

1. This schedule is to be read in conjunction with the Drawings and Specification Sections.

Room No.	Floor	Base	Walls				Ceiling	Notes:
			N	E	S	W		
<b>Basement</b>								
006	EX	EX / RB	EX / PT-6	EX	EX / PT-6	PT-6	EX	
007	EX	EX / RB	EX	EX	PT-6	EX	EX	
056	EX	EX / RB	EX	EX	PT-6	EX	EX	
093	EX	EX / RB	PT-6	PT-6	PT-6	PT-6	ACT-1 / GBP / EXP	
093.1	EX	EX / RB	PT-6	EXP / PT-6	EX / PT-6	EXP	ACT-3 / GBP	
<b>Main Floor</b>								
103	EX / CFT-3	EX / CFT-3	-	EX	EX	EXP / PT-5	EXP / ACT-3 / GBP	Match ceramic floor and base tiles to existing
104	EX / CFT-3	EX / CFT-3	EX	EX	PT-5	EX	EXP / ACT-3 / GBP	
105	CFT-1	EX / CFT-1	PT-5	PT-5	PT-5	PT-5	ACT-3	
105.1	CFT-1	CFT-1	PT-5	PT-5	PT-5	PT-5	ACT-3	
105.2	EX	RB	EX	PT-5	PT-5	EX	EX	Patch & repair all surfaces
107	EX / CFT-1 / CFT-3	EX / RB / CFT-1	EXP	EXP / PT-1	EXP / PT-1	EXP / PT-5	EX / ACT-3 / GBP	
108	EX	CFT-3	EX	EX	EXP / PT-5	EX	EX	Patch & repair all surfaces. Match finish materials to existing
150.1	LVT	RB	PT-1	PT-1 / PT-4	PT-2 / PT-3	PT-2 / PT-4	ACT-1 / ACT-2	
150.2	CAR-1	RB	PT-1	PT-2	PT-1	PT-1	ACT-1	
150.3	CAR-1	RB	PT-1	PT-1	PT-1	PT-2	ACT-1	
150.4	CAR-1	RB	PT-1	PT-1	PT-1	PT-1	ACT-1 / ACT-2	
150.5	CAR-1	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	Fire-retardant plywood on walls
150.6	CAR-1	RB	PT-2	PT-1	PT-1	PT-1	ACT-1 / ACT-2	
150.7	SDT	RB	PT-1	PT-1	PT-1	PT-1	EXPO	
150.8	CAR-1	RB	PT-1	PT-1	PT-1	PT-2	ACT-1	
150.9	CAR-1	RB	PT-1	PT-2	PT-1	PT-1	ACT-1	
150.10	CAR-1	RB	PT-1	PT-2	PT-1	PT-1	ACT-1	
150.11	LVT	RB	PT-1	PT-1	PT-1	PT-1	ACT-1	
150.12	CAR-1	RB	PT-2	PT-2	-	PT-1 / PT-2	ACT-1	
150.13	CAR-1	RB	PT-2	PT-2	-	PT-2	ACT-1	

Room No.	Floor	Base	Walls				Ceiling	Notes:
			N	E	S	W		
<b>Main Floor continued</b>								
150.14	CFT-2	CFT-2	CWT-1 / PT-1	CWT-1 / PT-1	CWT-1 / PT-1	CWT-1 / PT-1	ACT-1	
150.15	LVT	RB	PT-2	PT-1 / PT-2 / CWT-2	PT-1 / PT-2	PT-1	ACT-1	
150.16	CAR-1	RB	PT-2	PT-1	PT-1	PT-2 / PT-1	ACT-1 / ACT-2	
150.17	LVT	RB	PT-1	PT-1	PT-1	PT-1	GBP / ACT-1	Epoxy modified latex paint
150.18	LVT	RB	PT-1	PT-1	PT-1	PT-1	GBP / ACT-1	Epoxy modified latex paint
150.19	LVT	RB	PT-1	PT-2	PT-1	PT-1	ACT-1 / ACT-2	
150.20	CFT-1	CFT-1	PT-1	PT-1	PT-1	PT-1	ACT-3	Patch & repair all columns
170.1	-	-	-	-	-	-	-	Prime paint all walls. Prep floor.
170.2	-	-	-	-	-	-	-	Prime paint all walls. Prep floor.

**List of Abbreviations:**

FLOORS		BASE	
EX	EXISTING TO REMAIN	CFT - #	CERAMIC FLOOR TILE (09 30 13)
CAR - #	CARPET TILE (09 68 13)	EX	EXISTING TO REMAIN
CFT - #	CERAMIC FLOOR TILE (09 30 13)	RB	RESILIENT BASE (09 65 19)
LVT	LUXURY VINYL TILE (09 65 19)		
SDT	STATIC DISSIPATIVE VINYL TILE (09 65 19)		
WALL		CEILING	
EX	EXISTING TO REMAIN	ACT- #	ACOUSTICAL CEILING TILE (09 51 13)
EXP	EXISTING – PAINT	EX	EXISTING TO REMAIN
GBP	GYPSUM BOARD – PAINT	EXP	EXISTING - PAINT
CWT - #	CERAMIC WALL TILE	EXPO	EXPOSED STRUCTURE – PAINT
PT - #	PAINT	GBP	GYPSUM BOARD – PAINT
	<b>GENERAL NOTE</b>		
	PATCH, REPAIR AND PAINT ALL WALLS AND CEILINGS THROUGHOUT WHERE THEY ARE AFFECTED BY NEW WORK. REFER ALSO TO STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR COMPLETE SCOPE OF WORK.		

**Part 1 General**

**1.1 REFERENCE STANDARDS**

- .1 American Society for Testing and Materials (ASTM)
  - .1 ASTM C475-17, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - .2 ASTM C840-20, Standard Specification for Application and Finishing of Gypsum Board.
  - .3 ASTM C841-03(2018), Standard Specification for Installation of Interior Lathing and Furring.
  - .4 ASTM C1002-18, 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.
  - .5 ASTM C1047-19, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
  - .6 ASTM C1177/C1177M-17, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
  - .7 ASTM C1178/C1178M-18, Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
  - .8 ASTM C1278/C1278M-17, Standard Specification for Fibre-Reinforced Gypsum Panel.
  - .9 ASTM C1280-18, Standard Specification for Application of Gypsum Sheathing.
  - .10 ASTM C1396/C1396M-17, Standard Specification for Gypsum board.
- .2 Association of the Wall and Ceilings Industries International (AWCI)
  - .1 AWCI Levels of Gypsum Board Finish-GA-214-2015.
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-51.34-M86 (R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .4 Underwriters' Laboratories of Canada (ULC)
  - .1 ULC-102-11, Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies (ULC S102).

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish, and limitations.

### **1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address and applicable standard designation.
- .3 Exercise care in unloading gypsum board materials shipment to prevent damage.
- .4 Storage and Handling Requirements in accordance with ASTM C840:
  - .1 Store gypsum board assembly materials level flat indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Protect gypsum board from direct exposure to rain, snow, sunlight, or other excessive weather conditions.
  - .3 Protect ready mix joint compounds from freezing, exposure to extreme heat and direct sunlight.
  - .4 Replace defective or damaged materials with new.
- .5 Develop Construction Waste Management Plan and Waste Reduction Workplan related to Work of this Section and in accordance with Section 01 74 19 - Waste Management and Disposal.

### **1.4 AMBIENT CONDITIONS**

- .1 Maintain temperature 10°C minimum, 21°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 and clean surfaces.
- .3 Ventilation: ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Standard board: to ASTM C1396/C1396M, thickness as indicated in drawings, 1200 mm wide x maximum practical length, ends square cut, and edges bevelled.
- .2 Rated board: to ASTM C1396/C1396M, Type X, thickness as indicated in drawings, 1200 mm wide x maximum practical length, ends square cut, and edges bevelled.
- .3 Water-resistant gypsum board (Water-Resistant Fibre-Reinforced Gypsum Backing Panels): to ASTM C1278, thickness as indicated in drawings, 1200 mm wide x maximum practical length.
- .4 Glass mat water-resistant gypsum backing board: to ASTM C1178/C1178M-13, 12.7 and 16 mm thick (as noted in the drawings), 1200 mm wide x maximum practical length, ends square cut, edges bevelled.

- .5 Glass mat water-resistant gypsum liner panels: to ASTM C1658, 25.4 mm thick, 610 mm wide x maximum practical length, stamped with UL or ULC Classifications for fire resistance, surface burning characteristics, and noncombustibility.
- .6 Metal furring runners, hangers, tie wires, inserts, and anchors required for installation: to ASTM C841.
- .7 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
- .8 Resilient drywall furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.
- .9 Steel drill screws: to ASTM C1002.
- .10 Laminating compound: as recommended by manufacturer, asbestos-free.
- .11 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, metal, zinc-coated by electrolytic process, 0.5 mm base thickness, perforated flanges, one piece length per location.
- .12 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
  - .1 Acoustic sealant: in accordance with Section 07 92 00 - Joint Sealants.
- .13 Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self-sticking permanent adhesive on one face, lengths as required.
- .14 Joint compound: to ASTM C475, asbestos-free.

### **Part 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 Proceed with installation only after unacceptable conditions have been remedied.

#### **3.2 ERECTION**

- .1 Do application and finishing of gypsum board to ASTM C840 except where specified otherwise.
- .2 Do application of gypsum sheathing to ASTM C1280.
- .3 Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C840 except where specified otherwise.
- .4 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 400 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, and 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 C840, except where specified otherwise.
- .11 Furr openings and around built-in equipment, cabinets, and 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, spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25 mm drywall screw.

### 3.3 APPLICATION

- .1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work have been approved.
- .2 Apply single and double layer gypsum board (as indicated in drawings) to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.
  - .1 Single-Layer Application:
    - .1 Apply gypsum board on ceilings prior to application of walls to ASTM C840.
    - .2 Apply gypsum board on walls vertically or horizontally, providing sheet lengths that will minimize number of board edges or 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 water-resistant gypsum board where wall tiles to be applied. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Do not apply joint treatment on areas to receive tile finish.
- .4 Apply 12 mm diameter bead of acoustic sealant continuously around periphery of each face of acoustic rated partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, and penetrations, in partitions where perimeter sealed with acoustic sealant.

