
  - .3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".
  - .4 Test concrete, masonry and plaster surfaces for alkalinity as required.
- .3 Surface and Environmental Conditions:
  - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
  - .2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits noted herein.
  - .3 Apply paint when previous coat of paint is dry or adequately cured.
  - .4 Apply paint finishes when conditions forecast for entire period of application fall within manufacturer's recommendations.
  - .5 Do not apply paint when:
    - .1 Temperature is expected to drop below 10 degrees C before paint has thoroughly cured.
    - .2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.
    - .3 Surface to be painted is wet, damp or frosted.

- .6 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.
- .7 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
- .8 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.
- .9 Paint occupied facilities in accordance with approved schedule only. Schedule operations to approval of Contract Administrator such that painted surfaces will have dried and cured sufficiently before occupants are affected.

#### **1.10. WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

### **2. PRODUCTS**

#### **2.1. MANUFACTURERS – PAINT**

- .1 Standard of Acceptance: Benjamin Moore
- .2 Substitutions: Refer to Section 01 25 00

#### **2.2. MATERIALS**

- .1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- .2 Provide paint materials for paint systems from single manufacturer.
- .3 Low odour products: whenever possible, select products exhibiting low odour characteristics. If two products are otherwise equivalent, select the product with the lowest odour. Only qualified products with E2 or E3 "Environmentally Friendly" rating are acceptable for use on this project.
- .4 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, shall:
  - .1 be water-based, water soluble, water clean-up.
  - .2 be non-flammable
  - .3 be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
  - .4 be manufactured without compounds which contribute to smog in the lower atmosphere.
  - .5 do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
- .5 Water-borne surface coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).
- .6 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .7 Water-borne surface coatings must have a flash point of 61.0°C or greater.
- .8 Both water-borne surface coatings and recycled water-borne surface coatings must be made by a process that does not release:



- .1 Matter in undiluted production plant effluent generating a 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.
- .2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.
- .9 Water-borne paints and stains, and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.

### 2.3. COLOURS

- .1 Colours are to be (final colours to be confirmed by Contract Administrator prior to ordering. Selection of colours will be from manufacturer's full range of colours).
  - .1 Paint Colour 1 (PT1): Benjamin Moore 2124-70 Distant Gray
  - .2 Paint Colour 2 (PT2): Benjamin Moore 2124-40 Thundercloud Gray (floors)
- .2 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

### 2.4. MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to Site. On-Site tinting of painting materials is allowed only with Contract Administrator's written permission.
- .2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.
- .3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.
- .4 Thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Contract Administrator.
- .5 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.

### 2.5. GLOSS/SHEEN RATINGS

- .1 Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following values:

<b>Gloss Level /Category</b>	<b>Units @ 60E/</b>	<b>Units @ 85°</b>
G1 - matte finish	0 to 5	max. 10
G2 - velvet finish	0 to 10	10 to 35
G3 - eggshell finish	10 to 25	10 to 35
G4 - satin finish	20 to 35	min. 35
G5 - semi-gloss finish	35 to 70	
G6 – gloss finish	70 to 85	
G7 - high gloss finish	> 85	

- .2 Gloss level ratings of painted surfaces shall be as specified herein.

### 2.6. INTERIOR PAINTING SYSTEMS

- .1 Concrete Horizontal Surfaces: floors
  - .1 INT 3.2B Alkyd floor enamel low gloss finish.
- .2 Concrete Masonry Units.
  - .1 INT 4.2A Latex G5 finish.
- .3 Structural Steel and Metal Fabrications: columns, beams, joists, space frame.
  - .1 INT 5.1E Alkyd G5 finish.

