

Room		Floor		Wall	Ceiling	
No.	Name	Finish	Base	Finish (orientation)	Finish	Notes
215		CPT	RB	P	ACT	
217A		RSF	RB	P	OPN	
217B		RSF	RB	P	ACT	
218		CPT	RB	P	ACT	
219		CPT	RB	P	ACT	
219A		CPT	RB	P	ACT	
219B		CPT	RB	P	ACT	
220		RSF	RB	P	ACT	CT ON BACKSPLASH WALL
221		CPT	RB	P	ACT	
222		CPT	RB	P	ACT	
223		CPT	RB	P	ACT	
224		CPT	RB	P	ACT	
225		CPT	RB	P	ACT	
226		CPT	RB	P	OPN	
227		RSF	RB	P	ACT	
228		CPT	RB	P	ACT	
229		RSF	RB	P	ACT	
234		PREP	RB	P	PREP	PREP FLOOR ONLY FOR NEW FINISH BY OTHERS
237		PREP	RB	P	PREP	PREP FLOOR ONLY FOR NEW FINISH BY OTHERS

NOTES

- 1
- Refer to Finishes Plan for paint colour locations and lines of floor finish changes.
- 2
- Paint all existing walls in accordance to Finishes Plan
- 3
- Paint heater covers typical
- 4
- Paint columns typical, colour indicated on Finishes Plan

Room		Floor		Wall	Ceiling	
No.	Name	Finish	Base	Finish (orientation)	Finish	Notes

LEGEND

Abbrev.	Material	Section	Manufacturer	Colour	Pattern
ACT	acoustic ceiling tile	09 51 00			
CT	ceramic tile	09 30 13			
DP	demountable partition	10 22 19	DIRTT		
EX	existing				
FG	frame guard	10 26 00			
FRL	fibre reinforced laminate	06 40 00			
FRP	fibre glass reinforced panel				
HPDL	high pressure laminate	06 40 00			
LPDL	low pressure laminate	06 40 00			
LCKR	locker	10 51 00			
MTL	metal	05 50 00			
OPN	open, no ceiling				
PHEN	phenolic				
PREP	prepare				
PREFIN	prefinished				
PT	paint	09 91 00			
RB	resilient base				
RBL	roller blinds				
RSF	resilient sheet flooring	09 65 16			
SC	sealed concrete				
SPS	solid polymer surface	06 40 00			
SRF	slip resistant flooring	09 65 16			
SS	stainless steel	05 57 00			
STL	steel				
SWP	sheet wall protection	09 72 16			
TGL	tempered glass				
WD	wood				

Room		Floor		Wall	Ceiling	
No.	Name			Finish (orientation)	Finish	Notes
		Finish	Base			

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## 1 General

### 1.01 REFERENCES

- .1 ASTM International (ASTM)
  - .1 ASTM C475 Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - .2 ASTM C840, Standard Specification for Application and Finishing of Gypsum Board.
  - .3 ASTM C954, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
  - .4 ASTM C1002, 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, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
  - .6 ASTM C 1178, Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.
  - .7 ASTM C1396/C1396M, Standard Specification for Gypsum Wallboard.
  - .8 ASTM D 3273, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-51.34 M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .3 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102-10, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

### 1.02 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Action Submittals:
  - .1 Product Data:
    - .1 Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Shop Drawings
    - .1 Submit schedule of wall assemblies requiring fire resistance rating.
    - .2 Identify construction solution ULC Design assembly listing numbers for each wall assembly; organize by exterior wall location.
    - .3 Include copy of ULC Design Listing indicating assembly components, project specific materials, and associated fire resistance ratings.
  - .3 Samples:
    - .1 Submit for review and acceptance of each unit.

- .2 Samples will be returned for inclusion into work.
- .3 Submit duplicate 300 mm long samples of corner and casing beads, and cornice cap.

### **1.03 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store gypsum board assemblies materials level indoors, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Replace defective or damaged materials with new.

### **1.04 AMBIENT CONDITIONS**

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

## **2 Products**

### **2.01 MATERIALS**

- .1 Standard board: to ASTM C1396/C1396M Type X, thickness indicated, 1 219 mm wide by maximum practical length, ends square cut, edges bevelled.
- .2 Moisture-Resistant Interior Gypsum Board (GB-MR): To ASTM C 1396M, moisture-resistant, treated core, mould resistance rating 10 to ASTM D 3273. Type X, 16 mm thick for walls, 12 mm thick for ceilings by 1 219 mm wide by maximum practical length, ends square cut, long edges bevelled.
- .3 Interior Glass-Mat Water Resistant Gypsum Backing Board (GB-WR): to ASTM C1178M, Type X, 16 mm thick, 1 219 mm wide by maximum practical length. Mould resistance score 10 in accordance with ASTM D3273. For use as tile backing panels.
- .4 Steel drill screws: To ASTM C1002, except:
  - .1 To ASTM C954 for metal framing 0.91 mm and thicker.
- .5 Laminating compound: as recommended by manufacturer, asbestos-free.
- .6 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, zinc-coated by hot-dip process, 0.45 mm base thickness, laminated to paper tape, one piece length per location.

- .7 Cornice cap: 12.7 mm deep x partition width, of 1.6 mm base thickness galvanized sheet steel, prime painted. Include splice plates for joints.
- .8 Sealants: in accordance with Section 07 92 00 - Joint Sealants except as indicated
- .9 Acoustic sealant: in accordance with Section 07 92 00 - Joint Sealants.
- .10 Polyethylene: to CAN/CGSB-51.34, Type 2.
- .11 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.
- .12 Acoustic Insulation: Batt and blanket mineral fibre to CAN/ULC S702, Type 1, mineral wool, non-combustible, install full depth of stud cavity or as indicated.
- .13 Preformed Control Joint: Extruded vinyl V-shape joint with perforated flanges, and tear-off centre protection strip.
- .14 Joint Tape:
  - .1 Interior Gypsum Board: Paper, except where fibreglass mesh tape is indicated.
  - .2 Tile Backing Panels: 10-by-10 glass mesh , except as recommended by panel manufacturer.
- .15 Joint compound: to ASTM C475, asbestos-free.
- .16 Putty Pad: Non corrosive, mouldable putty to seal acoustically rated walls at gypsum board penetrations including but not limited to electrical outlets, HVAC ducts, plumbing, and electrical and telecommunications services.
  - .1 Provide materials tested and listed for use in 1 hour fire-resistant rated assemblies in accordance with UL 1479.

### 3 Execution

#### 3.01 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 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.

#### 3.02 ERECTION

- .1 Do application and finishing of gypsum board to ASTM C840 except where specified otherwise.
- .2 Construct fire-resistance rated partitions in strict accordance with requirements of construction solution ULC listing reviewed submittal.

### 3.03 APPLICATION

- .1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work have been approved.
- .2 Apply gypsum board to metal furring or framing using screw fasteners for both layers. 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 vertically or horizontally, providing sheet lengths that will minimize end joints.
  - .2 Double-Layer Application:
    - .1 Install gypsum board for base layer and exposed gypsum board for face layer.
    - .2 Apply base layers at right angles to supports unless otherwise indicated.
    - .3 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 Provide interior glass-mat water resistant gypsum backing board where wall tiles to be applied. 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 partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut outs around electrical boxes, ducts, and all penetrations in partitions where perimeter sealed with acoustic sealant.
- .5 Install gypsum board on walls vertically to avoid end-butt joints. At high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-resistance rated assemblies require vertical application.
- .6 Install gypsum board with face side out.
- .7 Do not install damaged or damp boards.
- .8 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

### 3.04 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, 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 Provide backup at control joints in fire resistance rated assemblies in accordance with ASTM C840 and as follows: multiple layers of 16 mm gypsum board attached to metal framing on one side of joint across entire width and full length of stud.
- .8 Locate control joints where indicated, at changes in substrate construction, at approximate 9 m spacing on long walls, and at approximate 15 m spacing on ceilings.
- .9 Install control joints straight and true.
- .10 Install gypsum board to accommodate deflection at underside of floor and structural beams. Do not fasten gypsum board to deflection framing system specified in Section 09 22 16 - Non-Structural Metal Framing. Coordinate with Section 07 84 00 – Firestopping for installation of firestopping at joint conditions.
- .11 Install access doors to electrical and mechanical fixtures specified in section 08 31 00 – Access Doors.
  - .1 Rigidly secure frames to furring or framing systems.
- .12 Gypsum Board Finish: finish gypsum board walls to following levels in accordance with ASTM C840. Finish gypsum board with following levels of finish for specific areas indicated:
  - .1 Levels of finish:
    - .1 Level 0: Behind solid paneling where fire-resistance or smoke seal is not required.
    - .2 Level 1: Ceiling plenum areas, concealed areas, and where indicated.
    - .3 Level 2: Panels that are substrate for tile.
    - .4 Level 4: Where gypsum board is to be painted, except otherwise indicated.
    - .5 Level 5: Where gypsum board is part of special wall assemblies W4 and W5, where dry erase coatings are indicated.
- .13 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.
- .14 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
- .15 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .16 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

### **3.05 CLEANING**

- .1 Progress and Final Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.