- .5 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .6 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.
- .7 Install gypsum board with face side out.
- .8 Do not install damaged or damp boards.
- .9 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. Secure at 150 mm on centre.
- .2 Install casing beads around perimeter of suspended ceilings.
- .3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
- .4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- .5 Construct control joints of preformed units set in gypsum board facing and supported independently on both sides of joint.
- .6 Provide continuous polyethylene dust barrier behind and across control joints.
- .7 Ensure that screws are properly applied in process of attaching gypsum board to framing without damaging of gypsum board edges and ends.
- .8 Locate control joints at changes in substrate construction and where indicated. Maximum spacing of 10 m along corridor runs and maximum 15 m spacing on ceilings.
- .9 Install expansion joint straight and true.
- .10 Splice corners and intersections together and secure to each member with 3 screws.
- .11 Install access doors to electrical and mechanical fixtures specified in respective sections.
  - .1 Rigidly secure frames to furring or framing systems.
- .12 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.
- .13 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWCI 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 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 one separate coat of joint compound over joints, 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.
- .14 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.
- .15 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board, invisible after surface finish is completed.
- .16 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .17 Completed installation smooth, level or plumb, free from waves and other defects and ready for surface finish.
- .18 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.
- .19 Mix joint compound slightly thinner than for joint taping.
- .20 Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations, or tool marks.
- .21 Allow skim coat to dry completely.
- .22 Remove ridges by light sanding or wiping with damp cloth.

### **3.5 CONTROL JOINTS**

- .1 Provide control joints at not greater than 9 m spacing on continuous gypsum board walls in a single plane and at not greater than 9 m spacing on ceilings and bulkheads except where indicated otherwise in the drawings.
  - .1 Confirm location of control joints with the Consultant prior to installation of gypsum board
- .2 Provide control joints of preformed units set in gypsum board facing and supported independently on both sides of joint. Interrupt top and bottom tracks at location of control joint.
- .3 Install control joints straight and true. Finish control joints as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.



### **3.6 ACCESS PANELS**

- .1 Coordinate installation with Mechanical.
- .2 Secure frames rigidly in place, plumb, and level in opening, with plane of door and panel face aligned with adjacent finished surfaces.
- .3 Set concealed frame type units flush with adjacent finishes surfaces.
- .4 Position unit to provide convenient access to concealed work requiring access.

### **3.7 SCHEDULES**

- .1 Levels of finish: interior partitions:
  - .1 Level 1:
    - .1 Plenums above suspended ceilings, inside of duct shafts and other gypsum board wall areas not exposed to view, unless noted otherwise,
  - .2 Level 5:
    - .1 Vertical surfaces exposed to view.
    - .2 Ceilings and underside of bulkheads exposed to view.
    - .3 Plenum space for Rooms #150.07, #150.17, and #150.18.
- .2 Types of gypsum board:
  - .1 As noted in drawings and partition schedule.
  - .2 Water-resistant gypsum board as substrate to tile application in Room #150.14 and Room #150.15.

### **3.8 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - 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 00 - Cleaning.

### **3.9 PROTECTION**

- .1 Provide protection that ensures installed gypsum drywall work and components will remain without damage or deterioration at time of substantial completion.
- .2 Repair damage to adjacent materials caused by gypsum board assemblies installation.

**END OF SECTION**

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**Part 1            General**

**1.1                REFERENCE STANDARDS**

- .1    ASTM International (ASTM)
  - .1        ASTM A653/A653M-20, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process.
  - .2        ASTM C645-18, Standard Specification for Nonstructural Steel Framing Members.
  - .3        ASTM C754-20, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .2    Canadian Standards Association) CSA International)
  - .1        CSA W59-18, Welded Steel Construction (Metal Arc Welding).

**1.2                ACTION AND INFORMATIONAL SUBMITTALS**

- .1    Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2    Product Data:
  - .1        Submit manufacturer's instructions, printed product literature and data sheets for metal framing and include product characteristics, performance criteria, physical size, finish and limitations.

**1.3                QUALITY ASSURANCE**

- .1    Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2    Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**1.4                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 materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2        Replace defective or damaged materials with new.
- .4    Develop Construction Waste Management Plan and Waste Reduction Workplan related to Work of this Section and in accordance with Section 01 74 19 - Waste Management and Disposal.
- .5    Waste Management: separate waste materials for recycling and reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

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**Part 2            Products**

**2.1                MATERIALS**

- .1    Secure partitions (types P3, P4, and P5): Refer to GC13-01 and GC-13.02 appended to these specifications.
  - .1       Studs to ASTM C645, stud size 51x152 mm, roll formed from 1.146 mm (18ga) thickness hot dipped zinc-coated (galvanized) steel sheet in accordance with ASTM A653, Z180, for welded and riveted track connection, rivet attachment of expanded steel mesh, and screw attachment of gypsum board and plywood.
  - .2       Floor and ceiling tracks to ASTM C615, Slotted Deflection Track for Fire Separations: Premanufactured slotted top runner with 63 mm down standing legs and having 6 mm wide x 38 mm high slots spaced at 25 mm on centre along length of runner; tested and certified for use in fire rated wall construction.
  - .3       Base Runner: Bottom track with 51 mm upstanding legs.
  - .4       Anti-spread bracing: 51x152 mm studs, roll formed from 1.146 mm (18gs) steel sheet. Riveted or welded to vertical studs.
  - .5       Fasteners: weld or rivets. Screws not allowed.
    - .1           Rivets: 4.76mm pop rivets complete with 38mm outside diameter, 4.76mm inside diameter fender washers.
    - .2           Welds: to CSA W59.
- .2    Non-load bearing channel stud framing: to ASTM C645, stud size as noted in drawings and Partition Schedule, roll formed from 0.478 mm (25ga) and 1.146 mm (18ga) thickness hot dipped zinc-coated (galvanized) steel sheet in accordance with ASTM A653, Z180, for screw attachment of gypsum board and plywood, and rivet attachment of expanded steel mesh.
  - .1       Knock-out service holes at 460 mm centres.
- .3    Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, and as follows:
  - .1       Slotted Deflection Track for Fire Separations: Premanufactured slotted top runner with 63 mm down standing legs and having 6 mm wide x 38 mm high slots spaced at 25 mm on centre along length of runner; tested and certified for use in fire rated wall construction.
  - .2       Double Runner Deflection Track: Outside runner using 75 mm flanges; inner runner 33 mm; maintaining 25 mm minimum deflection space.
  - .3       Deep Leg Deflection Track: Top runner having 75 mm down standing legs; maintaining 13 mm minimum deflection space.
  - .4       Base Runner: Bottom track with 33 mm upstanding legs.
- .4    Furring Channels: Commercial steel sheet in accordance with ASTM A653, Z180, hot dipped zinc-coated (galvanized), as follows:
  - .1       Hat Shaped, Rigid Furring Channels: ASTM C645, 0.75 mm thickness x 22 mm deep.
  - .2       Resilient Furring Channels: 0.46 mm thickness x 13 mm deep members designed to reduce sound transmission having asymmetrical face attached to single flange by a slotted leg (web).

- .5 Metal channel stiffener: cold rolled steel, coated with rust inhibitive coating.
- .6 Expanded Mesh: in accordance with Section 05 50 00 - Metal Fabrications.
- .7 Acoustical sealant: in accordance with Section 07 92 00 - Joint Sealants.
- .8 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
- .9 Insulating strip: rubberized, moisture resistant 3 mm thick closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.
- .10 Welding materials: to CSA W59.
- .11 Fasteners:
  - .1 Stud to stud: to ASTM C1002, steel, self-drilling, self-threading, case hardened shallow Phillips type heads with integral washer, 25mm (1") minimum length.
  - .2 Track to concrete: Secure track to concrete with either high-performance wedge expansion type anchors or metal hit type 6.25mm (1/4") at 300mm (12") centres. Do not use Powder Actuated Fasteners.
  - .3 Track to steel: Secure track to structural steel over 8mm thickness with high-performance stainless steel fasteners at 300 mm on centre.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for non-structural metal framing application in accordance with manufacturer's written instructions.
  - .1 Proceed with installation only after unacceptable conditions have been remedied.

#### **3.2 ERECTION**

- .1 Erect partitions in accordance with framing requirements of ASTM C754.
- .2 Align partition tracks at floor and ceiling and secure at 400 mm on centre maximum.
- .3 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- .4 Place studs vertically at spacing noted in Partition Schedule and not more than 50 mm from abutting walls, and at each side of openings and corners.
  - .1 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 ceiling and bottom tracks using screws.
- .7 Co-ordinate simultaneous erection of studs with installation of service lines. Align web openings when erecting studs.
- .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 structure at each side of openings wider than stud centres specified.
  - .1 Weld studs together, placed alongside frame anchor clips.
    - .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .10 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs.
  - .1 Secure track to studs at each end, in accordance with manufacturer's instructions.
  - .2 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 stud or furring channel secured between studs for attachment of solid wood blocking. Attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to solid wood blocking.
- .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.
  - .1 Use double track slip joint.
- .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.

### **3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - 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 00 - Cleaning.

### **3.4 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by non-structural metal framing application.

**END OF SECTION**

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**Part 1            General**

**1.1            REFERENCE STANDARDS**

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
  - .1 ANSI A108.1-2019, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
  - .2 CTI A118.4-2019, Specification for Latex Cement Mortar (included in ANSI A108.1).
  - .3 CTI A118.6-2019, Specification for Ceramic Tile Grouts (included in ANSI A108.1).
- .2 ASTM International (ASTM)
  - .1 ASTM C144-18, Specification for Aggregate for Masonry Mortar.
  - .2 ASTM C979/C979M-16, Specification for Pigments for Integrally Coloured Concrete.
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-75.1-M88, Tile, Ceramic.
  - .2 CAN/CGSB-25.20-95, Surface Sealer for Floors.
- .4 Terrazzo Tile and Marble Association of Canada (TTMAC)
  - .1 Tile Specification Guide 09 30 00 2016/2017, Tile Installation Manual.
  - .2 Hard Surface Maintenance Guide 2017-2019.

