

PART 1 - GENERAL

1.1 RELATED  
SECTIONS

- .1 Section 07 21 12 - Board Insulation.
- .2 Section 09 22 16 - Non-Structural Metal Framing.
- .3 Section 09 22 27 - Acoustical Suspension.
- .4 Section 09 51 13 - Acoustical Ceilings.
- .5 Section 09 91 23 - Interior Painting.

1.2 REFERENCES

- .1 American Society For Testing And Materials (ASTM):
  - .1 ASTM A 653/A 653-11 -Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process .
  - .2 ASTM C 36/C 36M-05 - Specification For Gypsum Wallboard.
  - .3 ASTM C1397-09 Standard Practice for Application of Class PB Exterior Insulation and Finish Systems.
  - .4 ASTM C 475/C 475M-12 - Specification For Joint Compound For Finishing Gypsum Board.
  - .5 ASTM C 840-11 - Specification for Application and Finishing Of Gypsum Board.
  - .6 ASTM C 919-12 Standard Practice for Use of Sealants in Acoustical Applications
  - .7 ASTM C 954-11 - Specification For Steel Drill Screws For The Application Of Gypsum Board Or Metal Plaster Bases To Steel Studs From 0.84 mm to 2.84 mm in thickness.
  - .8 ASTM C 1047-09 - Accessories For Gypsum Wallboard And Gypsum Veneer.
  - .9 ASTM C 1280-12a - Specification For Application Of Gypsum Sheathing Board.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
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- 1.4 ENVIRONMENTAL REQUIREMENTS
- .1 Maintain temperature minimum 10°C, maximum 21°C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.
  - .2 Apply board and joint treatment to dry, frost free surfaces.

PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Gypsum board where indicated on drawings: to ASTM C 36, 16 mm thickness, 1220 mm wide x maximum practical length, ends square cut, tapered.
  - .2 Gypsum board where indicated on drawings as fire rated: to ASTM C 36, type X, fire rated, 16 mm thick, 1220 mm wide x maximum practical length, ends cut square, edges tapered.
  - .3 Metal furring runners, hangers, tie wires, inserts, anchors: to ASTM C 1047, galvanized.
  - .4 Main ceiling runner channels: 41 mm in depth, 0.53 mm thickness galvanized steel channel sections.
  - .5 Drywall furring channels: 0.53 mm thickness, 22 mm in depth, 70 mm wide, having a face width of 35 mm, galvanized steel channels for screw attachment of gypsum board.
  - .6 Resilient drywall furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.
  - .7 Screws: to ASTM C 954. Screws for attaching gypsum board to steel framing or furring: gypsum board screws type "S" minimum 32 mm long for first layer of gypsum board, 50 mm long for second layer of gypsum board.
  - .8 Laminating compound: as recommended by manufacturer, asbestos-free.
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2.1 MATERIALS  
(Cont'd)

- .9 Casing beads, corner beads fill type: 0.5 mm base thickness commercial grade sheet steel with Z275 zinc finish to ASTM A 525, perforated flanges; one piece length per location.
- .10 Joint compound: to ASTM C 475, asbestos-free.
- .11 Joint reinforcement: cross-laminated fibre tape with minimal longitudinal stretch and superior tensile strength, precreased along its mid-length for corner application, as recommended by the gypsum board manufacturer.
- .12 Acoustic sealant: to ASTM C 919.
- .13 Acoustic insulation: Refer to Section 07 21 16 - Blanket Insulation.
- .14 Control joints: roll-formed of zinc with an opening width of 6 mm, depth of 12 mm, for application at the face of the gypsum board, opening to be tape protected until crack filling is completed, as recommended by gypsum board manufacturer.
- .15 Partition fireproofing material: non-combustible, semi-rigid, mineral fibre felt. Refer to Section 07 21 16 - Blanket Insulation.

PART 3 - EXECUTION

3.1 ERECTION

- .1 Do work in accordance with ASTM C 840 and ASTM C 1280 except where specified otherwise.
  - .2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with manufacturer's instructions.
  - .3 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
  - .4 Install work level to tolerance of 1:1200.
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3.1 ERECTION  
(Cont'd)

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- .5 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles, etc.
  - .6 Locate hangers not more than 150 mm from the ends of main runners and furring channels. Locate hangers not more than 1,200 mm O.C. both ways.
  - .7 Locate main runners not more than 150 mm from walls which are parallel to them or from ceiling interruptions and not more than 1,200 mm O.C.
  - .8 Attach furring channels at right angles to main runners and space at not more than 600 mm O.C.
  - .9 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
  - .10 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
  - .11 Install wall furring for gypsum board wall finishes in accordance with manufacturer's instructions, except where specified otherwise.
  - .12 Furr openings and around built-in equipment, cabinets, access panels, etc., on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
  - .13 Furr duct shafts, beams, columns, pipes and exposed services.
  - .14 Install furring channels spaced at 600 mm O.C. attached with anchors at 600 mm o/c maximum and staggered in alternate furring channel flanges.
  - .15 Shim furring channels as required to provide straight surfaces.
  - .16 Erect drywall resilient furring transversely across studs, spaced maximum 600 mm o/c and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25 mm gypsum board screws.
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3.1 ERECTION  
(Cont'd)

- .17 Install 150 mm continuous strip of 16 mm gypsum board along base of partitions where resilient furring is installed.