**3.06 PROTECTION**

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

**END OF SECTION**

## 1 General

### 1.01 REFERENCES

- .1 ASTM International (ASTM)
  - .1 ASTM C645, Specification for Nonstructural Steel Framing Members.
  - .2 ASTM A653/A653M, Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process
  - .3 ASTM C754, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
  - .4 ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials.
  - .5 ASTM E814 Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
- .2 Definitions:
  - .1 Steel Thickness:
    - .1 Base Steel Thickness: Thickness of bare steel exclusive of coatings.
    - .2 Design Thickness: Target or "nominal" thickness used to determine structural properties of the cold formed Products.
    - .3 Minimum Thickness: Design thickness minus minimum allowable under-tolerance required by CSA S136 (95% of design thickness) or material specification; whichever is more stringent.
    - .4 Designation Thickness: For the purposes of this specification; thicknesses provided will be minimum base steel thicknesses in accordance with CSA S136 as interpreted by Section 01 61 00 – Common Product Requirements and determined by the following table:

Designation Thickness	Minimum Base Steel Thickness		Gauge No. (For reference Only)	Colour
(mils)	(in)	(mm)	Ga	
18	0.0179	0.455	25	Not Painted
33	0.0329	0.836	20	White
43	0.0428	1.087	18	Yellow
54	0.0538	1.367	16	Green

### 1.02 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Action Submittals:
  - .1 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.

### 1.03 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.

### 1.04 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements, and 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 off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .5 Remove from site and dispose of packaging materials at appropriate recycling facilities.

## 2 Products

### 2.01 MATERIALS

- .1 Non-load bearing channel stud framing: to ASTM C645, stud size indicated, roll formed from hot dipped galvanized steel sheet, for screw attachment of gypsum board.
  - .1 Minimum Base Steel Thickness:
    - .1 General interior framing: 0.455 mm.
    - .2 Interior framing scheduled for ceramic tile finishes, abuse-resistant gypsum board: 0.836 mm.
    - .3 Jamb framing: 0.836 mm.
    - .4 Special wall construction framing (W3C, W3Cm, W4, W5): 1.087 mm
  - .2 Knock-out service holes at 460 mm centres.
- .2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 32 mm flange height.
  - .1 Minimum base steel thickness: matching thickest stud required for wall assembly.
- .3 Deflection systems:
  - .1 Single Track: To ASTM C645, roll formed from hot dipped galvanized steel sheet, Z120 coating designation to ASTM A653, single slotted ceiling track.
    - .1 Movement: Allowing up to 25 mm vertical movement
    - .2 Dimensions: 1.087 mm thick x width required.

- .3 UL classification: 1 and 2 hour fire rating, to ASTM E119 and ASTM E814 for fire and hose stream testing.
- .4 Sheet steel: 1.367 mm thick, rolled commercial quality steel to ASTM A1008M or A1011M., hot dipped galvanized to ASTM A653, coating designation ZF120.
- .5 Expanded Metal: To EMMA 557-99, fabricated from cold rolled carbon-steel sheet to ASTM A1011, diamond size 14 mm SWO by 43 mm LWO x 3.048 mm base metal thickness (3/4-9F), rolled and flattened.
- .6 Metal channel stiffener: 38 x 19 mm size, 1.367 mm thick cold rolled steel, coated with rust inhibitive coating.
- .7 Metal furring runners, hangers, tie wires, inserts, anchors: to ASTM C1280, galvanized.
- .8 Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 4.12 mm in diameter.
- .9 Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 1.367 mm and minimum 13 mm wide flanges, 38 mm deep.
- .10 Furring Channels (Furring Members): Galvanized steel for screw attachment of gypsum board:
- .11 Security bars: tool-resistant steel bar, grade 1, per ASTM A627.
- .12 Acoustical sealant: in accordance with Section 07 92 00 - Joint Sealants.
- .13 Insulating strip: rubberized, moisture resistant 3 mm thick foam strip, 12 mm wide, with self-sticking adhesive on one face, lengths as required.
- .14 Metal Framing Fasteners: To ASTM C1513, self-drilling tapping screws, and self-piercing tapping screws, corrosion resistant, head style and size to suit application, except:
  - .1 Pop rivets at special wall construction W4 and W5: 4.5 mm diameter, zinc plated steel body and mandrel.
- .15 Washers: 38 mm OD, 5.5 mm ID, 1.6 mm thick zinc plated carbon steel.

### 3 Execution

#### 3.01 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 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.

### 3.02 ERECTION

- .1 Install steel framing members and wall protection materials for special wall construction framing (W4 and W5) where noted in accordance with RCMP Lead Agency Guide G13-01, Rev 1.1 (May 2014), Secure Storage Rooms (SSR).
- .2 Align partition tracks at floor and ceiling and secure at 600 mm on centre maximum, except 300 mm on centre for special wall framing (W4 and W5).
- .3 Place studs vertically as follows:
  - .1 General interior framing: 406 mm on centre and not more than 50 mm from abutting walls, and at each side of openings and corners.
  - .2 Special wall construction framing (W4 and W5): 300 mm on centre, construct with double studs at abutting walls, at each side of openings and corners
  - .3 Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
- .4 Where walls are not indicated to extend to underside of floor above, provide lateral bracing above ceilings to underside of floor structure:
  - .1 Bracing: Steel studs matching wall framing thickness and depth, spaced 2 440 mm o.c., angled 45 degree from vertical. Alternate bracing direction for successive braces on long walls.
- .5 Where walls terminate below ceilings, provide box framed steel stud lintel along entire top edge of wall, and provide 100 mm wide flat strap sheet steel shear wall 'X' bracing from corner to corner.
- .6 Erect metal studding to tolerance of 1:1 000.
- .7 Attach studs to tracks as follows:
  - .1 General interior framing: using screws.
  - .2 Special wall construction framing (W4 and W5): using welds or pop rivets.
  - .3 Ensure fastening does not compromise deflection system at upper track.
- .8 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .9 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .10 Provide two studs extending from floor-to-floor, or floor-to-ceiling, as applicable, at each side of openings wider than stud centres specified.
  - .1 Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
- .11 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.

- .12 Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C840 except where specified otherwise.
- .13 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .14 Install work level to tolerance of 1:1 200.
- .15 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.
- .16 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .17 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .18 Install wall furring for gypsum board wall finishes to ASTM C840, except where specified otherwise.
- .19 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- .20 Furr duct shafts, beams, columns, pipes and exposed services where indicated.
- .21 Special wall construction framing (W4 and W5): Install anti-spread bracing (channel stud framing) 1 219 mm from bottom of wall between door frame double stud and adjacent stud on both sides of frame.
- .22 Provide 40 mm stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.
- .23 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .24 Extend partitions to ceiling height except where noted otherwise on drawings.
- .25 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.
  - .1 Provide deflection system accommodating not less than 25 mm vertical movement or more as indicated and required.
  - .2 Maintain continuity of fire resistance rating at joints in accordance with reviewed ULC firestopping assembly in accordance with Section 07 84 00 – Firestopping.
- .26 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .27 Install two continuous beads of acoustical sealant under studs and above tracks around perimeter of sound control partitions.
- .28 Apply continuous bead of fire-rated acoustic sealant on both sides of top and bottom tracks at Special Wall Construction W4 and W5.