**1.2            ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Include manufacturer's information on:
    - .1 Ceramic tile, marked to show each type, size, and shape required.
    - .2 Dry-set cement mortar and grout.
    - .3 Divider strip.
    - .4 Levelling compound.
    - .5 Slip resistant tile.
- .3 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Base tile: submit 100 x 100 mm sample panels of each colour, texture, size, and pattern of tile.
  - .2 Floor tile: submit 305 x 305 mm sample panels of each colour, texture, size, and pattern of tile.
  - .3 Wall tile: submit 305 x 305 mm sample panels of each colour, texture, size, and pattern of tile.

- .4 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.

### **1.3 QUALITY ASSURANCE**

- .1 Quality Assurance Submittals:
  - .1 Manufacturer's Instructions: manufacturer's installation instructions.
  - .2 Manufacturer's Field Reports: manufacturer's field reports specified.

### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Packing, shipping, handling, and unloading:
  - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal:
  - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

### **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 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 for maintenance use. Store where directed.
  - .3 Maintenance material same production run as installed material.

## **Part 2 Products**

### **2.1 FLOOR TILE**

- .1 Porcelain tile (Type 1) to ANSI A118.4 and CAN/CGSB-75.1: 300mm x 600mm x 8mm size, square edges, slip resistant surface, surface printed pattern, colour as selected by Departmental Representative.
  - .1 Manufactures:
    - .1 Daltile: Colorbody Porcelain – My City, London
    - .2 Or Approved Alternate

- .2 Porcelain tile (Type 2) to ANSI A118.4 and CAN/CGSB-75.1: 300mm x 600mm x 8mm size, square edges, slip resistant surface, surface printed pattern, colour as selected by Departmental Representative.
  - .1 Manufacturers:
    - .1 Daltile: Colorbody Porcelain - Astronomy
    - .2 Or Approved Alternate
- .3 Porcelain tile (Type 3): to ANSI A118.4 and CAN/CGSB-75.1: approximately 400mm x 400mm (size to match existing floor tiles in Rooms 103 and 104), square edge, slip resistant surface, colour and pattern to match existing. Colour and pattern as selected by Departmental Representative.

## **2.2 WALL TILE**

- .1 Ceramic tile (Type 1) to CAN/CGSB-75.1: 110mm x 330mm x 8mm size, square edges, glazed semi-gloss surface, colour as selected by Departmental Representative.
  - .1 Manufacturers:
    - .1 Daltile: Color Wheel Collection – Linear
    - .2 Or Approved Alternate
- .2 Ceramic mosaic tile (Type 2) to CAN/CGSB-75.1: 25mm x 75mm size, lattice weave pattern, dot-mounted, glazed semi-gloss surface, single colour as selected by Departmental Representative.
  - .1 Manufacturers:
    - .1 Daltile: Color Wheel Collection – Mosaic
    - .2 Or Approved Alternate

## **2.3 BASE TILE**

- .1 Ceramic tile base:
  - .1 Type 1 to match Floor Tile ‘Type 1’, size, colour, and texture to match adjacent flooring material.
  - .2 Type 2 to match Floor Tile ‘Type 2’, size, colour, and texture to match adjacent flooring material.
  - .3 Type 3 to match Floor Tile ‘Type 3’, size, colour, and texture to match adjacent flooring material.

## **2.4 TRIM SHAPES**

- .1 Conform to applicable requirements of adjoining floor and wall tile.
- .2 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.
- .3 Internal Corners, External Corners, and Top Cap: provide trim shapes as follows:
  - .1 Type 304 stainless steel, square edge trim, integrated perforated anchoring leg, and integrated grout joint spacer, at all exposed edges. Height and length to match tile edge. Provide all connectors, caps, and components for a complete system.



- .1 Manufacturer: Schluter QUADREC profile or approved alternate.

## **2.5 MORTAR AND ADHESIVE MATERIALS**

- .1 Latex additive: formulated for use in cement mortar and thin set bond coat.
- .2 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

## **2.6 BOND COAT**

- .1 Latex Cement mortar: to ANSI A108.1, two-component universal dry-set mortar.

## **2.7 GROUT**

- .1 Colouring Pigments:
  - .1 Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.
  - .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 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.

## **2.8 ACCESSORIES**

- .1 Transition Strips: purpose made metal extrusion; stainless steel type.
- .2 Sealant: in accordance with Section 07 92 00 - Joint Sealants.
- .3 Floor sealer and protective coating: to tile and grout manufacturers recommendations.

## **2.9 PATCHING AND LEVELLING COMPOUND**

- .1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.
- .2 Have not less than the following physical properties:
  - .1 Compressive strength - 25 MPa.
  - .2 Tensile strength - 7 MPa.
  - .3 Flexural strength - 7 MPa.
  - .4 Density - 1.9 kg/m<sup>3</sup>
- .3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.
- .4 Ready for use in 48 hours after application.

## **2.10 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.

### **Part 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 Departmental Representative to provide pattern and may include stack bond, sketcher, subway, running bond, basket weave, herringbone, brickwork, and random.
- .3 Apply tile to clean and sound surfaces.
- .4 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.
- .5 Maximum surface tolerance 1:800.
- .6 Make joints between wall 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.
- .7 Make joints between floor tile uniform and approximately 5.0 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .8 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .9 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .10 Make internal angles square, and external angles square.
- .11 Use square edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.
- .12 Install purpose made finishing accessories at top edges, internal corners, and external corners of wall tile installation.
- .13 Install transition strips / floor profiles at junction of tile flooring and dissimilar materials.
- .14 Allow minimum 24 hours after installation of tiles, before grouting.
- .15 Clean installed tile surfaces after installation and grouting cured.

#### **3.3 WALL TILE**

- .1 Install in accordance with TTMAC detail W305, tile installed on water-resistant, fibre reinforced gypsum board.

**3.4 FLOOR TILE**

- .1 Install in accordance with TTMAC detail W310F, tile installed on interior cement mortar on concrete slab.

**3.5 BASE TILE**

- .1 Install in accordance with TTMAC detail W304, tile installed on gypsum board.

**3.6 FLOOR SEALER AND PROTECTIVE COATING**

- .1 Apply in accordance with manufacturer's instructions.

**3.7 FIELD QUALITY CONTROL**

- .1 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 00 - Cleaning.

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCE STANDARDS**

- .1 ASTM International (ASTM)
  - .1 ASTM A641/A641M-19, Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
  - .2 ASTM C423-17, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
  - .3 ASTM C635/C635M-17, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
  - .4 ASTM C636/C636M-19, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
  - .5 ASTM E1264-19, Standard Classification for Acoustical Ceiling Products.
  - .6 ASTM E1414/E1414M-16, Standard Test Method for Sound Attenuation between Rooms Sharing a Common Ceiling Plenum.
  - .7 ASTM E1477-98a(2017)e1, Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction and Amendment No. 1 1988.
  - .2 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Safety Data Sheets (SDS).
- .4 Underwriter's Laboratories of Canada (ULC)
  - .1 ULC-S102-2018, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

**1.2 COORDINATION**

- .1 Do not begin erection of ceiling suspension system until work above ceiling has been inspected by Departmental Representative.

**1.3 PRE-INSTALLATION MEETING**

- .1 Convene pre-installation meeting one week prior to beginning work of this Section, with Departmental Representative, other affected trades, Consultant, and contractor's representative in accordance with Section 01 32 16.19- Construction Progress Schedule - Bar (GANTT) Chart to:
  - .1 Verify project requirements.
  - .2 Review installation and substrate conditions.
  - .3 Coordination with work of other sections.

- .4 Review manufacturer's installation instructions and warranty requirements.
- .5 Review accepted shop drawings for installation requirements.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for acoustical suspension, acoustic panels, acoustic tiles, acoustic suspension, and system accessories. Include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Samples:
  - .1 Submit for review and acceptance of each component specified or necessary for complete installation. Include technical descriptive data.
  - .2 Submit duplicate samples of each component proposed for use in each type of ceiling suspension system.
  - .3 Submit duplicate 150 mm x 100 mm samples of each type of acoustical unit.

#### **1.5 ACOUSTICAL PANEL RECLAMATION**

- .1 Co-ordinate acoustical panel reclamation in accordance with Section 01 74 19 – Waste Management and Disposal where available.
- .2 Schedule of acoustical panel reclamation activities indicating following:
  - .1 Detailed sequence of removal work.
  - .2 Inventory of items to be removed and reclaimed.
  - .3 Proposed packing and transportation measures.
- .3 Assemble Closeout Submittal documentation.

#### **1.6 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Submit operation and maintenance data for acoustical suspension for incorporation into manual.
- .3 Acoustical Panel Reclamation:
  - .1 Reclamation agencies' records indicating receipt and disposition of used acoustical ceiling tiles.

#### **1.7 MAINTENANCE MATERIALS**

- .1 Provide extra acoustical units in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide acoustical units amounting to 2% of gross ceiling area for each pattern and type of acoustical panel or tile, suspension system and trim required for project, minimum 1 complete factory-sealed package of each.
- .3 Ensure extra materials are from same production run as installed materials.

.4 Deliver extra materials for each type of acoustical unit in original unopened packages clearly identified, including colour and texture.

.5 Deliver to Departmental Representative, upon completion of the work of this section.

### **1.8 CERTIFICATIONS**

.1 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements. Include certification of sustainable requirements.

### **1.9 MOCK-UPS**

.1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.

.2 Construct mock-up 10 m<sup>2</sup> minimum of each type acoustical ceiling assembly including one inside corner. Ceiling system mock-up to show basic construction and assembly, treatment at walls, recessed fixtures, splicing, interlocking, finishes, and acoustical unit installation.

.3 Construct mock-up where directed.

.4 Allow 48 hours for inspection of mock-up by Departmental Representative before proceeding with ceiling work.

.5 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of the finished work.

### **1.10 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 materials flat and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect acoustical ceiling panels, suspension grid components from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.4 Store extra materials required for maintenance, where directed by Departmental Representative.

### **1.11 ENVIRONMENTAL REQUIREMENTS**

.1 Permit wet work to dry before beginning to install.

.2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20% before and during installation.

.3 Store materials in work area 72 hours prior to installation.