### **3. EXECUTION**

#### **3.1. MANUFACTURER'S INSTRUCTIONS**

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

#### **3.2. PREPARATION**

- .1 Perform preparation and operations for exterior painting in accordance with MPI Maintenance Repainting Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.
- .3 Clean and prepare exterior surfaces to be repainted in accordance with MPI Maintenance Repainting Manual requirements. Refer to the MPI Manual in regard to specific requirements and as follows:
  - .1 Remove dust, dirt, and surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
  - .2 Wash surfaces with a biodegradable detergent [and bleach where applicable] and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
  - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
  - .4 Allow surfaces to drain completely and allow to dry thoroughly. Allow sufficient drying time and test surfaces using electronic moisture meter before commencing work.
  - .5 Use water-based cleaners in place of organic solvents where surfaces will be repainted using water based paints.
  - .6 Many water-based paints cannot be removed with water once dried. Minimize use of kerosene or such organic solvents to clean up water-based paints.
- .4 Clean metal surfaces to be repainted by removing rust, dirt, oil, grease and foreign substances in accordance with MPI requirements. Remove such contaminants from surfaces, pockets and corners to be repainted by brushing with clean brushes, blowing with clean dry compressed air, or brushing/vacuum cleaning as required.
- .5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before priming and between applications of remaining coats. Touch-up, spot prime, and 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.

#### **3.3. PROTECTION**

- .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 such surfaces as directed by Contract Administrator.
- .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
- .3 Protect factory finished products and equipment.
- .4 Protect passing pedestrians, and general public in and about building.
- .5 Remove light fixtures, surface hardware on doors, and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Store items and re-install after painting is completed.
- .6 Move and cover exterior furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
- .7 As painting operations progress, place "WET PAINT" signs in pedestrian and vehicle traffic areas to approval of Contract Administrator.

### **3.4. APPLICATION**

- .1 Method of application to be as approved by Contract Administrator. Apply paint by brush, roller, air sprayer. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
  - .1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.
  - .2 Work paint into cracks, crevices and corners.
  - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
  - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple.
  - .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 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 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
  - .3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.
  - .4 Brush out immediately runs and sags.
  - .5 Use brushes to work paint into cracks, crevices and places, which are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers when no other method is practical in places of difficult access and when specifically authorized by Contract Administrator.
- .5 Apply coats of paint as continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .7 Sand and dust between coats to remove visible defects.
- .8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as projecting ledges.
- .9 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

### **3.5. MECHANICAL/ELECTRICAL EQUIPMENT**

- .1 Unless otherwise specified, paint exterior exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as noted otherwise.
- .2 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- .3 Do not paint over nameplates.
- .4 Paint steel electrical light standards. Do not paint outdoor transformers and substation equipment.

### **3.6. STRUCTURAL STEEL, JOISTS, SPACE FRAME, DECKING**

- .1 Paint all structural steel, steel joists, steel space frame and steel decking with colour and finish as noted.

### **3.7. FIELD QUALITY CONTROL**

- .1 Inspection:
  - .1 Field inspection of exterior painting operations to be carried out be independent

- inspection firm as designated by Contract Administrator.
- .2 Advise Contract Administrator when each surface and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
  - .3 Co-operate with inspection firm and provide access to areas of work.
- .2 Manufacturer's Field Services:
- .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

**3.8. CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.

**3.9. EXTERIOR SURFACES**

- .1 See Section 09 97 19 – Painting Exterior Metal Surfaces

**END OF SECTION.**

## **1. GENERAL**

### **1.1. RELATED REQUIREMENTS**

- .1 Section 05 12 23 – Structural Steel for Buildings
- .2 Section 05 31 00 – Steel Decking
- .3 Section 05 50 00 – Metal Fabrications
- .4 Section 05 51 29 – Metal Stairs & Ladders
- .5 Section 08 11 00 – Metal Doors and Frames