3.2 APPLICATION

- .1 Gypsum board is to be installed in accordance with ASTM C 840.
- .2 Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical work are approved.
- .3 Before application of gypsum board, butter all outside surfaces of electrical and other service boxes, (back, top, sides and bottom) with a minimum 6 mm layer of acoustical sealant in all partitions which have acoustical insulation.
- .4 Before application of gypsum board, apply a bead of acoustical sealant as specified above, at the floor line, at each side of the bottom runner of framing and at each side of the top track adjacent to the surface above, in all partitions which have acoustical insulation.
- .5 Apply single and double layer gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm oc. Use gypsum board in maximum practical sizes. Carry gypsum board up to the level of the underside of the deck above. Using small pieces as fillers above the ceiling line will not be permitted. Apply gypsum board without holes, gaps, cracks, broken corners, etc., and with joints tightly butted together. At intersection of gypsum board edge to structure install acoustical sealant.
- .6 Any joints between panels of the first layer of gypsum board, which are open and not tightly butted together, and broken corners of panels or other such openings, are to be filled with gypsum board crackfilling material, before application of second layer of gypsum board.
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3.2 APPLICATION  
(Cont'd)

- .7 For applying the second layer of gypsum board to the first layer, apply the specified adhesive in beads approximately 9 mm wide x 12 mm high, spaced at 115 mm O.C. parallel to the long edge of each panel. Additionally secure the second layer through the first layer using screws spaced at 300 mm O.C. Joints in the second layer of gypsum board to be staggered in relation to joints in the first layer of gypsum board.
- .8 In all partitions where acoustical insulation is indicated on drawings, after the application of gypsum board to one side of studs, caulk the perimeter of holes at pipes, outlets, conduits, etc. Also butter the backs of all electrical boxes with acoustical sealant. Apply this caulking to the stud side of gypsum board. Friction fit acoustical insulation between studs with no gaps or open spaces.
- .9 Where partitions are indicated on drawings to be fire rated or are around the perimeter of areas where the ceiling space is used as an air plenum, and occur directly under and parallel to open web joists, provide furring and gypsum board on each side of joists to carry partition up to the level of the underside of the deck above.
- .10 Gypsum board is to be carried down to within 3 mm of the floor slab. Gaps in the gypsum board behind bases will not be permitted.

3.3 INSTALLATION

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm oc.
- .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.

3.3 INSTALLATION  
(Cont'd)

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- .4 Construct control joints of preformed units set in gypsum board facing and supported independently on both sides of joint. In all partitions finished with two layers of gypsum board, the control joint is to be located in the outside layer of gypsum board only. The backup layer of gypsum board is to carry through unbroken behind the control joint.
  - .5 Locate control joints at changes in substrate construction, at approximately 9,000 mm spacing on long partitions or furred surfaces, where indicated on drawings and in the following locations:
    - .1 Where a partition or furred surface abuts a structural element and the gypsum board carries straight through on the same plane.
    - .2 Where expansion or control joints occur in the backup wall.
  - .6 Install control joints straight and true.
  - .7 Install access doors to electrical and mechanical fixtures specified in respective sections:
    - .1 Rigidly secure frames to furring or framing systems.
  - .8 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
  - .9 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.
  - .10 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.
  - .11 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
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3.3 INSTALLATION  
(Cont'd)

.12 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

.13 Where cutouts occur in gypsum board walls and ceilings, for electrical boxes, etc., fill the spaces between the boxes and the edges of the gypsum board with crack filler material.

3.4 INSTALLATION OF  
PARTITION  
FIREPROOFING  
MATERIAL

.1 Where partitions are indicated on drawings to be fire rated, or partitions surrounding areas where the ceiling space is used as an air plenum, as indicated on drawings, close any spaces between the tops of partitions and the structure above using fireproofing completely filling the space above the partitions, including deck flute spaces where partitions run perpendicular to steel deck.

.2 Fireproofing material is to extend the full width of the partition including all layers of gypsum board. Where partitions occur under a structural member and spaces occur between the top of the structural member and the deck flutes, fill the spaces both above and below the structural member in the same manner.

.3 Close off any openings surrounding ductwork, piping, etc., which may occur in fire rated partitions, using fire barrier material.



## PART 1 - GENERAL

<u>1.1 RELATED SECTIONS</u>	.1	Section 09 21 16 - Gypsum Board Assemblies.
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<u>1.2 REFERENCES</u>	.1	ASTM A 653/A 653M-11 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
	.2	ASTM C 645-11a, Specification for Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.

## PART 2 - PRODUCTS

<u>2.1 MATERIALS</u>	.1	Non-loadbearing channel stud framing: to ASTM C 645, 41mm, 64mm, 92mm and 152mm stud size, as indicated on drawings, roll formed from 0.85mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres.
	.2	Floor and ceiling tracks: to ASTM C 645, in widths to suit stud sizes, hot dipped galvanized steel, 50 mm flange height. Install double track system at all interior walls.
	.3	Bridging channel reinforcing: to ASTM C 645, in lengths to suit application, rolled from 3.0mm hot dipped galvanized steel.
	.4	Acoustical sealant: Single component, non-skinning, non-hardening synthetic sealant.

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### PART 3 - EXECUTION

#### 3.1 ERECTION

- .1 Align partition tracks at floor and underside of structure above and secure at 600 mm o.c. maximum. Extend all partitions to underside of deck above unless shown otherwise on drawings.
- .2 Place studs vertically at 400 mm oc and 600 mm oc maximum as indicated on drawings, and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and top of metal stud framing. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions. Where steel stud partitions are greater than 4267 mm in height but less than 5182 mm in height, steel studs are to be placed at 300 mm O.C.
- .3 Before installation of steel studs, apply a minimum of 2 beads of acoustical sealant as specified, at the bottom floor track, and at the top track, in all partitions which have acoustical insulation.
- .4 Install 3mm horizontal reinforcing at mid point of walls a maximum of 3000 mm in height, and two rows of reinforcing for walls over 3000mm in height.
- .5 Erect metal studding to tolerance of 1:1,000.
- .6 Attach studs to bottom and top tracks using screws.
- .7 Provide and install horizontal, vertical or diagonal bracing of the tops of steel stud partitions as indicated on drawings and as required.
- .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.

3.1 ERECTION  
(Cont'd)

- .10 Provide two studs extending from floor to top track at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
- .11 Where two rows of studs are to be installed parallel to each other, forming a wide partition, provide horizontal attachment between the two rows of studs, as detailed on drawings.
- .12 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
- .13 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.
- .14 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.
- .15 Install steel studs or furring channel between studs for attaching electrical and other boxes. Provide double studs to support heavy wall hung accessories where indicated on drawings.
- .16 Provide and install 1.5 mm steel sheet metal backer sheets where indicated on drawings or required for support of railings, fixtures, accessories, etc.
- .17 Maintain clearance under beams and decks to avoid transmission of structural loads to studs. Use 50 mm leg top tracks.
- .18 Install two continuous beads of acoustical sealant under studs and tracks around perimeter of sound control partitions.