### **3.03 WALL PROTECTION MATERIAL INSTALLATION – SPECIAL WALL CONSTRUCTION (W4 AND W5)**

- .1 Provide expanded metal wall protection material on attack side of wall.
  - .1 Support edges by anti-spread bracing, studs and corners. Butt or inlay mesh at every vertical and horizontal seam on centre line of steel stud or anti-spread bracing and secure with rivets and fender washers in accordance with RCMP Lead Agency Guide G13-01.
- .2 Openings:
  - .1 Reinforce openings with additional layer of 1.367 mm thick sheet steel on inside (secure side) of studs. Secure with 1.5 mm fillet weld, 15 mm long at 200 mm o/c both sides of steel stud, or 8mm plug weld at 200 mm o/c..
  - .2 Extend reinforcing 1 200 mm from all edges of opening.

### **3.04 VENTILATION DUCT PASS-THROUGHS**

- .1 Install ventilation duct pass-throughs for special wall construction framing (W4 and W5) where noted in accordance with RCMP Lead Agency Guide G13-01, Rev 1.1 (May 2014), Secure Storage Rooms (SSR).
- .2 Ceiling mount:
  - .1 Duct sleeve to be at least the same thickness as duct passing through.
  - .2 The overall dimension of the sleeve must be slightly greater than the duct.
  - .3 Construct frames of 35 x 35 x 3 mm angle steel welded around duct sleeve (ceiling mount brackets are recommended).
  - .4 Space 10 mm Ø steel security bars at 150 mm on centre and weld to frame.
  - .5 Secure the duct sleeve to the structural ceiling with mechanical fasteners.
  - .6 Cut protection material 20 mm max from edge of the duct opening (3 sides)
  - .7 Apply fire-rated acoustic sealant between duct sleeve and finished wall.
- .3 Surface mount:
  - .1 Duct sleeve to be at least the same thickness as the duct passing through.
  - .2 The overall dimension of the sleeve must be slightly greater than the duct.
  - .3 Construct frame on each side of the wall of 35 x 35 x 3 mm angle steel welded around duct sleeve.
  - .4 Space 10 mm Ø steel security bars at 150 mm on centre and weld to frame.
  - .5 Secure duct sleeve with 6 mm Ø bolts and hex nuts (inside the room) at 200 mm on centre around the outside duct sleeve. The bolt head shall be on the attack side and be welded in at least three places to the angle frame.
  - .6 Framing around duct sleeve is required.
  - .7 Apply fire-rated acoustic sealant between duct sleeve and finished wall.

### **3.05 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.



**3.06 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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## **1 General**

### **1.01 REFERENCES**

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
  - .1 ANSI A108.1-99, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
- .2 Terrazzo Tile and Marble Association of Canada (TTMAC)
  - .1 Tile Specification Guide 09300 Tile Installation Manual, 2009-2010 edition
  - .2 Tile Maintenance Guide, latest edition

### **1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Action Submittals:
  - .1 Product data:
    - .1 Include manufacturer's information on:
      - .1 Wall tile, marked to show each type, size, and shape required.
      - .2 Mortar and grout.
      - .3 Divider strip.
      - .4 Accessories
  - .2 Samples:
    - .1 Samples for Initial Selection: For each type of grout indicated. Include Samples of accessories involving colour selection.
    - .2 Submit duplicate 300 by 600 mm sample panels of each colour, texture, size, and pattern of tile. Adhere tile samples to 12 mm thick plywood and grout joints to represent project installation.
- .3 Informational Submittals:
  - .1 Manufacturer's installation instructions and recommendations.

### **1.03 CLOSEOUT SUBMITTALS**

- .1 Maintenance Data:
  - .1 Submit maintenance data for incorporation into Operations and Maintenance Manual in accordance with Section 01 78 00 – Closeout Submittals.
  - .2 Submit cleaning and maintenance recommendations for Owner's use.
  - .3 Submit TTMAC Maintenance Guide. Provide specific warning of any maintenance practice or materials that may damage or disfigure finished work.

### **1.04 MAINTENANCE MATERIALS SUBMITTALS**

- .1 Supply extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents:

- .1 Tile: Supply minimum 5% or one full carton (whichever is greater) of each type and colour of tile required for project for maintenance use. Store where directed.

#### **1.05 QUALITY ASSURANCE**

- .1 Quality Assurance Submittals:
  - .1 Manufacturer's Instructions: manufacturer's installation instructions.

#### **1.06 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- .2 Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- .3 Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- .4 Store liquid materials in unopened containers and protected from freezing.
- .5 Waste management and disposal requirements: Refer to Section 01 74 21 – Construction Waste Management and Disposal.

#### **1.07 AMBIENT CONDITIONS**

- .1 Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

### **2 Products**

#### **2.01 PRODUCTS, GENERAL**

- .1 ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
- .2 ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.
- .3 Factory Blending: For tile exhibiting colour variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colours as those taken from other packages and match approved Samples.

#### **2.02 WALL TILE**

- .1 Ceramic tile: to CAN/CGSB-75.1, Type 5, Class MR 4.
  - .1 Module size: 100 x 300 mm.
  - .2 Finish: Glazed

- .1 Matte: 75%
- .2 Bright: 25%
- .3 Colour: Selected by Departmental Representative from manufacturer's full range to match Standard of Acceptance Product.

## **2.03 MORTAR AND GROUT MATERIALS**

- .1 Mortar and grout materials: product of a single manufacturer.
- .2 Thin-Set Mortar: Polymer-enriched, non-sag medium-bed and thin-set mortar specifically for use with large format tile, to ANSI A118.4 and ANSI A118.11, recommended by setting material manufacturer.
  - .1 Maximum VOC Content: 65g/L (less water)
- .3 Polymer-Modified Portland Cement Grout: to ANSI A118.1, A118.6, and A118.7, fast-setting, non-shrinking, colour-consistent, factory prepared, polymer-modified, Portland cement grout. Weather-, shock-, mildew-, and frost-resistant; non-flammable and meeting following requirements:
  - .1 Flexural Strength: Greater than 6.90 MPa to ANSI A118.6.
  - .2 Linear Shrinkage: Less than 0.10% to ANSI A118.6 after seven days.
  - .3 Water Absorption: Less than 7% (immersion to dry).
  - .4 Compressive Strength: Minimum 24.1 MPa at 28 days to ANSI A118.6.
  - .5 Tensile Strength: Minimum 3.45 MPa at 28 days to ANSI A118.7.
  - .6 Maximum VOC Content: 65g/L (less water)
  - .7 Colour: Selected by Departmental Representative from manufacturer's standard range.
- .4 Water: Potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

## **2.04 ACCESSORIES**

- .1 Transition Strips: Purpose made metal extrusion; sloped exposed surface, 4 mm tall leading edge, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer, stainless steel type 304.
- .2 Sealant: Mildew resistant silicone in accordance with Section 07 92 00 - Joint Sealants.

## **2.05 MIXES**

- .1 Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- .2 Add materials, water, and additives in accurate proportions.
- .3 Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

## **2.06 CLEANING COMPOUNDS**

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

## **3 Execution**

### **3.01 MANUFACTURER'S INSTRUCTIONS**

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

### **3.02 EXAMINATION**

- .1 Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
  - .1 Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
  - .2 Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
  - .3 Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Departmental Representative.
- .2 Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.03 PREPARATION**

- .1 Prepare substrate in accordance with manufacturer's recommendations.
- .2 Blending: For tile exhibiting colour variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colours as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

### **3.04 WORKMANSHIP**

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007, "Ceramic Tile", except where specified otherwise.
- .2 Apply tile or backing coats to clean and sound surfaces.
- .3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.

- .4 Maximum surface tolerance 1:800.
- .5 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .6 Bond Pattern: indicated on drawings.
- .7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .8 Allow minimum 24 hours after installation of tiles, before grouting.
- .9 Clean installed tile surfaces after installation and grouting cured.

### **3.05 CLEANING AND PROTECTING**

- .1 Cleaning: On completion of placement and grouting, clean tile surfaces so they are free of foreign matter.
  - .1 Remove grout residue from tile as soon as possible.
  - .2 Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
- .2 Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- .3 Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

**END OF SECTION**

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## **1 General**

### **1.01 ADMINISTRATIVE REQUIREMENTS**

- .1 Coordination:
  - .1 Obtain samples of each type of light fixture, diffuser, speaker, and sprinkler head to be installed for preparing factory cut-outs.
  - .2 Coordinate suspension system with location of related components, including, but not limited to, mechanical, electrical, and communication fixtures. Centre light fixtures, diffusers, speakers, and sprinkler heads in ceiling components.