### **1.2. REFERENCES**

- .1 The Master Painters Institute (MPI)
  - .1 Exterior Structural Steel and Metal Fabrications, [07].
    - .1 EXT 5.1D, Alkyd.
    - .2 EXT 5.1G, Polyurethane, Pigmented (over epoxy zinc rich primer and high build epoxy).
    - .3 EXT 5.4, Aluminum.
  - .2 Environmental Choice Program (ECP)
    - .1 CCD-047-[98(R2005)], Architectural Surface Coatings.
    - .2 CCD-048-[98(R2006)], Surface Coatings - Recycled Water-borne.
  - .3 Federal Standard (FS)
    - .1 FED-STD-595B-[89], Colours Used in Government Procurement.
  - .4 The Society for Protective Coatings (SSPC)
    - .1 SSPC-SP 1-[82(R2004)], Solvent Cleaning.
    - .2 SSPC-SP 2-[82(R2004)], Hand Tool Cleaning.
    - .3 SSPC-SP 3-[82(R2004)], Power Tool Cleaning.
    - .4 SSPC-SP 6/NACE No. 3-[07], Commercial Blast Cleaning.
    - .5 SSPC-SP 7/NACE No. 4-[07], 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-[07], Near White Blast Cleaning.
    - .8 SSPC-PA 2[04], Measurement of Dry Coat Thickness with Magnetic Gauges.
    - .9 SSPC Good Painting Practices, Volume 1, 4th Edition.
  - .5 Canada Green Building Council (CaGBC)
    - .1 LEED Canada NC 2009, LEED: Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum).

### **1.3. ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Co-ordinate submittal requirements and provide submittals required by Section 01 35 20 – LEED Sustainable Requirements.
- .3 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for painting exterior metal surfaces and include product characteristics, performance criteria, physical size, finish and limitations.
- .4 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Upon request, Contract Administrator will furnish qualified products list of paints.
  - .4 Enable Contract Administrator to take 1 L samples of each paint delivered to site, one sample from manufacturer's containers and one sample from

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

**1.4. QUALITY ASSURANCE**

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

**1.5. 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.

**1.6. WASTE MANAGEMENT AND DISPOSAL**

- .4 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .5 Collect and separate for disposal paper, plastic, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .6 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 20 – LEED Sustainable Requirements and Section 01 74 19 – Waste Management and Disposal.

**2. PRODUCTS**

**2.1. MANUFACTURERS – PAINT**

- .1 Standard of Acceptance: Benjamin Moore
- .2 Substitutions: Refer to Section 01 25 00

**2.2. MATERIALS**

- .1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- .2 Provide paint materials for paint systems from single manufacturer.
- .3 Low odour products: whenever possible, select products exhibiting low odour characteristics. If two products are otherwise equivalent, select the product with the lowest odour. Only qualified products with E2 or E3 "Environmentally Friendly" rating are acceptable for use on this project.
- .4 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, shall:
  - .1 be water-based, water soluble, water clean-up.
  - .2 be non-flammable
  - .3 be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
  - .4 be manufactured without compounds which contribute to smog in the lower atmosphere.
  - .5 do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
- .5 Water-borne surface coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).

- .6 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .7 Water-borne surface coatings must have a flash point of 61.0°C or greater.
- .8 Both water-borne surface coatings and recycled water-borne surface coatings must be made by a process that does not release:
  - .1 Matter in undiluted production plant effluent generating a 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.
  - .2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.
- .9 Water-borne paints and stains, and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.

### 2.3. COLOURS

- .1 Colours are to be (final colours to be confirmed by Contract Administrator prior to ordering. Selection of colours will be from manufacturer's full range of colours).
  - .1 Paint Colour 1 (PT1): Benjamin Moore 2124-70 Distant Gray
  - .2 Paint Colour 3 (PT3): Benjamin Moore 2124-10 Wrought Iron (HSS gate)
- .2 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

### 2.4. MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to Site. On-Site tinting of painting materials is allowed only with Contract Administrator's written permission.
- .2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.
- .3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.
- .4 Thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Contract Administrator.
- .5 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.

### 2.5. GLOSS/SHEEN RATINGS

- .1 Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following values:

<b>Gloss Level /Category</b>	<b>Units @ 60E/</b>	<b>Units @ 85°</b>
G1 - matte finish	0 to 5	max. 10
G2 - velvet finish	0 to 10	10 to 35
G3 - eggshell finish	10 to 25	10 to 35
G4 - satin finish	20 to 35	min. 35
G5 - semi-gloss finish	35 to 70	
G6 – gloss finish	70 to 85	
G7 - high gloss finish	> 85	

- .2 Gloss level ratings of painted surfaces shall be as specified herein.