PART 1 - GENERAL

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| <u>1.1 RELATED SECTIONS</u>    | .1 | Section 09 21 16 Gypsum Board Assemblies: Suspension systems for gypsum board ceilings.  |
|                                | .2 | Section 09 51 13 Acoustical Panel Ceilings: Acoustical units.  |
| <u>1.2 REFERENCES</u>          | .1 | ASTM C 635-M12, Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.                           |
|                                | .2 | ASTM C 636-C636M-08, Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.  |
|                                | .3 | ASTM A 1008/A 1008M-09, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability. |
|                                | .4 | ASTM A 653/A 653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.                          |
| <u>1.3 DESIGN REQUIREMENTS</u> | .1 | Maximum deflection: 1/360th of span to ASTM C 635 deflection test.   |
| <u>1.4 SAMPLES</u>             | .1 | Submit samples in accordance with Section 01 33 00 - Shop Drawings and other Submittal Procedures.   |
|                                | .2 | Submit one representative model of each type ceiling suspension system.  |
|                                | .3 | Ceiling system to show basic construction and assembly, treatment at walls, recessed fixtures, splicing, interlocking, finishes, acoustical unit installation.                   |
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## PART 2 - PRODUCTS

### 2.1 MATERIALS

- .1 Ceiling suspension system: in accordance with the requirements of ASTM C 635.
- .2 Basic materials for suspension system: to ASTM A 1008/A 1008M steel, commercial quality cold rolled 0.47 mm thickness, prior to finishing, galvanized to ASTM A 653/A 653M for severe environmental performance, G40 by hot dipped process, prepainted.
- .3 Suspension system: shop painted satin sheen white, non fire rated, made up as follows:
  - .1 Two directional exposed tee bar grid, 25 mm in exposed width.
- .4 Exposed tee bar grid components: shop painted satin sheen white. Components die cut. Main tee with double web, rectangular bulb and 25 mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.
- .5 Hanger wire: galvanized soft annealed steel wire.
  - .1 3.6 mm diameter for access tile ceilings.
  - .2 2.6 mm diameter for other ceilings.
- .6 Accessories: splices, clips, wire ties, retainers and wall moulding, to complement suspension system components, as recommended by system manufacturer.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- .1 Installation: in accordance with ASTM C 636 except where specified otherwise.
  - .2 Install suspension system to manufacturer's instructions and Certification Organizations tested design requirements.
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3.1 INSTALLATION  
(Cont'd)

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- .3 Do not erect ceiling suspension system until work above ceiling has been inspected by Departmental Representative.
  - .4 Secure hangers to overhead structure using attachment methods acceptable to Departmental Representative.
  - .5 Install hangers spaced at maximum 750 mm centres and within 150 mm from ends of main tees.
  - .6 Lay out center line of ceiling both ways, to provide balanced borders at room perimeter with border units not less than 50% of standard unit width system according to reflected ceiling plan.
  - .7 Ensure suspension system is co-ordinated with location of related components.
  - .8 Install wall moulding to provide correct ceiling height.
  - .9 Completed suspension system to support super-imposed loads, such as lighting fixtures diffusers grilles and speakers.
  - .10 Support at light fixtures, diffusers, and heating panels with additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
  - .11 Interlock cross member to main runner to provide rigid assembly.
  - .12 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
  - .13 Finished ceiling system to be square with adjoining walls and level within 1:1000.
  - .14 Expansion joints.
    - .1 Erect two main runners parallel, 25 mm apart, on building expansion joint line. Lay in strip of acoustic tile/board, 25% narrower than space between 2 'T' bars.
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3.1	INSTALLATION	.14	(Cont'd)
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		.2	Supply and install "Z" shaped metal trim pieces at each side of expansion joint. Design to accommodate plus or minus 25 mm movement and maintain visual closure. Finish metal components to match adjacent exposed metal trim. Provide backing plates behind butt joints.

3.2	<u>CLEANING</u>	.1	Touch up scratches, abrasions, voids and other defects in painted surfaces.
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## PART 1 - GENERAL

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| <u>1.1 Related Sections</u> | .1 | Section 01 33 00 - Submittal Procedures.                     |
|                             | .2 | Section 01 74 21 - Environmental and Waste Management Plans. |
|                             | .3 | Section 01 78 00 - Closeout Submittals.                      |
|                             | .4 | Section 07 90 00 - Joint Sealing.                            |

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| <u>1.2 References</u> | .1 | American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)<br>.1 ANSI A108.1-09, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).<br>.2 CTI A118.3-09, Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).<br>.3 CTI A118.4-09, Specification for Latex Portland Cement Mortar (included in ANSI A108.1).<br>.4 CTI A118.5-09, Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (included in ANSI A108.1).<br>.5 CTI A118.6-09, Specification for Ceramic Tile Grouts (included in ANSI A108.1). |
|                       | .2 | American Society for Testing and Materials (ASTM International) International<br>.1 ASTM C 144-04, Specification for Aggregate for Masonry Mortar.<br>.2 ASTM C 207-06, Specification for Hydrated Lime for Masonry Purposes.<br>.3 ASTM C 847-09, Specification for Metal Lath.<br>.4 ASTM C 979-05, Specification for Pigments for Integrally Coloured Concrete.   |
|                       | .3 | Canadian General Standards Board (CGSB)<br>.1 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.  |
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1.2 References  
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- .3 (Cont'd)
  - .2 CGSB 71-GP-22M-78, Adhesive, Organic, for Installation of Ceramic Wall Tile.
  - .3 CAN/CGSB-75.1-M88, Tile, Ceramic.
  - .4 CAN/CGSB-25.20-95, Surface Sealer for Floors.
- .4 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-A3000-05, Cementitious Materials Compendium (Consists of A5-98, A8-98, A23.5-98, A362-98, A363-98, A456.1-98, A456.2-98, A456.3-98).
  - .2 CSA A123.3-04, Asphalt Saturated Organic Roofing Felt.
- .5 Terrazzo Tile and Marble Association of Canada (TTMAC)
  - .1 Tile Specification Guide 09300 2010, Tile Installation Manual.
  - .2 Tile Maintenance Guide 2010.