### **1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Action Submittals:
  - .1 Product Data: For each type of product specified.
  - .2 Shop Drawings:
    - .1 Suspension Grid:
      - .1 Submit reflected ceiling plans for special grid patterns as indicated.
      - .2 Indicate lay-out, insert and hanger spacing and fastening details, splicing method for main and cross runners, change in level details, acoustical unit support at ceiling fixture, lateral bracing and accessories, attachment system, and methods of installation.
    - .2 Panels and Tiles:
      - .1 Indicate each type of ceiling material, location, design of units, methods of installation.
      - .2 Show sizes, and arrangement of ceiling materials on reflected ceiling plans, relating to lighting fixtures, other items.
  - .3 Samples:
    - .1 Submit duplicate 150 by 150 mm size samples of each type of specified ceiling panel and tile.

### **1.03 EXTRA STOCK MATERIALS**

- .1 Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - .1 Turn over open cartons of ceiling tile to Departmental Representative.
  - .2 Provide 1% overage of gross ceiling for each pattern and type required for project, in sealed cartons.
  - .3 Store where directed by Departmental Representative.
  - .4 Provide written receipt signed by Contractor, stating date and quantity delivered.

#### **1.04 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- .2 Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content
- .3 Handle acoustical panels carefully to avoid chipping edges or damaging units.
- .4 Waste Management:
  - .1 Deposit packaging materials in appropriate container on site for recycling or reuse.
  - .2 Avoid using landfill waste disposal procedures when recycling facilities are available.

#### **1.05 SITE CONDITIONS**

- .1 Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

### **2 Products**

#### **2.01 PERFORMANCE/DESIGN CRITERIA**

- .1 Maximum deflection: 1/360th of span to ASTM C635 deflection test.
- .2 Maximum supporting point load: 38 kg to ensure tracks and hangers will break away.

#### **2.02 SUSPENSION GRID MATERIALS**

- .1 Provide direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635/C 635M.
- .2 Grid: To match existing base building product:
  - .1 Acceptable Product: Armstrong Prelude XL 15/16"
  - .2 Substitutions: Not permitted.
- .3 Hanger Wire:
  - .1 Galvanized soft annealed steel wire, for use with suspension grid.
  - .2 Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but no less than 2.6 mm diameter wire.
- .4 Hanger Inserts: purpose made. Provide hangers and fasteners for independent suspension of light boxes.

- .5 Metal Edge Mouldings and Trim: Roll-formed, sheet-metal of type and profile indicated or, if not indicated, manufacturer's standard mouldings for edges and penetrations; formed from sheet metal of same material, finish, and colour as that used for exposed flanges of suspension-system runners.

### 2.03 ACOUSTIC PANEL MATERIALS

- .1 ACT: Acoustic units for suspended ceiling system: To match existing base building product:
  - .1 Acceptable Product: Armstrong Cortega model 769, Medium texture 24x 48x5/8"
  - .2 Substitutions: Not permitted.

## 3 Execution

### 3.01 EXAMINATION

- .1 Do not erect ceiling suspension system until work above ceiling including anchors, blockings, sound and fire barriers, mechanical and electrical work has been reviewed by Departmental Representative.

### 3.02 PREPARATION

- .1 Measure each ceiling area and establish layout of acoustical panels to comply with layout indicated on reflected ceiling plans.

### 3.03 INSTALLATION - SUSPENSION SYSTEM

- .1 Installation in accordance with ASTM C636 except where specified otherwise.
- .2 Secure hangers to overhead structure using attachment methods acceptable to Departmental Representative. Attach hangers to structural members.
  - .1 Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
- .3 Install hangers within 150 mm from ends of main tees. Wall perimeter moulding shall not be considered support for main tees and does not remove requirement for hangers placed at 150 mm from ends of main tees. Hanger spacing maximum 1 200 mm on centre.
- .4 Establish ceiling elevation using laser level.
  - .1 Install ceiling to match elevation of removed ceiling.
  - .2 Continue ceiling over low partitions as indicated on reflected ceiling plans.
- .5 Install edge mouldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
  - .1 Screw attach mouldings to substrate at maximum 400 mm o.c. and maximum 75 mm from ends, leveling with ceiling suspension system to a tolerance of 3.2 mm in 3.6 m. Mitre corners accurately and connect securely.
  - .2 Do not use exposed fasteners, including pop rivets, on moldings and trim.
- .6 Construct suspension system to support super-imposed loads, such as lighting fixtures, diffusers, grilles, and speakers. Provide additional hangers as required for loads.

- .7 Interlock cross member to main runner to provide rigid assembly.
- .8 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
- .9 Finished ceiling system to be square with adjoining walls and level within 3 mm in 3 650 mm.
- .10 Ensure straightness, tolerance, bow, camber, twist of suspension system member does not exceed values in ASTM standards.
- .11 Sharp local kinks, bends, bruises, and dents: not acceptable.
- .12 Level members with supporting hanger tensioned to prevent subsequent downward movement when ceiling loads imposed.
- .13 Do not kink, or bend hanger wires to level system.
- .14 Install cross tees at right angles to main tees, main tees be non-cumulative.
- .15 Ensure no apparent angular displacement from one tee to another.
- .16 Exposed surfaces of suspension system: level, flush, joints tight, straight, and true.

### **3.04 INSTALLATION – ACOUSTIC PANELS**

- .1 Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
  - .1 For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and mouldings.
- .2 Scribe panels to fit adjacent work. Butt joints tight, terminate edges with moulding.
- .3 Do not use scratched, damaged or broken panels. Replace scratched, damaged and broken panels.

### **3.05 INTERFACE WITH OTHER WORK**

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

### **3.06 CLEANING**

- .1 Touch up scratches, abrasions, voids and other defects in painted surfaces.
- .2 Clean down materials, leave free of grime, dirt, finger prints, other evidence of work.

**END OF SECTION**

## **1 General**

### **1.01 REFERENCES**

- .1 ASTM International (ASTM)
  - .1 ASTM F1859, Standard Specification for Rubber Sheet Floor Covering Without Backing
  - .2 ASTM F710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
- .2 Electrostatic Discharge Association
  - .1 ESD DSTM7.1-2013, Resistive Characterization of Materials – Floor Materials
  - .2 ANSI/ESD S6.1-2009, Grounding
- .3 FloorScore
  - .1 FloorScore Certified Flooring Products tested to meet SCS-EC10.2-2001 Environmental Certification Program for Indoor Air Quality Performance
- .4 South Coast Air Quality Management District (SCAQMD), California State
  - .1 SCAQMD Rule 1113, Architectural Coatings. Rules in affect January 1, 2004
  - .2 SCAQMD Rule 1168, Adhesives and Sealants Applications. Amended January 7, 2005; Rules in affect July 1 2005

### **1.02 ADMINISTRATIVE REQUIREMENTS**

- .1 Coordination:
  - .1 Where integral bases are scheduled to be installed on gypsum board partitions ensure joints are taped and fitted properly and that gypsum board is installed to the floor line to ensure adequate bond of cove base material.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Action Submittals:
  - .1 Shop Drawings: Submit seaming diagram indicating flooring type, seam locations, patterning, and roll direction. Include dimensions.
  - .2 Samples:
    - .1 Duplicate 300 mm long sample of edge protection strips, transition strip, each colour of welding rods, cove former, and cap strip.
    - .2 In manufacturer's standard size, but not less than 150 by 150 mm sections, duplicate samples of each different colour and pattern of floor covering required.
    - .3 Seam Samples: For heat- and cold-welded seams, and for each floor covering product, colour, and pattern required; with seam running lengthwise and in centre of 150 by 150 mm sample applied to a rigid backing and prepared by installer for this Project.
- .3 Informational Submittals:

- .1 Qualification Data: for installer.
- .2 Statement of material compatibility.

#### **1.04 CLOSEOUT SUBMITTALS**

- .1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 – Closeout Submittals.
  - .1 Include recommended maintenance procedures, maintenance materials and suggested schedule for cleaning. Include detailed information regarding properties of stain resistance and procedures recommended for removal of spills and stains.