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**Part 2            Products**

**2.1                DESIGN CRITERIA**

- .1    Design Requirements:
  - .1        Heavy duty system to ASTM C635/ASTM C635M.
  - .2        Maximum deflection: 1/360th of span to ASTM C635/ASTM C635M deflection test.

**2.2                ACOUSTICAL CEILING SUSPENSION**

- .1    Coordinate suspension components with suspended tile and panel requirements.
- .2    Acoustical Ceiling Suspension system: non fire rated, made up as follows:
  - .1        Two directional exposed tee bar grid.
  - .2        Perimeter angle grid.
- .3    Basic materials for suspension system: commercial quality cold rolled steel, hot dipped galvanized.
- .4    Exposed tee bar grid components: shop painted satin sheen. Components die cut. Hot dipped galvanized steel. Main tee with double web, rectangular bulb and 24 mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection. Wall moulding: L shaped, hemmed edges, 43 mm leg height, 24 mm reveal, shop painted satin sheen. Manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated.
  - .1        Structural Classification: ASTM C635 HD.
  - .2        Colour: White
  - .3        Acceptable material:
    - .1            Armstrong Prelude XL;
    - .2            Donn DX/DXL;
    - .3            Approved alternate.
- .5    Perimeter exposed fascia molding for dropped acoustical panels adjacent to bulkhead: shop painted satin sheen. Extruded aluminum alloy. Unique L-shape, 25 mm flange and 102 mm leg height. Factory-welded and finished seamless corners. Complete system including connection clips.
  - .1        Colour: White
  - .2        Acceptable material:
    - .1            Armstrong – Fascia Molding #7818;
    - .2            Approved alternate.
- .6    Attachment Devices: Size for five times design load indicated in ASTM C635, Table 1, Direct hung unless otherwise indicated.
- .7    Hanger wire: galvanized soft annealed steel wire to ASTM A641:
  - .1        Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least three times design load, but not less than:

- .1 3.6 mm diameter for access tile ceilings. Increase sizes as required for ceiling loads.
- .2 2.6 mm diameter for other ceilings.
- .8 Hanger inserts: purpose made.
- .9 Carrying channels: 38mm channel, of thickness to suit, galvanized steel.
- .10 Accessories: splices, clips, wire ties, retainers, and wall moulding flush, to complement suspension system components, as recommended by system manufacturer.

## 2.3 ACOUSTICAL CEILING PANELS

- .1 Acoustical Panel ACT-1: to CAN/CGSB-92.1 and ASTM E1264 and as follows.
  - .1 Type: IV, Form 2.
  - .2 Pattern Designation: E (match surface of Armstrong Ultima)
  - .3 Fire Classification: Class A.
    - .1 Flame spread rating of 25 or less in accordance with ULC-S102.
    - .2 Smoke developed 50 or less in accordance with CAN/ULC-S102.
  - .4 Noise Reduction Coefficient (NRC) designation of 0.80.
  - .5 Ceiling Attenuation Class (CAC) rating 35, in accordance with ASTM E1414.
  - .6 Light Reflectance (LR) range of 0.86 to ASTM E1477.
  - .7 Edge type: square.
  - .8 Colour: white.
  - .9 Size: 610mm x 1220mm x 22.5 mm thick.
  - .10 Shape: flat.
  - .11 Humidity resistant: proprietary coating
  - .12 Surface coverings: low VOC paint.
  - .13 Acceptable manufacturers:
    - .1 Armstrong Ultima Health Zone High NRC
    - .2 CGC
    - .3 CertainTeed,
    - .4 Rockfon
    - .5 Approved alternate
- .2 Acoustical Panel ACT-2: to CAN/CGSB-92.1 and ASTM E1264 and as follows. Double layer system comprised of ACT-1 (exposed face) and acoustical backing material, with finish material facing up, laminated to top surface of ACT-1, and meeting acoustical backing material requirements noted below:
  - .1 Acoustical backing material:
    - .1 Type: III, Form 1.
    - .2 Pattern Designation: EI (match surface of Armstrong Cirrus)
    - .3 Fire Classification: Class A.
    - .4 Flame spread rating of 25 or less in accordance with CAN/ULC-S102.
    - .5 Smoke developed 50 or less in accordance with CAN/ULC-S102.



- .6 Noise Reduction Coefficient (NRC) designation of 0.75.
  - .7 Ceiling Attenuation Class (CAC) rating 35, in accordance with ASTM E1414.
  - .8 Light Reflectance (LR) range of 0.85 to ASTM E 1477.
  - .9 Edge type: square.
  - .10 Colour: white.
  - .11 Size: 610mm x 1220mm x 22.2 mm thick.
  - .12 Shape: flat.
  - .13 Humidity resistant: proprietary coating
  - .14 Surface coverings: low VOC paint.
  - .15 Acceptable manufacturers:
    - .1 Armstrong Cirrus High NRC
    - .2 CGC
    - .3 CertainTeed,
    - .4 Rockfon
    - .5 Approved alternate
- .3 Acoustical Panel ACT-3 (to match existing): to CAN/CGSB-92.1 and ASTM E1264 and as follows.
- .1 Type: IV, Form 2.
  - .2 Pattern Designation: E (match surface of Armstrong Ultima)
  - .3 Fire Classification: Class A.
    - .1 Flame spread rating of 25 or less in accordance with CAN/ULC-S102.
    - .2 Smoke developed 50 or less in accordance with CAN/ULC-S102.
  - .4 Noise Reduction Coefficient (NRC) designation of 0.80.
  - .5 Ceiling Attenuation Class (CAC) rating 35, in accordance with ASTM E1414.
  - .6 Light Reflectance (LR) range of 0.86 to ASTM E 1477.
  - .7 Edge type: square.
  - .8 Colour: white.
  - .9 Size: 610 x 610 x 22.5 mm thick.
  - .10 Shape: flat.
  - .11 Humidity resistant: proprietary coating
  - .12 Surface coverings: low VOC paint.
  - .13 Acceptable manufacturers:
    - .1 Armstrong Ultima Health Zone High NRC
    - .2 CGC
    - .3 CertainTeed,
    - .4 Rockfon
    - .5 Approved alternate

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**Part 3            Execution**

**3.1                EXAMINATION**

- .1        Verify conditions of substrates previously installed under other Sections or Contracts are acceptable for acoustical ceiling tile and track installation in accordance with manufacturer's written instructions.
  - .1        Proceed with installation only after unacceptable conditions have been remedied.

**3.2                INTERFACE WITH OTHER WORK**

- .1        Coordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

**3.3                SUSPENSION SYSTEM INSTALLATION**

- .1        Comply with manufacturer's written installation instructions and recommendations, including product technical bulletins, product carton installation instructions, and data sheets.
- .2        Install suspension system in accordance with reviewed shop drawings and ASTM C636/C636M except where specified otherwise.
- .3        Refer to reflected ceiling plan for layout of ceiling. Provide balanced borders at room perimeter, with border units not less than 50% of standard unit width.
- .4        Finished ceiling system to be square with adjoining walls and level within 1:1000.
- .5        Secure hangers to overhead structure using attachment methods acceptable to Departmental Representative.
- .6        Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.
- .7        Ensure suspension system is coordinated with location of related components. Provide carrying channels as necessary to bridge at unavoidable interference between suspension system and other work above ceiling.
- .8        Install wall moulding to provide correct ceiling height.
- .9        Completed suspension system to support super-imposed loads, such as diffusers, grilles, lighting fixtures, and speakers.
- .10       Support at diffusers, grilles, light fixtures, and speakers with additional ceiling suspension hangers within 150 mm of each corner and at maximum 610 mm around perimeter of fixture.
- .11       Interlock cross member to main runner to provide rigid assembly.
- .12       Frame at openings for light fixtures, air diffusers, grilles, speakers and at changes in ceiling heights.
- .13       Install perimeter trim at floating installations securely anchored to suspension system, in accurate alignment with adjacent assemblies. Install curved trim members in smooth curves to radius indicated.

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**3.4 ACOUSTICAL CEILING PANEL INSTALLATION**

- .1 Install acoustical panels in ceiling suspension system in accordance with manufacturer's instructions and as indicated.
- .2 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.

**3.5 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - 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 00 - Cleaning.
  - .1 Touch up scratches, abrasions, voids, and other defects in painted surfaces.

**3.6 PROTECTION**

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

**3.7 SCHEDULE**

- .1 In accordance with Section 09 06 00.13 - Room Finish Schedule.

**END OF SECTION**

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**Part 1            General**

**1.1                REFERENCE STANDARDS**

- .1     ASTM International
  - .1        ASTM F1066-04 (2018), Standard Specification for Vinyl Composition Floor Tile.
  - .2        ASTM F1700-20, Standard Specification for Solid Vinyl Floor Tile.
- .2     Canadian General Standards Board (CGSB)
  - .1        CAN/CGSB-25.20-95, Surface Sealer for Floors.

**1.2                ACTION AND INFORMATIONAL SUBMITTALS**

- .1     Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2     Product Data:
  - .1        Submit manufacturer's instructions, printed product literature and data sheets for resilient tile flooring and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3     Samples:
  - .1        Submit duplicate tile in size specified and base, 300 mm long.

**1.3                MAINTENANCE MATERIAL SUBMITTALS**

- .1     Extra Materials:
  - .1        Provide maintenance materials of resilient tile flooring, base, and adhesive in accordance with Section 01 78 00 - Closeout Submittals.
  - .2        Provide 10 m<sup>2</sup> of each colour, pattern and type flooring material required for this project for maintenance use.
  - .3        Extra materials from same production run as installed materials.
  - .4        Identify each container of floor tile and each container of adhesive.
  - .5        Deliver to Departmental Representative, upon completion of the work of this section.
  - .6        Store where directed by Departmental Representative.