1.3 Product Data

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Include manufacturer's information on:
  - .1 Ceramic tile, marked to show each type, size, and shape required.
  - .2 Chemical resistant mortar and grout (Epoxy and Furan).
  - .3 Cementitious backer unit.
  - .4 Dry-set Portland cement mortar and grout.
  - .5 Divider strip.
  - .6 Elastomeric membrane and bond coat.
  - .7 Reinforcing tape.
  - .8 Leveling compound.
  - .9 Latex-Portland cement mortar and grout.
  - .10 Commercial Portland cement grout.
  - .11 Organic adhesive.
  - .12 Slip resistant tile.
  - .13 Waterproofing isolation membrane.
  - .14 Fasteners.

1.4 Samples

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
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1.4 Samples  
(Cont'd)

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- .2 Base tile: submit duplicate 100 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
- .3 Floor tile: submit duplicate 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
- .4 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.
- .5 Adhere tile samples to 11 mm thick plywood and grout joints to represent project installation.

1.5 Delivery,  
Storage and  
Handling

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- .1 Deliver materials in containers with labels legible and intact and grade-seals unbroken.
- .2 Store material so as to prevent damage or contamination.
- .3 Store materials in a dry area, protected from freezing, staining and damage.
- .4 Store cementitious materials on a dry surface.

1.6 Waste  
Management and  
Disposal

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- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
  - .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
  - .3 Collect and separate for disposal corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
  - .4 Unused adhesive, sealant and coating materials must be disposed of at an official hazardous material collections site as approved by the Departmental Representative.
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1.6 Waste  
Management and  
Disposal  
(Cont'd)

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- .5 Unused adhesive, sealant and coating materials must not be disposed of into the sewer system, into streams, lakes, onto the ground or in other location where it will pose a health or environmental hazard.
- .6 Broken ceramic materials must be diverted from landfill to a local facility as approved by Departmental Representative

1.7 Environmental  
Conditions

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

1.8 Extra Material

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide a minimum of 3 boxes per colour for each tile required for project for maintenance use. Store where directed.
- .3 Maintenance material to be of same production run as installed material.

PART 2 - PRODUCTS

2.1 Floor Tile

- .1 Ceramic tile: to CAN/CGSB-75.1, anti slip, R9, 300 x 600 x 12 mm size, square edges, textured surface.
  - .2 Matching square base, 100 high x 300 long.
  - .3 Departmental Representative will provide colour schedule after contract award.
  - .4 Colour schedule will be based upon the selection of no more than 2 colours from the manufacturers full range of colours.
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## 2.2 Trim Shapes

- .1 Conform to applicable requirements of adjoining floor and wall tile.
- .2 Use slip resistant trim shapes for horizontal surfaces of showers, overflow ledges, recessed steps, shower curbs, drying area curbs, and stools.
- .3 Use trim shapes sizes conforming to size of adjoining field wall tile, unless specified otherwise.
- .4 Internal and External Corners: Provide trim shapes as follows where indicated.
  - .1 Bullnose shapes for external corners including edges.
  - .2 Coved shapes for internal corners.
  - .3 Special shapes for:
    - .1 Base to floor internal corners to provide integral coved vertical and horizontal joint.
    - .2 Base to floor external corners to provide bullnose vertical edge with integral coved horizontal joint. Use as stop at bottom of openings having bullnose return to wall.
    - .3 Wall top edge internal corners to provide integral coved vertical joint with bullnose top edge.
    - .4 Wall top edge external corners to provide bullnose vertical and horizontal joint edge.

## 2.3 Mortar and Adhesive Materials

- .1 Portland cement: to CSA-A5, type 10.
  - .2 Sand: to ASTM C 144, passing 16 mesh.
  - .3 Hydrated lime: to ASTM C 207, Type N.
  - .4 Latex additive: formulated for use in portland cement mortar and thin set bond coat.
  - .5 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.
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2.4 Grout .1 Grout to be used in all floor tile joints to be epoxy reactive resin grout. Colour to be selected by Departmental Representative (minimum 3 colours).  
.1 Acceptable material: Opticolor as manufactured by Mapei, Flextile, or an approved alternate

2.5 Accessories .1 Transition Strips: purpose made metal extrusion, Schiene as manufactured by Schluter, or an approved alternate.  
.2 Sealant: in accordance with Section 07 90 00 - Joint Sealing.

2.6 Mixes .1 Portland Cement:  
.1 Scratch coat: 1 part portland cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand.  
.2 Slurry bond coat: portland cement and water mixed to creamy paste. Latex additive may be included.  
.3 Mortar bed for floors: 1 part portland cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.  
.4 Levelling coat: 1 part portland cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.  
.5 Bond or setting coat: 1 part portland cement, 1/3 part hydrated lime, 1 part water.  
.6 Measure mortar ingredients by volume.

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

PART 3 - EXECUTION

- 3.1 Workmanship
- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2000 , "Ceramic Tile", except where specified otherwise.
  - .2 Apply tile or backing coats to clean and sound surfaces.
  - .3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
  - .4 Maximum surface tolerance 1:800.
  - .5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
  - .6 Lay out tiles so perimeter tiles are minimum 1/2 size.
  - .7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
  - .8 Make internal angles square, external angles rounded.
  - .9 Use round edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.
  - .10 Install divider strips at junction of tile flooring and dissimilar materials.
  - .11 Install built in external corner strip at wall tiles.