#### **1.05 EXTRA STOCK MATERIALS**

- .1 Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01 78 00 – Closeout Submittals.
  - .1 Provide 2% of each colour, pattern and type of flooring material installed on project in full width rolls, and remnants over 1 square metre of each colour for maintenance use.
  - .2 Extra materials to be in one piece and from same production run as installed materials.
  - .3 Clearly identify each roll of sheet flooring.
  - .4 Deliver to Departmental Representative, upon completion of the work of this section.
  - .5 Store where directed by Departmental Representative.

#### **1.06 QUALITY ASSURANCE**

- .1 Installer: company or person specializing in resilient sheet flooring, with three years documented experience and approved by flooring manufacturer.
- .2 Source Limitations for Waterproofing Membrane: Obtain waterproofing membrane for use behind ceramic tile in bariatric shower and under resilient sheet flooring from one manufacturer.
- .3 Material Compatibility: Provide materials that are compatible with one another under conditions of service and application required.

#### **1.07 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- .2 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- .3 Store rolls in dry locations, stand rolls on end. Protect and secure rolls from falling.

#### **1.08 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

## **1.09 ENVIRONMENTAL REQUIREMENTS**

- .1 If storage temperature is below 21 deg C, move flooring products to warmer place and allow to acclimate before unrolling or installation.
- .2 Maintain air temperature and structural base temperature at flooring installation area between 21 deg and 26 deg C for 48 hours before, during and 48 hours after installation.

## **2 Products**

### **2.01 PERFORMANCE REQUIREMENTS**

- .1 Flooring: shall not require sealers, waxes or polishes. Maintenance requirement to be dry buffing, with no polish treatment, sealers, waxes or spray buff solutions.

### **2.02 FLOORING MATERIALS**

- .1 Resilient Sheet (Rubber) Flooring (RSF): to ASTM F1859, Type I, smooth finish.
  - .1 Thickness: 2.0 mm
  - .2 Hardness: Shore type A,  $\geq 92$  to ASTM D 2240.
  - .3 Abrasion resistance: Taber abrasion test to ASTM D 3389, H-18 wheel, 500 gram load, 1000 cycles, gram weight loss  $\leq 0.25$ .
  - .4 Slip resistance: static coefficient of friction  $\geq 0.96$  (dry) and  $\geq 0.85$  (wet) to ASTM D 2047.
  - .5 Rolling load limit: 3100 kPa.
  - .6 Bacteria resistance: resistant to bacteria, fungi, and micro-organism activity to ASTM E 2180 and ASTM G21.
  - .7 Critical radiant flux:  $\geq 0.45$  W/cm<sup>2</sup> to ASTM E648.
  - .8 Surface burning Characteristics: Tested to CAN/ULC S102.2 with following performance values:
    - .1 Flame Spread: 125 maximum.
    - .2 Smoke Development: 450 maximum.
  - .9 Static Generation AATCC 134 (20% RH) <2000 volts.
  - .10 Colours: Allow for three colours selected by Departmental Representative from manufacturer's standard range.
  - .11 FloorScore Certified Flooring Products, or product must meet testing and product requirements of the California Department of Public Health Standard Practice for Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 addenda.

### **2.03 ACCESSORIES**

- .1 Filler cove strips: required for specific material installation as recommended by manufacturer.
- .2 Welding rods: for sheet flooring, manufacturer standard for specific material joint treatment, colour matched to Departmental Representative approval.
  - .1 Colour: Allow for three colours of welding rods for rubber sheet flooring.

- .3 Sub-floor filler and leveler: trowelable, non-shrinking, water-resistant, alkali mould-resistant, cementitious underlayment, two component compound consisting of liquid latex and Portland cement base, both supplied by same manufacturer.
- .4 Primers and adhesives: water-resistant type recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.
- .5 Sealants: as specified in Section 07 92 00 – Joint Sealants.

### **3 Execution**

#### **3.01 SITE VERIFICATION OF CONDITIONS**

- .1 Inspect surfaces prepared to receive flooring and base.
- .2 Report defects, and unsuitable conditions.
- .3 Proceed only when defects, and unsuitable conditions corrected.
- .4 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.

#### **3.02 PREPARATION**

- .1 Prepare substrates according to manufacturer's written instructions to ensure adhesion of floor coverings.
- .2 Concrete Substrates: Prepare according to ASTM F710.
  - .1 Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  - .2 Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
  - .3 Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
  - .4 Moisture Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- .3 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .4 Thoroughly clean surfaces of dust, dirt, grease, paint, other foreign material before installing flooring and base.
- .5 Fill cracks, other openings, depressions in substrate with sub-floor filler mix featheredged. Level uneven joints, rough areas. Apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
- .6 Sweep, vacuum floors clean.
- .7 Neutralize surface of concrete in accordance with manufacturer's printed instructions.



- .8 Prime concrete slab to resilient flooring manufacturer's printed instructions.
- .9 Where flooring of different thickness abut apply filler to build a smooth gradual ramping so top of finished flooring meets top of adjacent material.

### 3.03 APPLICATION: FLOORING

- .1 Flooring manufacturer's technical Departmental Representative shall on a periodic basis conduct site consultations on matters relating to products and installation procedures.
- .2 Install flooring and accessories in accordance with manufacturer's written installation instructions.
- .3 Unroll floor coverings and allow them to stabilize before cutting and fitting.
- .4 Provide a high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to the outside. Do not let contaminated air recirculate through building air distribution system.
- .5 Protect areas of flooring subject to direct sunlight during installation and for 72 hours after installation in accordance with manufacturer's instructions.
- .6 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .7 Adhere floor coverings to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- .8 Lay flooring with seams parallel to building lines to produce minimum number of seams. Border widths minimum 1/3 width of full material.
- .9 Run sheets in direction of traffic. Double cut sheet joints and continuously heat weld according to manufacturer's printed instructions.
- .10 Lay material full width in corridors. Where corridors are wider than sheet material, lay full width down centre of corridor with equal border on each side unless otherwise specified.
- .11 Seaming: Prepare, cut and finish seams, in accordance with manufacturer's printed instructions, and as follows:
  - .1 Cold weld seams of sheet rubber flooring.
  - .2 Hot weld seams of sheet vinyl flooring.
  - .3 Neatly trim welding thread and leave flush with surface of material.
- .12 As installation progresses, and after installation roll flooring with minimum 45 kg roller to ensure full adhesion. Weight seams as required until suitable bond is established.
- .13 Scribe and cut floor coverings to butt neatly and tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, wall and corner guard aluminum retainers, and door frames
- .14 Install floor patterning where indicated. Fit joints tightly.

- .15 Extend floor coverings into toe spaces, door reveals, closets, and similar openings. Continue flooring over areas which will be under built-in furniture.
- .16 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.
- .17 Install edge strips at unprotected or exposed edges where flooring terminates unless otherwise noted.

#### **3.04 INTEGRAL FLASH COVE BASE**

- .1 Where base material is indicated as "INTEG" in Room Finish Schedule cove base sheet flooring material up vertical surfaces.
- .2 Cove floor coverings 150 mm up vertical surfaces where indicated, including architectural woodwork base cabinets.
- .3 Extend cove flooring base minimum 150 mm onto horizontal surface of flooring.
- .4 Support floor coverings at horizontal and vertical junction by cove strip.
- .5 Apply small continuous bead of mildew-resistant paintable silicone sealant along top edge of integral base.
- .6 At flush door frames and other projections, taper cove former 300 mm back from frame to provide flush cove at face of frame.
- .7 Sheet Rubber Flooring Corners: Fabricate corners using boot method in accordance with manufacturer's instructions. Cold-weld joints.

#### **3.05 CLEANING**

- .1 Comply with manufacturer's written instructions for cleaning and protection of floor coverings.
- .2 Perform the following operations immediately after completing floor covering installation:
  - .1 Remove excess adhesive from floor, base and wall surfaces without damage.
  - .2 Sweep and vacuum floor coverings thoroughly.
  - .3 Damp-mop floor coverings to remove marks and soil.

#### **3.06 PROTECTION**

- .1 Protect new floors from time of final set of adhesive until final inspection.
- .2 Prohibit foot traffic on floor for 48 hours after installation. Prohibit rolling traffic on floor for minimum 72 hours after installation.