**1.4                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 materials and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

- .2 Store and protect specified materials from damages.
- .3 Replace defective or damaged materials with new.
- .4 Develop Waste Reduction Workplan and Construction Waste Management Plan related to Work of this Section.
- .5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

## **1.5 SITE CONDITIONS**

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

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Luxury vinyl tile: to ASTM F1700, designated by LVT on Room Finish Schedule.
  - .1 Vinyl wear layer with UV-cured polyurethane finish, 0.5 mm (0.020").
  - .2 Backing: solid vinyl
  - .3 Thickness: 3.2 mm (0.125")
  - .4 Size: 152 mm x 1219 mm
  - .5 Colour: to match Armstrong, Natural Creations NA 180 'Galena Oak Rye'
  - .6 Acceptable manufacturers:
    - .1 Armstrong
    - .2 Forbo
    - .3 Johnsonite/Tarkett
    - .4 Approved alternate.
- .2 Static dissipative vinyl tile: to ASTM F1066, designated by SDT on Room Finish Schedule.
  - .1 Pattern: marbleized
  - .2 Thickness: 3.0 mm
  - .3 Size: 305 mm x 305 mm tile or 610 mm x 610 mm tile.
  - .4 1.0 x 10 (to 6<sup>th</sup>) ohms resistance.
  - .5 Colour: to match Forbo SD 15201 'Everest'.
  - .6 Acceptable manufacturers:
    - .1 Forbo Colorex SD
    - .2 Armstrong Excelon SDT
    - .3 Johnsonite Granit SD
    - .4 Approved alternate.
- .3 Finish:

- .1 Factory prefinished.
- .4 Resilient base: continuous, top set, cover.
  - .1 Type: Type TS vulcanized rubber or Type TP thermoplastic rubber.
  - .2 Style: cove
  - .3 Thickness: 3.17 mm.
  - .4 Height: 101.6 mm
  - .5 Lengths: cut lengths minimum 2400 mm
  - .6 Colour: selected by Departmental Representative from manufacturer's complete range of colours. Allow for three colours throughout project.
- .5 Primers and adhesives: waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.
- .6 Sub-floor filler and leveller: white premix latex requiring water only to produce cementitious paste as recommended by flooring manufacturer for use with their product.
- .7 Metal edge strips: stainless steel extruded, smooth, mill finish with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for resilient tile flooring installation in accordance with manufacturer's written instructions.
  - .1 Proceed with installation only after unacceptable conditions have been remedied.

#### **3.2 INSPECTION**

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

#### **3.3 SUB-FLOOR TREATMENT**

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

#### **3.4 TILE APPLICATION**

- .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 in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .3 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.
- .4 Install flooring with pattern grain parallel to length of room, in the east-west orientation, ashlar pattern with 1/3 tile (length) offset.
- .5 As installation progresses, and after installation, roll flooring in 2 directions with 45 kg minimum roller to ensure full adhesion.
- .6 Cut tile and fit neatly around fixed objects.
- .7 Install feature strips and floor markings where indicated. Fit joints tightly.
- .8 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .9 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
- .10 Install metal edge strips at unprotected or exposed edges where flooring terminates.

### **3.5 BASE APPLICATION**

- .1 Lay out base to keep number of joints at minimum. Base joints at maximum length available or at internal corners.
- .2 Clean substrate and prime with one coat of adhesive.
- .3 Apply adhesive to back of base.
- .4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
- .5 Install straight and level to variation of 1:1000.
- .6 Scribe and fit to door frames and other obstructions.
- .7 Cope internal corners. Use formed straight base material for external corners of other angles, minimum 300 mm each leg.

### **3.6 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - 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 00 – Cleaning.
  - .1 Clean flooring and base surfaces to flooring manufacturer's printed instructions.
- .3 Remove excess adhesive from floor, base, and wall surfaces without damage.
- .4 Clean, floor and base surface to flooring manufacturer's instructions. In carpeted areas clean base surface before carpet installation.

**3.7            PROTECTION**

- .1      Protect new floors from time of final set of adhesive until final inspection.
- .2      Prohibit traffic on floor for 48 hours after installation.
- .3      Use only water-based coating for linoleum.

**3.8            SCHEDULE**

- .1      Refer to drawings.

**END OF SECTION**



**Part 1            General**

**1.1            REFERENCE STANDARDS**

- .1 American Association of Textile Chemists and Colorists (AATCC)
  - .1 AATCC Test Method 16.1-2014), Colorfastness to Light: Outdoor.
  - .2 AATCC Test Method 16.2-2014), Colorfastness to Light: Carbon-Arc.
  - .3 AATCC Test Method 16.3-2020, Colorfastness to Light: Xenon-Arc
  - .4 AATCC Test Method 23-2015, Colorfastness to Burn Gas Fumes.
  - .5 AATCC Test Method 129-2016, Colorfastness to Ozone in the Atmosphere Under High Humidities.
  - .6 AATCC Test Method 134-2019, Electrostatic Propensity of Carpets.
  - .7 AATCC Test Method 171-2019, Carpets: Cleaning of; Hot Water Extraction Method.
  - .8 AATCC Test Method 175-2013, Stain Resistance: Pile Floor Coverings.
  - .9 AATCC Test Method 189-2017, Fluorine Content of Carpet Fibers.
- .2 ASTM International (ASTM)
  - .1 ASTM D2661-14e1, Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings.
  - .2 ASTM D3936-21, 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. 22-2013, Textile Test Methods - Colourfastness to Rubbing (Crocking).
  - .2 CAN/CGSB-4.2 No.77.1-94/ISO 4919: 1978 (R2012), Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.
  - .3 CAN/CGSB 4.129
- .4 Carpet and Rug Institute (CRI)
  - .1 CRI 104 Standard for Installation of Commercial Carpet 2015.
  - .2 CRI Green Label Plus Indoor Air Quality Testing Program.
- .5 Health Canada
  - .1 C.R.C., c.923-10, Hazardous Products Act - Carpet Regulations, Part II of Schedule 1.
- .6 National Floor Covering Association (NFCA)
  - .1 National Floor Covering Specification Manual 2007.
- .7 ULC Standards(ULC)
  - .1 CAN/ULC-S102-11, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

- .2 CAN/ULC-S102.2-88, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.

## **1.2 ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-Installation Meetings:
  - .1 Convene pre-installation meeting 1 week prior to beginning work of this Section, with Contractor's Representative, Consultant, Departmental Representative in accordance with Section 01 31 19 - Project Meetings to:
    - .1 Verify project requirements.
    - .2 Review installation and substrate conditions.
    - .3 Co-ordination with other construction subtrades.
    - .4 Review manufacturer's written installation instructions and warranty requirements.
  - .2 Sequencing: sequence with other work. Comply with manufacturer's written recommendations for sequencing construction operations.
  - .3 Scheduling: schedule with other work.

## **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for each carpet tile, subfloor patching compound, and adhesive and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Samples:
  - .1 Submit 2 samples for review and acceptance of each accessory.
  - .2 Submit 2 samples of each type of carpet tile specified and duplicate tiles for each colour selected, divider strips, base, and 150 mm length binder bars.
- .4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Manufacturer's Instructions: submit manufacturer's installation instructions.
- .6 Qualification Statements:
  - .1 Compliance: to CAN/ULC-S102.2 and CAN/ULC-S102.
  - .2 Tuft bind: meets requirements of CAN/CGSB-4.129 when tested to CAN/CGSB-4.2 No.77.1.

## **1.4 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for installed products for incorporation into manual.

- .3 Warranty Documentation: submit warranty documents specified.
  - .1 Indicate: manufacturer's standard warranty.
- .4 Carpet Reclamation (where available):
  - .1 Co-ordinate carpet reclamation in accordance with Section 01 74 19. 13 - Carpet Reclamation.
  - .2 Schedule of carpet reclamation activities indicating following:
    - .1 Detailed sequence of removal work.
    - .2 Inventory of items to be removed and reclaimed.
    - .3 Proposed packing and transportation measures.
  - .3 Reclamation agencies' records indicating receipt and disposition of used carpet.

## **1.5 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Extra stock materials in accordance with this Section: deliver to Departmental Representative extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals.
  - .1 Quantity: provide minimum 2% of:
    - .1 Carpet tile.
    - .2 Rubber base.
    - .3 Adhesives.
  - .2 Delivery, storage, and protection: comply with Departmental Representative's requirements for delivery and storage of extra materials. Protect as follows:

## **1.6 QUALITY ASSURANCE**

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
- .2 Qualifications:
  - .1 Flooring Contractor:
    - .1 Experienced in performing work of this Section who has specialized in installation of work similar to that required for this project.
    - .2 Certified by carpet manufacturer prior to bid submission.
    - .3 No sub-contract labour without written approval of Departmental Representative.
    - .4 Responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturer's written instructions.

## **1.7 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 materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
  - .3 Store and protect carpet tile, base, and adhesive in original containers or wrapping with manufacturer's seals and labels intact.
  - .4 Store and protect carpet tile and accessories in location as directed by Departmental Representative.
  - .5 Store carpet and adhesive at minimum temperature of 18 degrees C and relative humidity of maximum 65% for minimum of 48 hours before installation.
  - .6 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
  - .7 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
  - .8 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan and Waste Reduction Workplan related to Work of this Section.
- .5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

## **1.8 SITE CONDITIONS**

- .1 Moisture: substrate within moisture limits and alkalinity limits recommended by manufacturer. Prepare moisture testing and provide report to Departmental Representative.
- .2 Temperature: maintain ambient temperature of minimum 18 degrees C from 48 hours before installation to minimum 48 hours after completion of work.
- .3 Relative humidity: maintain between 10% and 65% for 48 hours before, during and 48 hours after installation.
- .4 Ventilation:
  - .1 Ventilate area of work as directed use of approved portable supply and exhaust fans. Departmental Representative will co-ordinate operation of ventilation system during installation of carpet.
  - .2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities. Provide fans with HEPA filters.
  - .3 Provide continuous ventilation during and after carpet application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of carpet installation.
- .5 Install carpet after:
  - .1 Space enclosed and weatherproof.
  - .2 Wet-work in space completed and nominally dry.

- .3 Work above ceilings complete.