PART 1 - GENERAL

- |                                       |    |  |
|---------------------------------------|----|--|
| <u>1.1 RELATED SECTIONS</u>           | .1 | Section 09 22 27 - Acoustical Suspension Systems.  |
|                                       | .2 | Section 09 21 16 - Gypsum Board Assemblies.  |
| <u>1.2 REFERENCES</u>                 | .1 | CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.  |
|                                       | .2 | ASTM E 1264-08 (e1), Classification for Acoustical Ceiling Products.   |
| <u>1.3 SAMPLES</u>                    | .1 | Submit samples in accordance with Section 01 33 00 - Shop Drawings and other Submittal Procedures.   |
|                                       | .2 | Submit duplicate full size samples of each type acoustical units.  |
| <u>1.4 ENVIRONMENTAL REQUIREMENTS</u> | .1 | Commence installation after building enclosed and dust generating activities completed.  |
|                                       | .2 | Permit wet work to dry before commencement of installation.  |
|                                       | .3 | Maintain uniform minimum temperature of 15°C and humidity of 20 - 40% before and during installation.  |
|                                       | .4 | Store materials in work area 48 hours prior to installation.   |
| <u>1.5 MAINTENANCE MATERIALS</u>      | .1 | Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.   |
|                                       | .2 | Provide minimum 2 cartons of each type of tile required for project for maintenance use. Mark on carton date, project number and name, and location used, store where directed by Departmental Representative. |
-

- |  |    |  |
|--|----|--|
| 1.5 MAINTENANCE<br>MATERIALS<br>(Cont'd) | .3 | Maintenance materials to be from same production run as installed materials. |
|  | .4 | Clearly identify each type of acoustic unit, including colour and texture.   |

## PART 2 - PRODUCTS

- |               |    |  |
|---------------|----|--|
| 2.1 MATERIALS | .1 | Tile materials: conforming to the requirements of ASTM E 1264, type III, form 2, pattern C E, with the following properties: <ul style="list-style-type: none"> <li>.1 Humidity sag resistant mineral-fibre.</li> <li>.2 Square edge.</li> <li>.3 Factory applied vinyl latex paint.</li> <li>.4 NRC 0.55.</li> <li>.5 CAC 35.</li> <li>.6 Light reflectance 0.84.</li> <li>.7 Size 610 mm x 1220 mm x 16 mm.</li> </ul> |
|---------------|----|--|

## PART 3 - EXECUTION

- |                                  |    |  |
|----------------------------------|----|--|
| 3.1 EXAMINATION                  | .1 | Do not install acoustical panels and tiles until work above ceiling has been inspected by Departmental Representative.   |
| 3.2 INSTALLATION                 | .1 | Install acoustical panels and tiles in ceiling suspension system.  |
| 3.3 INTERFACE WITH<br>OTHER WORK | .1 | Co-ordinate ceiling work to accommodate other components, such as light fixtures, diffusers, speakers, and sprinkler heads to be built into acoustical ceiling system. |



PART 1 - GENERAL

1.1 REFERENCES

- .1 American Society for Testing and Materials International (ASTM).
  - .1 ASTM F 1344-12, Standard Specification for Rubber Floor Tile.
- .2 Underwriter's Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102.2-10, Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies.
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-25.20-95, Surface Sealer for Floors.
- .4 Health Canada/ Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

1.2 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Submit duplicate tile in size specified,
- .4 Closeout Submittals:
  - .1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

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

1.4 ENVIRONMENTAL REQUIREMENTS .1 Maintain air temperature and structural base temperature at flooring installation area above 20 degrees C for 48 hours before, during and for 48 hours after installation.

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

PART 2 - PRODUCTS

2.1 MATERIALS .1 Vinyl composition tile: to ASTM F 1066, Composition 1 - non asbestos Class 2 - through pattern tile 3.2 mm thick, 305 x 305 mm size, colours to be selected by Departmental Representative.  
.2 Resilient Tile: Composition of polyester resins, fillers and pigments. Conforms to ASTM F1066, Class 2 through pattern tile, 3.2mm thick, 305 x 610mm size.  
.1 Floor score certified to CDPH standard method VI.1-2010, 10-1 recycled content LEED MR4.0 pre-consumer, Non-PVC BioBased.  
.2 Departmental Representative will provide colour schedule after contract award.  
.3 Colour schedule will be based upon the selection of no more than 4 colours from the manufacturers full range of colours.

2.1 MATERIALS  
(Cont'd)

- .3 Static Dissipative Tile: to ASTM F-150, 10e6 to 10e9 ohms. Composition 1 - non asbestos Class 2 - through pattern tile, 3mm, 300 x 300 mm size, composed of polyvinyl chloride resin binder, fillers, and pigments with colours and texture dispersed uniformly throughout its thickness. The non-directional pattern shall consist of minute, randomly dispersed granules blended in solid-coloured field to create a monolithic look.
- .4 Resilient base: to rubber, coved, minimum 2400 mm length and 101.6 mm high x 3.17 mm thick, including premoulded end stops and external corners for coved base only, colours selected by Departmental Representative.
- .5 Primers and adhesives: waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.
- .6 Sub-floor filler and leveller: white premix latex requiring water only to produce cementitious paste as recommended by flooring manufacturer for use with their product.
- .7 Metal edge strips: aluminum extruded, smooth, mill finish, stainless steel with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.
- .8 Flame spread rating must meet TB Chapter 3-6 FPSCI Article 3.6.
- .9 To CAN/ULC S102.2.

PART 3 - EXECUTION

3.1 MANUFACTURER'S  
INSTRUCTIONS

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

### 3.2 INSPECTION

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

### 3.3 SUB-FLOOR TREATMENT

- .1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .2 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
- .3 Prime to flooring manufacturer's printed instructions.

### 3.4 TILE APPLICATION

- .1 Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
  - .2 Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
  - .3 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.
  - .4 Install flooring to square grid pattern with joints aligned with pattern grain alternating to produce basket weave pattern.
  - .5 As installation progresses, and after installation, roll flooring in 2 directions with 45 kg minimum roller to ensure full adhesion.
  - .6 Cut tile and fit neatly around fixed objects.
-

3.4 TILE  
APPLICATION  
(Cont'd)

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- .7 Install feature strips and floor markings where indicated. Fit joints tightly.
- .8 Install flooring in pan type floor access covers. Maintain floor pattern.
- .9 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .10 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
- .11 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.5 BASE  
APPLICATION

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

3.6 FIELD QUALITY

- .1 Manufacturer's Field Services:
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- |                                       |    |  |
|---------------------------------------|----|--|
| 3.6 FIELD QUALITY CONTROL<br>(Cont'd) | .1 | (Cont'd)<br>.1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions. |
| 3.7 CLEANING                          | .1 | Proceed in accordance with Section 01 74 11 - Cleaning.  |
|                                       | .2 | Remove excess adhesive from floor, base and wall surfaces without damage.  |
| 3.8 PROTECTION                        | .1 | Protect new floors from time of final set of adhesive until final inspection.  |

PART 1 - GENERAL

1.1 RELATED SECTIONS .1 Section 09 65 19 - Resilient Tile Flooring.

1.2 REFERENCES .1 Canadian General Standards Board (CGSB).  
.1 CAN/CGSB-4.2 #27.5 -2008, Textile Test Methods.  
.2 CAN/CGSB-4.129-93, Carpets for Commercial Use.  
.2 National Floor Covering Association (NFCA).