**END OF SECTION**

## **1 General**

### **1.01 REFERENCES**

- .1 American Association of Textile Chemists and Colorists (AATCC)
  - .1 AATCC Test Method 134-2006, Electrostatic Propensity of Carpets.
- .2 Carpet and Rug Institute (CRI)
  - .1 CRI Green Label Plus Indoor Air Quality Testing Program.
  - .2 CRI Test Method 101 Assessment of Carpet Surface Appearance Change
  - .3 CRI-104-Sept 2015, Standard for Installation of Commercial Carpet

### **1.02 ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-Installation Meetings:
  - .1 Convene pre-installation meeting 1 week prior to beginning work of this Section, with Contractor's Representative and 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.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Action Submittals:
  - .1 Product Data:
    - .1 Submit product data sheet for each carpet, carpet protection and subfloor patching compound. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation recommendations for each type of substrate.
    - .2 Submit data on specified products, describing physical and performance characteristics, sizes, patterns, colours, and methods of installation.
    - .3 Submit 2 copies of WHMIS MSDS.
  - .2 Shop Drawings:
    - .1 Information on shop drawings to indicate:
      - .1 Carpet tile type, color, and dye lot.
      - .2 Type of subfloor.
      - .3 Type of installation.
      - .4 Type, colour, and location of edge, transition, and other accessory strips.
      - .5 Transition details to other flooring materials.
      - .6 Seam locations, types, and methods.

- .7 Submit carpet schedule using same room number designations indicated on drawings.
- .3 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work. Submit duplicate samples of each type of carpet tile specified and duplicate tiles for each colour selected.
- .3 Informational Submittals:
  - .1 Manufacturer's Instructions: submit manufacturer's installation instructions.
  - .2 Manufacturers Reports:
    - .1 Manufacturer's Field Reports: submit manufacturer's written reports within 3 days of review, verifying compliance with specifications.
  - .4 Qualification Statements:
    - .1 Tested to CAN/ULC-S102.2.
    - .2 Testing: passes testing requirements of:
      - .1 Green Label Plus Indoor Air Quality Testing Program.
    - .3 Tuft bind: meets requirements of CAN/CGSB-4.129 when tested to CAN/CGSB-4.2 No.77.1.

#### **1.04 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.

#### **1.05 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Extra stock materials in accordance with Section 01 78 00 Closeout Submittals: deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels.
  - .1 Quantity: provide minimum of 1 full box of each colour, pattern and type of carpet tile.
  - .2 Delivery, storage and protection: comply with Departmental Representative's requirements for delivery and storage of extra materials.

#### **1.06 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Manufacturer: capable of providing field service representation during construction and approving application method.
  - .2 Flooring Installer:
    - .1 Experienced in performing work of this Section who has specialized in installation of work similar to that required for this project.
    - .2 Responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturer's written instructions.

## **1.07 DELIVERY, STORAGE AND HANDLING**

- .1 Comply with CRI 104.
- .2 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .3 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .4 Storage and Handling Requirements:
  - .1 Store materials indoors and 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 and adhesive in original containers or wrapping with manufacturer's seals and labels intact.
  - .4 Store carpet and adhesive at minimum temperature of 18 degrees C and relative humidity of maximum 65% for minimum of 48 hours before installation.
  - .5 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
  - .6 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
  - .7 Replace defective or damaged materials with new.
- .5 Waste management and disposal requirements: Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **1.08 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Moisture: ensure substrate is within moisture limits and alkalinity limits recommended by manufacturer. Prepare moisture testing and provide report to Departmental Representative.
  - .2 Temperature: maintain ambient temperature of not less than 18 degrees C from 48 hours before installation to at least 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 Co-ordinate operation of ventilation system during installation of carpet.
    - .2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.
    - .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 space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete.

## 2 Products

### 2.01 MATERIALS

- .1 CPT1 (tone on tone geometric pattern)
  - .1 Face Construction
    - .1 Construction: Tufted Textured Loop.
    - .2 Face weight: min. 678 g/m2
    - .3 Machine Gauge: 50.4 ends / 10 cm.
    - .4 Stitches: 34.3 ends / 10 cm.
    - .5 Pile Height: 4.1 mm
    - .6 Finished Pile Thickness: 3 mm
    - .7 Pile Density: minimum 226 g/m2
    - .8 Fiber System: 100% type 6 nylon.
    - .9 Recycled Content: 100%
    - .10 Dimensions: 500 x 500 mm
    - .11 Dye Method: 100% solution dyed
    - .12 Soil/Stain resistant protection.
    - .13 Primary Tufting Substrate: Synthetic, non-woven
    - .14 Static Performance: To AATCC-134, under 3.5 KV
    - .15 Fibre Modification Ratio: 1.9 to 2.2
    - .16 Recycled Content (nominal): 70% total - 60% post industrial, 10% post consumer.
    - .17 Colour and pattern: Include single colour and pattern selected by Departmental Representative based on following:
      - .1 Colour: Product range to include a minimum of five options in medium value taupes and greys.
      - .2 Pattern: Product range to include minimum three fine linear groove patterns defined by colour alternation in specified colour range. Allow for selection of one pattern from range by Departmental Representative

### 2.02 ACCESSORIES

- .1 Trowellable Sub floor Filler and Leveller: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
- .2 Resilient base: to ASTM F1861, Type TS (rubber), Group I (solid homogeneous), in coils of manufacturer's standard lengths. Outside and inside corners: job-formed.
  - .1 Style: Standard no toe, 3.2 mm thick exposed face height: 101.6 mm.
  - .2 Colour: Selected by Departmental Representative from manufacturer's full range. Allow up to four colours.
- .3 Tile/Carpet Transition: 25 mm exposed width 6 mm high.
  - .1 Colour: Selected by Departmental Representative from manufacturer's full range. Allow up to four colours.

- .4 Adhesive: Water-resistant, mildew-resistant, non-staining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
- .5 Carpet protection: non-staining heavy duty kraft paper.

### **3 Execution**

#### **3.01 EXAMINATION**

- .1 Examine conditions, substrates and work to receive work of this Section, co-ordinate with Section 01 71 00 - Examination and Preparation.
- .2 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for carpet tile installation in accordance with manufacturer's written instructions.
  - .1 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .2 Proceed with installation only after unacceptable conditions have been remedied.

#### **3.02 PREPARATION**

- .1 Surface Preparation: prepare surface in accordance with manufacturer's written recommendations and co-ordinate with Section 01 71 00 - Examination and Preparation.
- .2 Prepare floor surfaces in accordance with CRI Carpet Installation Standard and as follows:
  - .1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
  - .2 Trowel and float sub floor filler to leave smooth, flat, hard surface. Prohibit traffic until filler cured.
  - .3 Thoroughly clean surfaces of dust, dirt, grease, paint, other foreign material before installing flooring and base.
  - .4 Neutralize surface of concrete in accordance with manufacturer's printed instructions.
  - .5 Prime concrete slab to flooring manufacturer's printed instructions.
- .3 Tile Carpeting Preparation: Pre-condition carpeting following manufacturer's written instructions.

#### **3.03 INSTALLATION**

- .1 Install carpet tiles in accordance with manufacturer's written instructions, and CRI Carpet Installation Standard
- .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 furniture is installed.

- .4 Install carpet tile in quarter turn layout.
- .5 Snugly join carpet tiles in completed installation.
  - .1 Measure distance covered by 11 carpet tiles (10 joints) and ensure distance is in compliance with manufacturer specifications.
  - .2 Do not trap yarn between carpet tiles.
- .6 Apply thin film of pressure-sensitive adhesive according to manufacturer's recommendations.
- .7 Ensure finished installation presents smooth wearing surface free from conspicuous seams, burring and other faults.
- .8 Use material from same dye lot.
  - .1 Ensure colour, pattern and texture match within visual areas.
  - .2 Maintain constant pile direction.
- .9 Fit around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
- .10 Extend carpet tiles into toe spaces, door reveals (to centreline beneath doors), 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.

#### **3.04 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 Adhesive application:
  - .1 Porous wall surfaces: apply adhesive to back of base.
  - .2 Non-porous wall surface: apply adhesive to wall surface and back of base.
- .4 Set base against wall and floor surfaces tightly by using 3 kg hand roller. Roll back to starting point.
- .5 Install straight and level to variation of 1:1000.
- .6 Scribe and fit to door frames and other obstructions.
- .7 On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.