## **1.9 WARRANTY**

- .1 Manufacturer's warranty: submit, for Departmental Representative's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty in addition to and not limit other rights Departmental Representative may have under Contract Documents.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Manufacturers:
  - .1 Ensure manufacturer has minimum 5 years experience in manufacturing components similar to or exceeding requirements of project.
- .2 Description:
  - .1 Adhesives: in accordance with manufacturer's recommendation.
  - .2 Primer and Sealer: in accordance with manufacturer's recommendations for surface conditions:

### **2.2 PERFORMANCE**

- .1 Flammability: certified for flammability to Health Canada regulations under "Hazardous Products - Carpet Regulations", Part II of Schedule 1.
- .2 Flame Spread: maximum flame spread rating 300, maximum smoke developed classification 500, when tested to CAN/ULC-S102.2.
- .3 Dry Breaking Strength: to ASTM D2661, minimum acceptable tear strength in both length and width:
  - .1 11.3 kg for carpets installed by glue down installation.
- .4 Wear: maximum 10% loss of pile face fibre by weight for 10 years.
- .5 Edge Ravel: none for 10 years.
- .6 Static Resistance: permanent static control to AATCC 134, 3000 V maximum at 20% RH and 22 degrees C.
- .7 Static Generation: less than 3.0 kV per AATCC 134 for 10 years.
- .8 Tuft Bind: Tuft Lock: to CAN/CGSB-4.129, minimum acceptable 3.6 for loop pile product, 1.6 kilograms for cut pile product.
- .9 De-lamination of Secondary Backing: Lamination Strength of Secondary Backing: to ASTM D3936, minimum acceptable peel strength of 1.6 kg/25 mm.
- .10 Stain resistance: to AATCC 175, 8.
- .11 Soil Resistance: Fluorine Durability Level to AATCC 189, 350 ppm fluorine minimum.
- .12 Colorfastness, dimensional stability, permanency of finishes, and ease of cleaning: to AATCC 171.

- .13 Colourfastness to light: to AATCC 16 and CAN/CGSB-4.2 No.18.3.
- .14 Colourfastness to atmosphere: to AATCC 129 and AATCC 23.
- .15 Colourfastness to crocking: to CAN/CGSB-4.2 No. 22.
- .16 Cleaning of Carpets with Hot Water Extraction Method: to AATCC 171.

## **2.3 FABRICATION**

- .1 Type 1: Tandus – Street Life, colour 36101 ‘Lights Out’, size 610 mm x 610 mm.
  - .1 Approved Alternates
    - .1 Shaw Contract – Brightwork, Allure Tile 59327, size 610mm x 610mm.
    - .2 Milliken – Common Thread, Point 3, size 500mm x 500mm
    - .3 Or Approved Alternate
  - .2 Face construction:
    - .1 Patterned loop.
  - .3 Pile Surface Appearance:
    - .1 Level loop: textured.
  - .4 Pile fibre: to CAN/CGSB-4.129.
    - .1 Nylon: BCF.
      - .1 Type: Nylon 6.6 or Nylon 6.
  - .5 Gauge: 50 rows per 100 mm.
  - .6 Stitch Rate: 10 per 25 mm.
  - .7 Dyeing Method: solution dyed.
  - .8 Colourization: patterned.
  - .9 Tufted Carpet Backing: to CAN/CGSB-4.129.
    - .1 Primary backing:
      - .1 Synthetic: non-woven.
  - .10 Woven Carpet Backing: to CAN/CGSB-4.129.
    - .1 100% moisture resistant warp, filling and stuffer yarns.
  - .11 Secondary and Unitary Backings: to CAN/CGSB-4.129.
  - .12 Finished Pile Height: minimum 5 mm average.
  - .13 Performance Rating: 3.0 minimum at 22,000 cycles to Vetterman test or 12,000 cycles to Hexapod test.
  - .14 Total Weight: 12oz/yd<sup>3</sup>.

## **2.4 ACCESSORIES**

- .1 Resilient base: continuous, top set, cover.
  - .1 Type: Type TS vulcanized rubber or Type TP thermoplastic rubber.

- .2 Style: cove
- .3 Thickness: 3.17 mm.
- .4 Height: 101.6 mm
- .5 Lengths: cut lengths minimum 2400 mm
- .6 Colour: selected by Departmental Representative from manufacturer's complete range of colours.
- .2 Edge Strips:
  - .1 Stainless steel:
    - .1 Designed for carpet being installed.
    - .2 Floor flange minimum 38 mm wide, face minimum 16 mm wide.
- .3 Adhesive:
  - .1 Pressure Sensitive Type: recommended by carpet tile manufacturer for direct glue down installation of modular carpet.
- .4 Transition Mouldings:
  - .1 Smooth, mill finish stainless steel with lip to extend under tile carpeting, shoulder flush with top of adjacent floor finish.
- .5 Carpet protection: non-staining heavy duty kraft paper.
- .6 Concrete floor sealer: to CAN/CGSB-25.20, Type 1.
- .7 Subfloor patching compound: white premix latex requiring water only to form cementitious paste as recommended by flooring manufacturer for use with their product.

### **Part 3 Execution**

#### **3.1 INSTALLERS**

- .1 Experienced and qualified technicians to carry out assembly and installation of tile carpet.

#### **3.2 EXAMINATION**

- .1 Examine conditions, substrates, and work to receive work of this Section.
- .2 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for carpet tile installation in accordance with manufacturer's written instructions.
  - .1 Proceed with installation only after unacceptable conditions are remedied.

#### **3.3 PREPARATION**

- .1 Demolition/Removal:
  - .1 Remove and divert carpet for recycling in accordance with Section 01 74 19 - Waste Management and Disposal and with Waste Reduction Workplan. Coordinate with Departmental Representative.
- .2 Subfloor Preparation:

- .1 Inspect concrete and determine special care required to make it suitable for carpet installation.
- .2 Fill and level cracks 3 mm wide or protrusions over 0.8 mm with appropriate and compatible latex patching compound.
- .3 Comply with manufacturer's written recommendations for maximum patch thickness.
- .4 Prime large patch areas with compatible primer.
- .5 Ensure concrete substrates cured, clean and dry.
- .6 Ensure concrete substrates free of paint, dirt, grease, oil, curing or parting agents, and other contaminants, including sealers, that interfere with bonding of adhesive.
- .7 Where powdery or porous concrete surface encountered, apply primer compatible with adhesive to provide suitable surface for glue-down installation.
- .3 Surface Preparation: prepare surface in accordance with manufacturer's written recommendations.
  - .1 Prepare floor surfaces in accordance with CRI Carpet Installation Standard.
- .4 Tile Carpeting Preparation:
  - .1 Pre-condition carpeting following manufacturer's written instructions.

### **3.4 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 installed.
- .4 Install carpet tile in accordance with manufacturer's recommendation. Departmental Representative to provide pattern and may include quarter-turn 90 degree format, monolithic, random, quarter turn ashlar, horizontal, herringbone, or vertical ashlar.
- .5 Snugly join carpet tiles in completed installation.
  - .1 Measure distance covered by 11 carpet tiles (10 joints) and ensure distance is compliance with manufacturer specifications.
  - .2 Trapping yarn between carpet tiles is prohibited.
- .6 Apply thin film of pressure-sensitive adhesive according to manufacturer's recommendations.
- .7 Finished installation to present smooth wearing surface free from conspicuous seams, burring and other faults.
- .8 Use material from same dye lot.
  - .1 Colour, pattern, and texture to 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.
- .12 Protect exposed carpet tile edges at transition to other flooring materials with suitable transition strips.
- .13 Base Installation: install to be free of bubbles, puckers, and other defects. Ensure tight corners.

### **3.5 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - 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 00 - Cleaning.
    - .1 Vacuum carpets clean immediately after completion of installation.

### **3.6 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Prohibit traffic on carpet for minimum period of 48 hours after installation and until adhesive is cured.
- .3 Install carpet protection as directed by Departmental Representative.
- .4 Repair damage to adjacent materials caused by tile carpeting installation.

**END OF SECTION**

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**Part 1            General**

**1.1            REFERENCE STANDARDS**

- .1 Environmental Protection Agency (EPA)
  - .1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, EPA Method 24 - Surface Coatings.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .3 Master Painters Institute (MPI)
  - .1 Architectural Painting Specification Manual - current edition.
- .4 National Research Council Canada (NRC)
  - .1 National Fire Code of Canada 2015 (NFC).
- .5 Society for Protective Coatings (SSPC)
  - .1 SSPC Painting Manual, Volume One, 8<sup>th</sup> Edition, Good Painting Practices.
  - .2 SSPC Painting Manual, Volume Two, 8th Edition, Systems and Specifications Manual.

**1.2            ADMINISTRATIVE REQUIREMENTS**

- .1 Scheduling
  - .1 Provide work schedule for various stages of painting to Departmental Representative for review. Provide schedule minimum of 96 hours in advance of proposed operations.
  - .2 Obtain written authorization from Departmental Representative for changes in work schedule.
  - .3 Schedule new additions to existing building coordinate painting operations with other trades.

**1.3            ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's instructions, printed product literature and data sheets for paint and paint products and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Confirm products to be used are in MPI's approved product list.
  - .3 Upon completion, provide 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).
- .3 Samples:
  - .1 Provide duplicate 200 x 300 mm sample panels of each paint and special finish with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards.
  - .2 When approved, samples shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.
  - .3 Provide full range of available colours where colour availability is restricted.
- .4 Sustainable Design Submittals:
  - .1 Construction Waste Management:
    - .1 Provide project Waste Management Plan and Waste Reduction Workplan highlighting recycling and salvage requirements.
  - .2 Low-Emitting Materials:
    - .1 Provide listing of paints and coatings used in building, showing compliance with VOC and chemical component limits or restriction requirements.

#### **1.4 CLOSEOUT SUBMITTALS**

- .1 Provide in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Provide operation and maintenance data for painting materials for incorporation into manual.
- .3 Include:
  - .1 Product name, type, and use.
  - .2 Manufacturer's product number.
  - .3 Colour numbers.
  - .4 MPI Environmentally Friendly classification system rating.

#### **1.5 MAINTENANCE MATERIAL SUBMITTALS**

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

#### **1.6 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Contractor: to have a minimum of 5 years proven satisfactory experience. When requested, provide list of last 3 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 Retain purchase orders, invoices, and documents to prove conformance with noted MPI requirements when requested by Departmental Representative.
- .7 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.