1.3 PRODUCT DATA .1 Submit product data in accordance with Section 01 10 10 - General Instructions.  
.2 Submit product data sheet for each carpet, adhesive, and carpet protection.  
.3 Submit WHMIS MSDS - Material Safety Data Sheets acceptable to Labour Canada and Health and Welfare Canada for carpet adhesive and seam adhesive. Indicate VOC content.

1.4 SHOP DRAWINGS .1 Submit shop drawings in accordance with Section 01 10 10 - General Instructions  
.2 Indicate locations and lengths of seams and cross joints for carpeted areas.  
.3 Indicate nap, open edges, special patterns, and other details required by Owner Representative to clarify work.

1.5 SAMPLES .1 Submit samples in accordance with Section 01 10 10 - General Instructions.  
.2 Submit duplicate 150 mm base of each type selected.  
.3 Submit duplicate 300 mm x 300 mm carpet samples of each type selected.

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|--|----|---|
| <u>1.5 SAMPLES<br/>(Cont'd)</u>                  | .3 | Submit duplicate 300 mm x 300 mm carpet samples of each type selected.  |
| <u>1.6 CLOSEOUT<br/>SUBMITTALS</u>               | .1 | Submit operation and maintenance data for incorporation into manual specified in Section 01 10 10 - General Instructions  |
| <u>1.7 DELIVERY<br/>STORAGE AND<br/>HANDLING</u> | .1 | Label packaged materials. For tile products indicate nominal dimensions of tile.  |
|  | .2 | Store packaged materials in original containers or wrapping with manufacturer's seals and labels intact.  |
|  | .3 | Store carpeting and accessories in location as directed by Owner Representative.  |
|  | .4 | Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.   |
|  | .5 | Maintain temperature of store room at a minimum of 20° C, for at least 24 hours immediately before the installation.  |
| <u>1.8 ENVIRONMENT<br/>REQUIREMENTS</u>          | .1 | Moisture: Ensure substrate is within moisture limits prescribed by manufacturer.  |
|  | .2 | Temperature: Maintain ambient temperature of not less than 18 °C from 72 hours before installation to at least 72 hours after completion of work.                   |
|  | .3 | Relative humidity: Maintain relative humidity between 10 and 65% RH for 48 hours before, during and 48 hours after installation.                                    |
|  | .4 | Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials. |
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#### 1.9 EXTRA MATERIALS

- .1 Provide extra materials of carpet, carpet base, and adhesive(s) in accordance with Section 01 10 10 - General Instructions .
- .2 Provide 2% extra maintenance material.
- .3 Extra materials to be from same production run as installed materials.
- .4 Identify each package of carpet and each container of adhesive.
- .5 Deliver to site and store where directed by Departmental Representative.

### PART 2 - PRODUCTS

#### 2.1 MODULAR CARPET

- .1 Departmental Representative will provide colour schedule after contract award. Colour schedule will be based upon the selection of no more than 5 colours from the manufacturers full range of colours and patterns.
- .2 Carpet Tile Dimensions: 500 x 500mm.
- .3 Carpet: To CAN/CGSB-4.129 and as follows:
  - .1 Certified for flammability to Health Canada regulations under "Hazardous Products(Carpet) Regulations", Part II of the Schedule.
  - .2 Maximum flame spread rating 300 maximum smoke developed classification 500, when tested to CAN/ULC-S102.2
  - .3 Certified to Carpet and Rug Institute's and the Canadian Carpet Institute's IAQ requirements.
- .4 Performance rating: to ASTM D 5252 or ASTM D 5417.
- .5 Construction: tufted cut pile.
- .6 Pile Surface Appearance:
  - .1 Level loop: textured.
- .7 Pile fibre: to CAN/CGSB-4.129.
  - .1 Nylon: BCF Staple.
    - .1 Type: Nylon 6.6
- .8 Gauge: 39.4 ends / 10cm

<u>2.1 MODULAR CARPET</u> (Cont'd)	.7	(Cont'd)
	.1	(Cont'd)
	.8	Gauge: 39.4 ends / 10cm
	.9	Stitch Rate: 55.11 ends / 10cm
	.10	Tuft Density: 5462.
	.11	Pile Height: 4.3mm.
	.12	Yarn Dye Method: solution dyed.
	.13	Total Weight: 746 g/m3.
	.14	Colourization: multiple colour tones.
	.15	Colourfastness to light: to AATCC 16E.
	.16	Primary Backing: woven or non-woven.
	.17	Secondary Backing: fibreglass reinforced.
	.18	Adhesive: As per manufacturers recommendation.
<u>2.2 SPECIAL REQUIREMENTS</u>	.1	Permanent static control: to AATCC 134, 3000V maximum at 20%RH and 22
<u>2.3 ACCESSORIES</u>	.1	Carpet grippers: types recommended by carpet manufacturer: types recommended by carpet manufacturer for purpose intended.
	.2	Seaming adhesive: type recommended by carpet manufacturer for purpose intended.
	.3	Binder bars: aluminum finish as manufactured by Schluter Systems or an approved alternate.
	.4	Sub-floor leveller: fast setting, high strength, self leveling underlayment to be Ultraplan 1 as manufacturer by Mapei or an approved alternate.
	.5	Adhesive:
	.1	Non-release type: for direct glue down installation, low odour, low VOC, free of volatile hydrocarbons such as toluene and mineral spirits.

- 2.3 ACCESSORIES  
(Cont'd)
- .5 (Cont'd)
    - .1 Non-release type: for direct glue down installation, low odour, low VOC, free of volatile hydrocarbons such as toluene and mineral spirits.
      - .1 Acceptable material: ECO 246, or ECO 300 depending on carpet backing, as manufactured by Mapei, or an approved alternate.
    - .6 Carpet protection: non-staining heavy duty kraft paper.
    - .7 Concrete floor sealer: to CAN/CGSB-25.20, Type 1.
    - .8 Subfloor filler: white premix latex requiring only water to produce cementitious paste.