- .8 Job-Formed Corners:
  - .1 Use straight pieces of maximum lengths possible.
  - .2 Wrap base minimum 300 mm beyond corners. No joint at corners permitted.
  - .3 Outside corners: Form without producing discolouration (whitening) at bends. Scribe back of base at bend locations and remove strips perpendicular to length of base that are only deep enough to produce snug fit, without removing more than half wall base thickness.
  - .4 Inside corners: Form by cutting inverted V-shape notch in toe of wall base at point where corner is formed. Scribe back of base where necessary to produce snug fit to substrate.
- .9 Install toeless type base before installation of carpet on floors.

### **3.05 FIELD QUALITY CONTROL**

- .1 Site Tests and Inspections:
  - .1 Co-ordinate site test with Section 01 45 00 - Quality Control.

### **3.06 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
    - .1 Vacuum carpets clean immediately after completion of installation.

### **3.07 PROTECTION**

- .1 Protect installed carpet to comply with CRI 104, "Protecting Indoor Installations."
- .2 Protect carpet against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet manufacturer and carpet adhesive manufacturer.
- .3 Repair damage to adjacent materials caused by tile carpeting installation.

**END OF SECTION**

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## **1 General**

### **1.01 REFERENCE STANDARDS**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM E-84, Standard Test Method for Surface Burning Characteristics of Building Materials
  - .2 ASTM E-136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
  - .3 ASTM C423, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
  - .4 ASTM C 612, Standard Specification for Mineral Fiber Block and Board Thermal Insulation

### **1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Action Submittals:
  - .1 Product data: manufacturer's printed literature demonstrating selected options, and compliance with specified design and performance properties.
    - .1 Include detailed instructions for proper handling and installation to minimize health concerns.
  - .2 Samples:
    - .1 Submit duplicate memo size sample of acoustical unit.

### **1.03 QUALITY ASSURANCE**

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct one representative mock-up of acoustical product.
- .3 Construct mock-up 10 m<sup>2</sup> minimum to indicate method of assembly, installation and fixing.
- .4 Construct mock-up where directed.
- .5 Allow 24 hours for inspection of mock-up by Departmental Representative before proceeding with work.
- .6 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of the finished work.

### **1.04 ENVIRONMENTAL REQUIREMENTS**

- .1 Commence installation after building enclosed and dust generating activities are completed.
- .2 Permit wet work to dry prior to commencement of installation.
- .3 Maintain uniform minimum temperature of 15 degrees C and relative humidity of 20- 40% prior to, during and after installation.

## **1.05 DELIVERY, STORAGE AND HANDLING**

- .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 recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **1.06 MAINTENANCE**

- .1 Extra Materials:
  - .1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Provide acoustical units for maintenance use amounting to 2% of gross wall area for each pattern and type required for project.
  - .3 Extra materials from same production run as installed materials.
  - .4 Identify each package of acoustical units including type.
  - .5 Deliver to Departmental Representative, upon completion of the work of this section.
  - .6 Store where directed by Departmental Representative.

## **2 Products**

### **2.01 DESIGN AND PERFORMANCE REQUIREMENTS**

- .1 Hazardous Materials: Provide materials that are not required to be labelled as poisonous, corrosive, flammable or explosive under Consumer Chemical and Container Regulations of the Hazardous Products Act.

### **2.02 MATERIALS**

- .1 Flexible semi-rigid acoustical fiberglass insulating board with vapour barrier facing, for use in ceiling plenum.
- .2 Acoustic units: to ASTM E-84, ASTM E-136, ASTM C 423, and ASTM C 612
  - .1 Foil Scrim Kraft (FSK) finish material both sides, i.e. use two panels back to back.
  - .2 Non-combustible.
  - .3 Flame spread rating of 25 or less.
  - .4 Smoke developed 50 or less.
  - .5 Noise reduction coefficient (NRC) designation 0.75
  - .6 Size 610 x 1219 x 51 mm thick.
  - .7 Shape flat.

### **3 Execution**

#### **3.01 MANUFACTURER'S INSTRUCTIONS**

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

#### **3.02 INSTALLATION**

- .1 Install two layers back to back acoustic units friction fit in plenum above partitions, plumb and aligned.

#### **3.03 CLEANING**

- .1 Proceed in accordance with Section 01 74 00 - Cleaning.
- .2 Keep acoustic installation and all components clean. Remove blemishes immediately.

#### **3.04 PROTECTION**

- .1 Protect finished acoustical wall treatment from damage.
- .2 Remove protection prior to Substantial Performance of Work.

**END OF SECTION**

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## **1 General**

### **1.01 REFERENCES**

- .1 Architectural Painting Specifications Manual, Master Painters Institute (MPI).
- .2 Systems and Specifications Manual, SSPC Painting Manual, Volume Two, Society for Protective Coatings (SSPC).
- .3 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA).
- .4 National Fire Code of Canada (NFCC).
- .5 Green Seal
  - .1 Standard GS-11, 1993, Standard for Paints and Coatings
  - .2 Standard GC-03, 1997, Anti-Corrosive Paints
- .6 South Coast Air Quality Management District
  - .1 Rule 1113 Architectural Coatings, July 2007. Rules in affect January 1 2004.

### **1.02 QUALITY ASSURANCE**

- .1 Painting contractor must be a member of the Accredited Quality Assurance Association.
- .2 Contractor shall have a minimum of five years proven satisfactory experience. When requested, provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.
- .3 Qualified journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in painting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.
- .4 Conform to latest MPI requirements for painting work including preparation and priming.
- .5 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) shall be in accordance with MPI Painting Specification Manual "Approved Product" listing and shall be from a single manufacturer for each system used. Other paint materials such as linseed oil, shellac, turpentine, etc. shall be the highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and shall be compatible with other coating materials as required.
- .6 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements.
- .7 Standard of Acceptance:
  - .1 Walls: No defects visible from a distance of 1 000 mm at 90 degrees to surface.
  - .2 Ceilings: No defects visible from floor at 450 to surface when viewed using final lighting source.

- .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

### 1.03 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

- .1 Provide paint products meeting the following environment performance requirements:
  - .1 VOC emissions from paints must not exceed the limits of Green Seal's Standard GS-11, 1993.
  - .2 The VOC content of anti-corrosive coatings must not exceed limits of Green Seal's Standard GC-03, 1997.
  - .3 For interior paints and coatings not covered by GS-11 and GS-03, the VOC content of all primers, under-coatings, sealers and clear wood finishes must be less than VOC content limits of South Coast Air Quality Management District Rule #1113, January 2004.

### 1.04 SUBMITTALS

- .1 Product Data:
  - .1 Submit product data and manufacturer's installation/application instructions for each paint and coating product to be used in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS).
  - .3 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .4 Submit manufacturer's installation and application instructions.
- .2 Upon completion, submit records of products used. List products in relation to finish system and include the following:
  - .1 Product name, type and use.
  - .2 Manufacturer's product number.
  - .3 Colour numbers.
  - .4 MPI Environmentally Friendly classification system rating.
  - .5 Manufacturer's Material Safety Data Sheets (MSDS).

### 1.05 SAMPLES

- .1 Submit three drawdowns of each product and colour combination with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards, size 100 x 150 mm, mounted on 216 x 280 mm sheets, submitted on the following substrate materials:
  - .1 Drawdowns of opaque finishes shall be applied using 4 mil WFT drawdown bar on Leneta form WD plain white coated cards
  - .2 3 mm plate steel for finishes over metal surfaces.
  - .3 50 mm concrete block for finishes over concrete or concrete masonry surfaces.
- .2 When approved, sample panels shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.
- .3 Label each card with the following:



- .1 Job name.
- .2 Date.
- .3 Product name.
- .4 Product number.
- .5 Colour number as stated in the colour schedule.
- .6 Name, address, and phone number of the supplying facility.
- .4 Submit full range of available colours where colour availability is restricted.

#### **1.06 EXTRA MATERIALS**

- .1 Submit maintenance materials in accordance with Section 01 78 00 – Closeout Submittals.
- .2 Submit one - four litre can of each type and colour of primer finish coating. Identify colour and paint type in relation to established colour schedule and finish system.
- .3 Deliver and store where directed.