#### **1.7 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 Labels: to indicate:
    - .1 Type of paint or coating.
    - .2 Compliance with applicable standard.
    - .3 Colour number in accordance with established colour schedule.
- .3 Storage and Handling Requirements:
  - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Observe manufacturer's recommendations for storage and handling.
  - .3 Store materials and supplies away from heat generating devices.
  - .4 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.
  - .5 Keep areas used for storage, cleaning, and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Departmental Representative.
  - .6 Remove paint materials from storage only in quantities required for same day use.
  - .7 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
  - .8 Fire Safety Requirements:

- .1 Provide one 9kg 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 (NFC).
- .9 Replace defective or damaged materials with new.
- .4 Develop Waste Reduction Workplan and Construction Waste Management Plan related to Work of this Section.
- .5 Packaging Waste Management: remove for reuse and return of pallets, packaging materials, crates, and padding, as specified in Waste Reduction Workplan and Construction Waste Management Plan.

## **1.8 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Heating, Ventilation and Lighting:
    - .1 Ventilate enclosed spaces.
    - .2 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.
    - .3 Where required, provide continuous ventilation for seven days after completion of application of paint.
    - .4 Co-ordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
    - .5 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.
    - .6 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.
    - .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 Application Requirements:
  - .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 Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

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**Part 2            Products**

**2.1                PERFORMANCE REQUIREMENTS**

- .1    Environmental Performance Requirements:
  - .1        Provide paint products meeting MPI "Environmentally Friendly" E2 or E3 ratings based on VOC (EPA Method 24) content levels.

**2.2                MATERIALS**

- .1    Only paint materials listed in latest edition of MPI Approved Products List (APL) are acceptable for use on this project.
- .2    Paint materials for paint systems: to be products of single manufacturer.
- .3    Only qualified products with E3 or E2 "Environmentally Friendly" ratings are acceptable for use on this project.
- .4    Use only MPI listed materials.
- .5    Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, to be as follows:
  - .1        Water-based.
  - .2        Non-flammable.
  - .3        Manufactured without compounds which contribute to ozone depletion in upper atmosphere.
  - .4        Manufactured without compounds which contribute to smog in the lower atmosphere.
  - .5        Do not contain methylene chloride, toxic metal pigments, and chlorinated hydrocarbons.
- .6    Water-borne surface coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products arising there from, 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).
- .7    Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .8    Water-borne surface coatings and recycled water-borne surface coatings must have flash point of 61.0 degrees C or greater.
- .9    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.

- .10 Water-borne paints and stains, surface coatings and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.

## **2.3 COLOURS**

- .1 PT10: to match exterior metal doors and frames. Departmental Representative will provide colour where available.
- .2 Departmental Representative will provide Colour Schedule after Contract award.
- .3 Selection of colours will be from manufacturers' full range of colours.
- .4 Where specific products are available in restricted range of colours, selection will be based on limited range.
- .5 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats if requested by Departmental Representative.
- .6 For deep and ultra deep colours 4 coats may be required.

## **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 Departmental Representative's written permission.
- .2 Mix paste, powder, or catalyzed paint mixes in accordance with manufacturer's written instructions.
- .3 Add thinner to paint manufacturer's recommendations. Do not use kerosene or organic solvents to thin water-based paints.
- .4 Thin paint for spraying according in accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Departmental Representative.
- .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.
- .6 Deep and ultra deep colors; 4 coats may be required.

## **2.5 GLOSS/SHEEN RATINGS**

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

Gloss Level Category/	Units @ 60 Degrees/	Units @ 85 Degrees/
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 herein and as noted on Finish Schedule.



## **2.6 EXTERIOR PAINTING SYSTEMS**

- .1 Galvanized Metal: not chromate passivated (exterior doors and frames)
  - .1 EXT 5.3L – Polyurethane, Pigmented (over epoxy primer) for high contact/traffic. Gloss Level 6 finish. Premium grade, one coat primer, two top coats.
- .2 Structural Steel and Metal Fabrications:
  - .1 EXT 5.1M – W.B. light industrial coating (over W.B. epoxy primer). Gloss Level 5 finish. Premium grade, one coat primer, two top coats.

## **Part 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 GENERAL**

- .1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.

### **3.3 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable to be painted in accordance with manufacturer's written instructions:
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- .2 Where "special" repainting or recoating system applications or non-MPI listed products or systems are to be used, paint or coating manufacturer to provide as part of work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost to Departmental Representative.

### **3.4 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 wiping with dry, clean cloths or compressed air.
  - .2 Wash surfaces with a biodegradable detergent 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 pre-treatment as soon as possible after cleaning and before deterioration occurs.
- .6 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.
- .7 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.

### **3.5 EXISTING CONDITIONS**

- .1 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Departmental Representative. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- .2 Maximum moisture content as follows:
  - .1 Concrete: 12%.
  - .2 Clay and Concrete Block/Brick: 12%.
  - .3 Wood: 15%.

### **3.6 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 Departmental Representative.
- .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 building occupants 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 Departmental Representative.

### **3.7 APPLICATION**

- .1 Method of application to be as approved by Departmental Representative. Apply paint by airless sprayer, air sprayer, brush, and roller. 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 to be free of roller tracking and heavy stipple unless approved by Departmental Representative.
  - .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.

- .6 Wood, stucco, concrete, cement masonry units CMU's and brick; if sprayed, must be back rolled.
- .4 Use dipping, sheepskins or daubers when no other method is practical in places of difficult access and when specifically authorized by Departmental Representative.
- .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.

### **3.8 FIELD QUALITY CONTROL**

- .1 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer to provide as part of this work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost to Departmental Representative.
- .2 Standard of Acceptance:
  - .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
  - .2 Ceilings: 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.
- .3 Advise Departmental Representative when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .4 Cooperate with inspection firm and provide access to areas of work.
- .5 Retain purchase orders, invoices, and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

### **3.9 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - 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 00 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

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**3.10 RESTORATION**

- .1 Clean and re-install hardware items removed before undertaken painting operations.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.
- .5 Restore areas used for storage, cleaning, mixing, and handling of paint to clean condition as approved by Departmental Representative.

**END OF SECTION**

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**Part 1            General**

**1.1               REFERENCE STANDARDS**

- .1 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33
- .2 Environmental Protection Agency (EPA)
  - .1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, EPA Method 24 - Surface Coatings.
  - .2 SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Safety Data Sheets (SDS).
- .4 Master Painters Institute (MPI)
  - .1 The Master Painters Institute (MPI)/Architectural Painting Specification Manual (ASM) - current edition.
- .5 National Research Council Canada (NRC)
  - .1 National Fire Code of Canada 2015 (NFC).
- .6 Society for Protective Coatings (SSPC)
  - .1 SSPC Painting Manual, Volume Two, 8th Edition, Systems and Specifications Manual.

**1.2               ADMINISTRATIVE REQUIREMENTS**

- .1 Scheduling:
  - .1 Submit work schedule for various stages of painting to Departmental Representative for review. Provide schedule minimum of 72 hours in advance of proposed operations.
  - .2 Obtain written authorization from Departmental Representative for changes in work schedule.
  - .3 Schedule new additions to existing building coordinate painting operations with other trades.

**1.3               ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's instructions, printed product literature and data sheets for paint and paint products and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit copy of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

- .3 Confirm products to be used are in MPI's approved product list.
- .3 Upon completion, provide 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 Safety Data Sheets (SDS).
- .4 Samples:
  - .1 Submit full range colour sample chips to indicate where colour availability is restricted.
  - .2 Submit duplicate 200 x 300 mm sample panels of each paint, stain, special finish, and clear coating with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on following substrate materials:
    - .1 Maple hardboard, 10 mm for finishes over wood surfaces.
  - .3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.
- .5 Test reports: Provide certified test reports for paint from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
  - .1 Lead, cadmium and chromium: presence of and amounts.
  - .2 Mercury: presence of and amounts.
  - .3 Organochlorines and PCBs: presence of and amounts.
- .6 Certificates: Provide certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties. MPI Gateway #.
- .7 Manufacturer's Instructions:
  - .1 Provide manufacturer's installation application instructions.

#### **1.4 CLOSEOUT SUBMITTALS**

- .1 Provide in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Provide operation and maintenance data for painting materials for incorporation into manual.
- .3 Include:
  - .1 Product name, type, and use.
  - .2 Manufacturer's product number.
  - .3 Colour numbers.
  - .4 MPI Environmentally Friendly classification system rating.

## **1.5 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Extra Stock Materials:
  - .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Submit one 4-litre can of each type and colour of paint, primer, stain, and finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

## **1.6 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Contractor: to have a minimum of 5 years proven satisfactory experience. When requested, provide list of last 3 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 Retain purchase orders, invoices, and documents to prove conformance with noted MPI requirements when requested by Departmental Representative.
  - .7 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.
- .2 Mock-Ups:
  - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control for staining, sealing, and finishing of wood window sills.
    - .1 Prepare, stain, seal, and finish designated surface, area, or item (in each colour scheme) to specified requirements, with specified paint or coating showing selected colours, gloss/sheen, textures.
    - .2 Mock-up will be used:
      - .1 To judge quality of work, substrate preparation, operation of equipment and material application and skill to MPI Architectural Painting Specification Manual standards.
    - .3 Locate where directed.
    - .4 Allow 72 hours for inspection of mock-up before proceeding with Work.



- .5 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

## **1.7 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 Labels: to indicate:
    - .1 Type of paint or coating.
    - .2 Compliance with applicable standard.
    - .3 Colour number in accordance with established colour schedule.
- .3 Storage and Handling Requirements:
  - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Observe manufacturer's recommendations for storage and handling.
  - .3 Store materials and supplies away from heat generating devices.
  - .4 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.
  - .5 Keep areas used for storage, cleaning, and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Departmental Representative.
  - .6 Remove paint materials from storage only in quantities required for same day use.
  - .7 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
  - .8 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 (NFC).
- .4 Develop Waste Reduction Workplan and Construction Waste Management Plan related to Work of this Section.
- .5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

## **1.8 SITE CONDITIONS**

- .1 Ambient Conditions:

- .1 Heating, Ventilation and Lighting:
  - .1 Ventilate enclosed spaces.
  - .2 Provide heating facilities 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.
  - .3 Provide continuous ventilation for 7 days after completion of application of paint.
  - .4 Co-ordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
  - .5 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.
  - .6 Provide minimum lighting level of 323 Lux on surfaces to be painted.
  - .7 Temperature, Humidity and Substrate Moisture Content Levels:
    - .1 Unless pre-approved written approval by Specifying body and product manufacturer, perform no painting when:
      - .1 Ambient air and substrate temperatures are below 10 degrees C.
      - .2 Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.
      - .3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.
      - .4 The relative humidity is under 85% or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.
      - .5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.
      - .6 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.
    - .2 Perform painting work when maximum moisture content of the substrate is below:
      - .1 12 % for concrete and masonry (clay and concrete brick/block). Allow new concrete and masonry to cure minimum of 28 days.
      - .2 15 % for hard wood.