### PART 3 - EXECUTION

- 3.1 SUB-FLOOR TREATMENT
- .1 Remove dust, old adhesive, dirt, and sealer from existing surfaces.
  - .2 Remove ridges and bumps in substrate.
  - .3 Seal sub floor surfaces as recommended by manufacturer.

- 3.2 PREPARATION
- .1 Prepare floor surfaces in accordance with Contract Carpet Manual, Standard for Installation of Textile Floor covering Materials No. 001.
  - .2 Clean floor and apply leveler to entire substrate; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

- 3.3 INSTALLATION
- .1 Install carpeting using minimum of pieces.
-

- 3.3 INSTALLATION (Cont'd)
- .2 Install in accordance with manufacturer's printed instructions and in accordance with Contract Carpet Manual, Standard for Installation of Textile Floor covering Materials No.001.
  - .3 Install carpeting after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets are installed.
  - .4 Finish installation to present smooth wearing surface free from conspicuous seams, burring and other faults.
  - .5 Use material from same dye lot. Ensure colour, pattern and texture match within any one visual area. Maintain constant pile direction.
  - .6 Hot melt Adhesive seams and cross-joints.
  - .7 Fit neatly around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
- 3.4 SEAMS
- .1 Seal edges of cut-outs with, binding method for roll goods.
  - .2 Make carpet seams and joints invisible for roll goods.
- 3.5 PROTECTION OF FINISHED WORK
- .1 Vacuum carpets clean immediately after completion of installation. Protect traffic areas.
  - .2 Prohibit traffic on carpet until adhesive is cured.
  - .3 Install carpet protection to satisfaction of Departmental Representative.
  - .4 Shampoo/clean carpet as required prior to Substantial Performance inspection.

PART 1 - GENERAL

- |                             |    |  |
|-----------------------------|----|--|
| <u>1.1 RELATED SECTIONS</u> | .1 | Section 05 50 00 - Metal Fabrications.   |
|                             | .2 | Section 08 11 14 - Metal Doors and Frames.   |
|                             | .3 | Section 09 91 23 - Interior Painting.  |
| <u>1.2 REFERENCES</u>       | .1 | American Society for Testing and Materials (ASTM)<br>.1 ASTM D 3960-05, Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings. |
|                             | .2 | Canadian Painting Contractors' Association (CPCA).<br>.1 Painting Specifications Manual 1993.  |
|                             | .3 | Canadian Standards Association (CSA)<br>.1 CSA Z760-94(R2001), Life Cycle Assessment.  |
|                             | .4 | Environmental Choice Program (ECP)<br>.1 ECP-67- 95, Recycled Water-Borne Surface Coatings.<br>.2 ECP-76- 98, Surface Coatings.  |
|                             | .5 | Environmental Protection Agency (EPA)<br>.1 EPA-SW-846, Test Methods for Evaluating Solid Wastes.  |
|                             | .6 | National Fire Code of Canada 2010.   |
|                             | .7 | Steel Structures Painting Council (SSPC).<br>.1 Systems and Specifications Manual 1989.  |
|                             | .8 | Master Painters Institute (MPI)<br>Architectural Painting Specification Manual May 2012 and updates.   |
| <u>1.3 PRODUCT DATA</u>     | .1 | Submit product data in accordance with Section 01 10 10 - General Instructions.  |
|                             | .2 | Submit full records of all products used. List each product in relation to finish formula and include the following:<br>.1 Finish formula designation.                   |
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- |                                    |    |  |
|------------------------------------|----|--|
| 1.3 PRODUCT DATA<br>(Cont'd)       | .2 | (Cont'd)   |
|                                    | .2 | Product MPI #.   |
|                                    | .3 | Manufacturer's product number.   |
|                                    | .4 | Colour number.   |
|                                    | .5 | Manufacturer's Material Safety Data Sheets (MSDS).   |
|                                    | .6 | Maximum VOC classification.  |
|                                    | .3 | Submit manufacturer's application instructions for each product specified.   |
| 1.4 SAMPLES                        | .1 | Submit samples in accordance with Section 01 10 10 - General Instructions .  |
|                                    | .2 | Submit duplicate 300 x 200 mm sample panels of each paint colour specified.  |
|                                    | .3 | Submit full range of available colours where colour availability is restricted.  |
|                                    | .4 | Use 3 mm plate steel for finishes over metal surfaces. Use 50 mm concrete block for finishes over concrete or concrete masonry surfaces. Use 12.5 mm gypsum board for finishes over smooth surfaces.                 |
| 1.5 QUALITY ASSURANCE              | .1 | Retain purchase orders, invoices and other documents to prove that all materials utilized in this contract meet requirements of the specifications. Produce documents when requested by Departmental Representative. |
|                                    | .2 | Walls. No defects visible from a distance of 1000 mm at 90 degrees to surface.   |
|                                    | .3 | Final coat to exhibit uniformity of colour and texture as well as uniformity of sheen across full surface area.  |
| 1.6 DELIVERY, STORAGE AND HANDLING | .1 | Deliver and store materials in original containers, sealed, with labels intact.  |
|                                    | .2 | Indicate on containers or wrappings:   |
|                                    | .1 | Manufacturer's name and address.   |
|                                    | .2 | Type of paint.   |
|                                    | .3 | Compliance with applicable standard.   |
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1.6 DELIVERY,  
STORAGE AND  
HANDLING  
(Cont'd)

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- .2 (Cont'd)
    - .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, weatherproof, 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 °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 if Departmental Representative.
  - .10 Provide minimum one 9 kg Type ABC fire extinguisher adjacent to storage area.
  - .11 Remove only in quantities required for same day use.
-

1.6 DELIVERY,  
STORAGE AND  
HANDLING  
(Cont'd)

- .12 Fire Safety Requirements
- .1 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.
  - .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.7 SCHEDULING OF  
WORK

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

1.8 EXTRA MATERIALS

- .1 Submit maintenance materials in accordance with Section 01 10 10 - General Instructions.
- .2 Submit 1 unopened - 4 litre can of each type and colour of primer and finish coating. Identify colour and paint type in relation to established colour schedule and finish formula.
- .3 Deliver to Departmental Representative and store where directed.