## **2.6. EXTERIOR PAINTING SYSTEMS**

- .1 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.
  - .1 EXT 5.1D Alkyd G3 finish.
- .2 Galvanized Metal: high contact/high traffic areas (doors, frames, exterior canopy)
  - .1 EXT 5.3B Alkyd G3 finish on HSS gate.
  - .2 EXT 5.3C Epoxy G5 finish on exterior canopy steel decking.
  - .3 Exterior canopy columns, beams to be powder coated over galvanized.

## **3. EXECUTION**

### **3.1. EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for painting exterior metal surfaces installation in accordance with manufacturer's written instructions.
  - .1 Carry out tests to determine existence of lead base paint on existing exterior metal surfaces.
  - .2 If lead exists stop work and report findings to Contract Administrator.
  - .3 Inform Contract Administrator of unacceptable conditions immediately upon discovery.
  - .4 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Administrator.

### **3.2. PREPARATION**

- .1 Remove existing loose and rusted paint from exterior metal surfaces.
- .2 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:
    - .1 Solvent cleaning: to SSPC-SP 1.
  - .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 Prior to starting paint application ensure degree of cleanliness of surfaces is to SSPC-Vis 1.
  - .1 Apply primer, paint, or pretreatment after surface has been cleaned and before deterioration of surface occurs.
  - .2 Clean surfaces again if rusting occurs after completion of surface preparation.
- .6 Mixing paint:
  - .1 Do not dilute or thin paint for brush application.
  - .2 Mix ingredients in container before and during use and ensure breaking up of lumps, complete dispersion of settled pigment, and uniform composition.
  - .3 Do not mix or keep paint in suspension by means of air bubbling through paint.
  - .4 Thin paint for spraying according to manufacturer's written instructions. If directions are not on container, obtain instructions in writing from



manufacturer and provide copy of instructions to Contract Administrator.

- .7 Number of paint coats: 2.
  - .1 New metal surfaces.
    - .1 Shop: 2 primer coats to minimum dry film thickness of 35 microns per coat.
    - .2 Field: 2 alkyd enamel coats to minimum dry film thickness of 25 microns per coat.

### 3.3. APPLICATION

- .1 Manufacturer's Instructions: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Apply paint by spraying, brushing, or combination of both. Use sheepskins or daubers when no other method is practical in places of difficult access.
- .3 Use dipping or roller coating method of application when specifically authorized by Contract Administrator in writing.
- .4 Caulk open seams at contact surfaces of built up members with material approved by Contract Administrator, before second undercoat of primer is applied.
- .5 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 50 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.
- .6 Supply cover when paint must be applied in damp or cold weather. Supply, shelter, or heat surface and surrounding air to comply with temperature and humidity conditions specified. Protect until paint is dry or until weather conditions are suitable.
- .7 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.
- .8 Apply each coat of paint as continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .9 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.
- .10 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.
  - .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.
- .11 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 approved primer after shop fabrication is completed.
  - .6 Remove weld spatter before painting. Remove weld slag and flux by methods as specified in paragraph 3.2.3 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.
- .12 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 Apply final coat of paint after concrete work is completed or 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.
- .13 Handling painted metal:
  - .1 Handle painted metal after paint has dried, or when necessary for 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.

### **3.4. 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.

### **3.5. CLEANING**

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

**3.6. PROTECTION**

- .1 Protect painted surfaces from damage during construction.
- .2 Protection of surfaces:
  - .1 Protect surfaces not to receive paint.
  - .2 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.
- .3 Repair damage to adjacent materials caused by painting exterior metal surface application installation.

**3.7. SCHEDULE – SHOP PRIMED/COATED ITEMS FOR SITE FINISHING**

- .1 Structural Steel (Section 05 12 23): Exposed surface of steel lintels, beams and columns. Exterior canopy steel to be duplex system of hot dipped galvanized and powder coated.
- .2 Steel Decking (Section 05 31 00): Exposed surface of steel decking to be duplex system of hot dipped galvanized and painted.

**END OF SECTION.**