- .3 17 % for soft wood.
- .4 12 % for plaster and gypsum board.
- .3 Test for moisture using calibrated electronic Moisture Meter.  
Test concrete floors for moisture using "cover patch test".
- .4 Test concrete, masonry and plaster surfaces for alkalinity as required.
- .8 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.
  - .3 Apply paint when previous coat of paint is dry or adequately cured.
- .9 Additional interior application requirements:
  - .1 Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.
  - .2 Apply paint in occupied facilities during silent hours only.  
Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

## **Part 2 Products**

### **2.1 PERFORMANCE REQUIREMENTS**

- .1 Environmental Performance Requirements:
  - .1 Provide paint products meeting MPI "Environmentally Friendly" E2 or E3 ratings based on VOC (EPA Method 24) content levels.

### **2.2 MATERIALS**

- .1 Only 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 Only qualified products with E2 or E3 "Environmentally Friendly" rating are acceptable for use on this project.
- .4 Conform to latest MPI requirements for interior painting work including preparation and priming.
- .5 Provide paint products meeting MPI "Environmentally Friendly" E2 or E3 ratings based on VOC (EPA Method 24) content levels.

- .6 Use MPI listed materials having minimum E2 or E3 rating where indoor air quality (odour) requirements exist.
- .7 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids to be:
  - .1 Water-based.
  - .2 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, and toxic metal pigments.

## **2.3 COLOURS**

- .1 PT1: to match Benjamin Moore 2124-60 'Misty Gray'
- .2 PT2: to match Benjamin Moore CSP-110 'Vintage Pewter'
- .3 PT3: to match Benjamin Moore 2124-10 'Wrought Iron'
- .4 PT4: to match Benjamin Moore CSP-1195 'Flamenco'
- .5 PT5: to match Main Floor Base Building walls and bulkheads. Departmental Representative will provide colour where available.
- .6 PT6: to match Basement Floor Base Building walls and ceiling. Departmental Representative will provide colour where available.
- .7 PT7: to match interior metal doors and frames. Departmental Representative will provide colour where available.
- .8 Selection of colours not specified will be from manufacturers full range of colours.
- .9 Departmental Representative will provide Colour Schedule after Contract award.
- .10 Where specific products are available in restricted range of colours, selection based on limited range.
- .11 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats, if requested by Departmental Representative.
- .12 For deep and ultra deep colours; 4 coats will be required.

## **2.4 MIXING AND TINTING**

- .1 Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Departmental Representative for tinting of painting materials.
- .2 Mix paste, powder, or catalyzed paint mixes in accordance with manufacturer's written instructions.
- .3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
- .4 Thin paint for spraying in accordance with paint manufacturer's instructions.

- .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. Strain as necessary.

## 2.5 GLOSS/SHEEN RATINGS

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

	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish (flat)	Max. 5	Max. 10
Gloss Level 2 - Velvet-Like Finish	Max.10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 - Satin-Like Finish	20 to 35	min. 35
Gloss Level 5 - Traditional Semi-Gloss Finish	35 to 70	
Gloss Level 6 - Traditional Gloss	70 to 85	
Gloss Level 7 - High Gloss Finish	More than 85	

- .2 Gloss level ratings of painted surfaces herein and as noted on Finish Schedule.

## 2.6 INTERIOR REPAINTING SYSTEMS – EXISTING CONSTRUCTION

- .1 Dressed lumber: including doors, door and window frames, window sills, casings, mouldings:
- .1 RIN 6.3T - High performance architectural latex. Gloss Level 5 (over latex primer) finish. Premium grade; one coat primer, two top coats.
  - .2 RIN 6.3Z – Polyurethane, clear, moisture cured (over semi-transparent stain). Gloss Level 6 finish. Premium grade; one coat primer, two top coats
- .2 Plaster and gypsum board: gypsum wallboard, drywall, “sheet rock type material”, and textured finishes:
- .1 RIN 9.2B - High performance architectural latex (over latex primer/sealer). Gloss Level 4 finish. Premium grade; one coat primer, two top coats.

## 2.7 INTERIOR PAINTING SYSTEMS – NEW CONSTRUCTION

- .1 Concrete masonry units: smooth and split face block and brick:
- .1 INT 4.2D - High performance architectural latex (over latex block filler). Gloss Level 5 finish. Premium grade; one coat primer, two top coats.
- .2 Structural steel and metal fabrications: columns, beams, joists:
- .1 INT 5.1RR - High performance architectural latex, (over alkyd primer). Gloss Level 3 finish. Premium grade; one coat primer, two top coats
- .3 Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.
- .1 INT 5.3M - High performance architectural latex, (over W.B. galvanized primer). Gloss Level 5 finish. Premium grade; one coat primer, two top coats.
- .4 Dressed lumber: including doors, door and window frames, casings, mouldings, window sills:

- .1 INT 6.3Y - Polyurethane, Clear, Moisture Cured, (over S.B. stain). Gloss Level 6 finish. Premium grade; one coat primer, two top coats.
- .5 Wood paneling: partitions, panels, shelving:
  - .1 INT 6.4S - High performance architectural latex, (over latex primer). Gloss Level 4 finish. Premium grade; one coat primer, two top coats.
- .6 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:
  - .1 INT 9.2B - High performance architectural latex, (over latex primer/sealer). Gloss Level 4 finish. Premium grade; one coat primer, two top coats.
  - .2 INT 9.2F - Epoxy-Modified Latex (tile-like) (over latex primer/sealer) finish. Gloss Level 5 finish. Premium grade; one coat primer, two top coats.

### **Part 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 data sheet.

#### **3.2 GENERAL**

- .1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.

#### **3.3 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable to be painted in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- .2 Interior surfaces requiring repainting: inspected by both painting contractor and Departmental Representative to determine defects or problems, prior to commencing repainting work, or after surface preparation if unseen substrate damage is discovered.
- .3 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

- .4 Maximum moisture content as follows:
  - .1 Stucco, plaster, and gypsum board: 12%.
  - .2 Concrete: 12%.
  - .3 Clay and Concrete Block/Brick: 12%.
  - .4 Hard Wood: 15%.
  - .5 Soft Wood: 17%.

### 3.4 PREPARATION

- .1 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 surfaces as directed by Departmental Representative.
  - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
  - .3 Protect factory finished products and equipment.
  - .4 Protect passing pedestrians, building occupants, and general public in and about the building.
- .2 Surface Preparation:
  - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings, and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
  - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
  - .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.
- .3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
  - .1 Remove dust, dirt, and other surface debris by wiping with dry, clean cloths.
  - .2 Wash surfaces with a biodegradable detergent 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.
  - .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
  - .6 Use trigger operated spray nozzles for water hoses.
  - .7 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications

of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.

- .5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
  - .1 Apply sealer to MPI #36 over knots, pitch, sap and resinous areas.
  - .2 Apply wood filler to nail holes and cracks.
  - .3 Tint filler to match stains for stained woodwork.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .7 Carried out during shop priming: clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease, and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets, and corners to be painted by brushing with clean brushes, and vacuum cleaning.
- .8 Touch up of shop primers with primer as specified.
- .9 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.

### **3.5 EXISTING CONDITIONS**

- .1 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test" and report findings to Departmental Representative. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- .2 Maximum moisture content as follows:
  - .1 Stucco: 12%.
  - .2 Concrete: 12%.
  - .3 Clay and Concrete Block/Brick: 12%.
  - .4 Hard Wood: 15%.
  - .5 Soft Wood: 17%.

### **3.6 APPLICATION**

- .1 Method of application to be as approved by Departmental Representative. Apply paint by airless sprayer, brush, and roller. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
  - .1 Apply paint in uniform layer using brush and/or roller type 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 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 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 uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
  - .4 Brush out immediately all runs and sags.
  - .5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.
- .4 Use dipping, sheepskins, or daubers only when no other method is practical in places of difficult access.
- .5 Apply coats of paint 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 tops of interior cupboards and cabinets and projecting ledges.
- .9 Finish inside of cupboards and cabinets as specified for outside surfaces.
- .10 Finish closets and alcoves as specified for adjoining rooms.
- .11 Finish top, bottom, edges, and cutouts of doors after fitting as specified for door surfaces.
- .12 Wood, drywall, plaster, stucco, concrete, concrete masonry units and brick; if sprayed, must be back rolled.

### **3.7 MECHANICAL/ELECTRICAL EQUIPMENT**

- .1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.
- .2 Boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.
- .3 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
- .4 Do not paint over nameplates.
- .5 Keep sprinkler heads free of paint.
- .6 Paint inside of ductwork where visible behind grilles, registers, and diffusers with primer and one coat of matt black paint.

- .7 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .8 Paint natural gas piping yellow.
- .9 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
- .10 Do not paint interior transformers and substation equipment.

### **3.8 SITE TOLERANCES**

- .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
- .2 Ceilings: 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.

### **3.9 FIELD QUALITY CONTROL**

- .1 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer will provide as part of this work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost to Departmental Representative.
- .2 Standard of Acceptance:
  - .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
  - .2 Ceilings: 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.
- .3 Advise Departmental Representative when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .4 Cooperate with inspection firm and provide access to areas of work.
- .5 Retain purchase orders, invoices, and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

### **3.10 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - 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 00 - Cleaning.

### **3.11 RESTORATION**

- .1 Clean and re-install hardware items removed before undertaken painting operations.

- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.
- .5 Restore areas used for storage, cleaning, mixing, and handling of paint to clean condition as approved by Departmental Representative.

**END OF SECTION**