#### **1.07 DELIVERY, HANDLING AND STORAGE**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Product Requirements.
- .2 Labels shall clearly indicate:
  - .1 Manufacturer's name and address.
  - .2 Type of paint or coating.
  - .3 Compliance with applicable standard.
  - .4 Colour number in accordance with established colour schedule.
- .3 Remove damaged, opened and rejected materials from site.
- .4 Provide and maintain dry, temperature controlled, secure storage.
- .5 Observe manufacturer's recommendations for storage and handling.
- .6 Store materials and supplies away from heat generating devices.
- .7 Store materials and equipment in a well ventilated area with temperature range 7 to 30 degrees C.
- .8 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
- .9 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Departmental Representative.
- .10 Remove paint materials from storage only in quantities required for same day use.
- .11 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.12 Fire Safety Requirements:

- .1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
- .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

**1.08 SITE REQUIREMENTS**

.1 Heating, Ventilation and Lighting:

- .1 Ventilate enclosed spaces.
- .2 Perform no 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 Coordinate use of existing ventilation system and ensure its operation during and after application of paint as required.
- .4 Where required, provide continuous ventilation for seven days after completion of application of paint.
- .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.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

- .1 Unless specifically pre-approved, 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 manufacturers prescribed limits.
  - .4 The relative humidity is above 85% or when the dew point is less than 3 degrees C variance between the 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 the maximum moisture content of the substrate exceeds:
  - .1 12% for concrete walls and masonry (concrete brick/block).
  - .2 15% for wood.
  - .3 12% for plaster and gypsum board.
  - .4 1.36 kg of water per 92.9 sq. m in 24 hours for concrete floors
- .3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a ASTM F 1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor using Anhydrous Calcium Chloride".
- .4 Test concrete, masonry and plaster surfaces for alkalinity as required.

- .3 Surface and Environmental Conditions:
  - .1 Apply paint finish only 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 only to adequately prepared surfaces and to surfaces within moisture limits noted herein.
  - .3 Apply paint only when previous coat of paint is dry or adequately cured.
- .4 Additional Interior Application Requirements:
  - .1 Apply paint finishes only when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.
- .5 Additional Exterior Application Requirements:
  - .1 Apply paint finishes only when conditions forecast for entire period of application fall within manufacturer's recommendations.
  - .2 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.
  - .3 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.
  - .4 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
  - .5 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

#### **1.09 WASTE MANAGEMENT AND DISPOSAL**

- .1 Collect and separate waste materials for recycle or disposal in accordance with Section 01 74 21 – Construction/Demolition Waste Management And Disposal.
- .2 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc..) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
- .3 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
- .4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .5 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground the following procedures shall be strictly adhered to:
  - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.

- .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
- .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
- .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
- .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
- .6 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .7 Set aside and protect surplus and uncontaminated finish materials. Deliver to or arrange collection for verifiable re-use or re-manufacturing.
- .8 Close and seal tightly partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

## **2 Products**

### **2.01 MATERIALS**

- .1 Paint materials listed in the MPI Approved Products List (APL), most recent edition, are acceptable for use on this project.
- .2 Grade: MPI Premium Grade coating systems.
- .3 Paint materials for paint systems shall be products of a single manufacturer.
- .4 Conform to latest MPI requirements for all painting work including preparation and priming.
- .5 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.): in accordance with MPI - Architectural Painting Specification Manual "Approved Product" listing.
- .6 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .7 Water-borne surface coatings and recycled water-borne surface coatings must have a flash point of 61.0 degrees C or greater.
- .8 Both water-borne surface coatings and recycled water-borne surface coatings must be made by a process that does not release:
  - .1 Matter in undiluted production plant effluent generating a 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.
  - .2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

## **2.02 COLOURS**

- .1 Departmental Representative will provide Colour Schedule after Contract award.
- .2 Colour schedule will be based upon selection of three base colours and three accent colours. No more than six colours will be selected for entire project and no more than three colours will be selected in each area.
- .3 Selection of colours will be from manufacturer's full range of colours.
- .4 Where specific products are available in a restricted range of colours, selection will be based on the limited range.
- .5 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

## **2.03 MIXING AND TINTING**

- .1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written instructions. On-site tinting of painting materials allowed only with Departmental Representative's written permission.
- .2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.
- .3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
- .4 Thin paint for spraying in accordance with paint manufacturer's written 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.

## 2.04 GLOSS/SHEEN RATINGS

- .1 Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the 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 shall be as specified herein.

## 2.05 INTERIOR PAINTING SYSTEMS

- .1 Non-insulated metal pipes conduit, valves, fittings and equipment:
- .1 INT 5.1Q, G2 finish.
    - .1 Maximum VOC Content: 150 g/L (less water).
  - .2 Plastic: Piping
    - .1 INT 6.8AA - High performance architectural latex (over w.b. bonding primer), G2 finish.
      - .1 Maximum VOC Content: 150 g/L (less water).
  - .3 Plaster and gypsum board:
    - .1 INT 9.2B - High performance architectural latex G4 finish, except G2 at ceilings.
      - .1 Maximum VOC Content: 150 g/L (less water)
  - .4 Canvas and cotton covering:
    - .1 INT 10.1A - Latex – no sheen finish.
      - .1 Maximum VOC Content: 150 g/L (less water).

## 2.06 INTERIOR REPAINTING SYSTEMS

- .1 Plaster and Gypsum Board: (gypsum wallboard, drywall, and "sheet rock type material".
- .1 RIN 9.2B - High performance architectural latex (over latex primer sealer).

## 3 Execution

### 3.01 GENERAL

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.
- .2 Perform preparation and operations for interior painting in accordance with MPI - Architectural Painting Specifications Manual except where specified otherwise.

- .3 Apply paint materials in accordance with paint manufacturer's written application instructions.

### **3.02 EXAMINATION**

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted.
  - .1 Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test".
  - .1 Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

### **3.03 PROTECTION**

- .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking.
  - .1 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 general public in and about the building.

### **3.04 PREPARATION**

- .1 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.
    - .1 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 As painting operations progress, place "WET PAINT" signs in occupied areas.
- .2 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual specific requirements and coating manufacturer's recommendations.
- .3 For existing surfaces, assess degree of surface deterioration in accordance with MPI Maintenance Repainting Manual.
  - .1 Include costs of repair of DSD-1 through DSD-3 defects in the Work.
  - .2 Do not repaint surfaces until DSD-4 defects have been corrected.

- .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.
  - .1 Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
- .5 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.
- .6 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.
- .7 Touch up of shop primers with primer as specified.
- .8 Do not apply paint until prepared surfaces have been accepted by Departmental Representative

### **3.05 APPLICATION**

- .1 Method of application to be as approved by Departmental Representative. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .3 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .4 Sand and dust between coats to provide adequate adhesion for next coat and to remove defects visible from a distance of 1 000 mm.
- .5 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.
- .6 Finish closets and alcoves as specified for adjoining rooms.
- .7 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

### **3.06 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 Unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks unless required for service identification specified elsewhere.
- .3 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
  - .1 Do not paint over nameplates.
  - .2 Do not paint transformers and substation equipment.



- .3 Keep sprinkler heads free of paint.
- .4 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
- .5 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .6 Paint both sides and edges of backboards for telephone and electrical equipment before installation.
- .1 Leave equipment in original finish except for touch-up as required.

### **3.07 EXISTING WORK**

- .1 Preparation of previously painted surfaces:
  - .1 Remove loose or flaked paint or paper.
  - .2 Remove dirt, dust, grease, oil, etc.
  - .3 Dull glossy areas with sandpaper.
  - .4 Fill minor cracks with plaster patching compound. Sand smooth and wipe clean.
  - .5 Spot prime patched areas with finishing coat.
  - .6 Finish as specified for new work.
- .2 Wherever painting of existing walls is scheduled or indicated, paint both sides of doors and frames, or other items requiring painting which occur within that wall.
- .3 Painting of patchwork shall include for painting of existing surfaces up to nearest change in direction or surface interruption (example: door jamb, corner, bulkhead). Make neat termination, match paint as closely as possible.
- .4 Paint both sides of new doors and frames, screens, windows or any other items requiring painting which are installed in existing walls. Remove doors before repainting to paint bottom and top edges.

**END OF SECTION**

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