1.9 WASTE  
MANAGEMENT

- .1 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
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1.9 WASTE  
MANAGEMENT  
(Cont'd)

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- .2 Return solvent and oil soaked rags, used during installation, for contaminate recovery, proper disposal, or appropriate cleaning with no contaminate release to water systems.
- .3 Close and seal tightly all partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
- .4 Do not dispose of paints or solvents by pouring on the ground. Place in designated containers and ensure proper disposal.
- .5 Solvent based paints, wood preservatives, stains and finishes which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner in accordance with hazardous waste regulations. Empty paint cans are to be dry prior to disposal or recycling (where available).
- .6 Where paint recycling is available, collect all waste paint by type and provide for delivery to recycling or collection facility.
- .7 Paints, stains and finishes are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from the Provincial Ministries of Environment and Regional levels of Government.

PART 2 - PRODUCTS

2.1 MATERIALS

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- .1 Only materials (primers, paints, coatings, fillers, etc.) listed in the latest edition of the MPI approved product list (APL) are acceptable for use on this project. All such materials shall be from a single manufacturer.
  - .2 All materials used shall be lead and mercury free, and shall have a low VOC content where possible.
  - .3 Use only materials having a MPI rating of E2.
-

## 2.2 COLOURS

- .1 Departmental Representative will provide Colour Schedule after contract award.
- .2 Colour schedule will be based upon the selection of no more than 3 colours.
- .3 Selection of colours will be from manufacturers 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 Perform all colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials allowed only with Departmental Representative's written permission.
- .6 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

## 2.3 PAINT FINISHES

- .1 Formula E01 (Alkyd): for primed ferrous metal to receive paint apply:
  - .1 Spot priming Quick Drying Alkyd Metal Primer MPI#76.
  - .2 Two coats Exterior Alkyd, Semi Gloss MPI # 94.

## PART 3 - EXECUTION

### 3.1 GENERAL

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

### 3.2 PREPARATION

- .1 Remove electrical cover plates, light fixtures, surface hardware on doors, and all other surface mounted fittings, equipment and fastenings prior to undertaking any painting operations. Store for re-installation after painting is completed.
- .2 Cover or move portable equipment around building as necessary to carry out painting operations. Replace as painting operations progress.
- .3 As painting operations progress, place "WET PAINT" signs in areas of work to approval of Departmental Representative.

### 3.3 PROTECTION

- .1 Protect existing building surfaces not to be painted from paint spatters, markings and other damage. If damaged, clean and restore such surfaces as directed by Departmental Representative.
- .2 Cover or mask floors, windows and other ornamental hardware adjacent to areas being painted to prevent damage and to protect from paint drops and splatters. Use non-staining coverings.
- .3 Protect items that are permanently attached such as Fire Labels on doors and frames.
- .4 Protect factory finished products and equipment.
- .5 Protect building occupants in and about the building.

### 3.4 CLEANING

- .1 To prepare surfaces for water based painting, water based cleaners should be used in place of organic solvents.
    - .1 Use trigger operated spray nozzles for water hoses.
    - .2 Many water based paints cannot be removed with water once dried. However, minimize the use of kerosene or any such organic solvents to clean up water based paints.
  - .2 Clean all surfaces to be painted as follows:
-

3.4 CLEANING  
(Cont'd)

- .2 (Cont'd)
  - .1 Remove all dust, dirt, and other surface debris by wiping with dry, clean cloths or compressed air .
  - .2 Wash surfaces with solution of T.S.P. bleach and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
  - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
  - .4 Allow surfaces to drain completely and allow to dry thoroughly.

3.5 SURFACE  
PREPARATION -METAL

- .1 Clean new metal surfaces to be painted in accordance with the following:
  - .1 Solvent cleaning: SSPC-SP-1.
  - .2 Hand tool cleaning: SSPC-SP-2.
  - .3 Power tool cleaning: SSPC-SP-3.
  - .4 Commercial blast cleaning: SSPC-SP-6.
  - .5 Brush-off blast cleaning: SSPC-SP-7.
- .2 Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes or blowing with clean dry compressed air.
- .3 Touch up damaged or defective paint or rusted areas of shop primer with primer as specified in applicable section.
- .4 Prepare new steel surfaces exposed normally to dry conditions to manufacturers recommendations.
- .5 Apply paint only after prepared surfaces have been accepted by Departmental Representative.

3.6 MIXING PAINT

- .1 Do not use kerosene or any such organic solvents to thin water based paints.
  - .2 Mix ingredients in container before and during use and ensure breaking up of lumps, complete dispersion of settled pigment, and uniform composition.
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<u>3.6 MIXING PAINT (Cont'd)</u>	.3	Thin paint for spraying according to manufacturer's written instructions and provide copy to Departmental Representative.
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<u>3.7 APPLICATION</u>	.1	Apply paint by brush as approved by Departmental Representative. Conform to manufacturer's application instructions unless specified otherwise.
	.2	Apply each coat of paint as a 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 each coat to remove visible defects.
	.5	Finish tops of projecting ledges, both above and below sight lines as specified for surrounding surfaces.
	.6	Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

<u>3.8 MECHANICAL AND ELECTRICAL EQUIPMENT</u>	.1	Paint exposed conduits, piping, hangers ductwork and other mechanical and electrical equipment unless specified otherwise. Colour to match adjacent surfaces except as specified otherwise.
	.2	Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
	.3	Do not paint outdoor transformers and substation equipment.
	.4	Paint all fire protection piping Red.
	.5	Paint all natural gas piping Yellow.

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3.9 FIELD QUALITY CONTROL

- .1 Field inspection of painting operations to be carried out by independent inspection firm as designated by Departmental Representative.
- .2 Advise Departmental Representative when each applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .3 Co-operate with inspection firm and provide access to all areas of the work.

3.10 RESTORATION

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

Building Modernization	INTERIOR PAINTING	Section 09 91 23
Phase II		Page 1
10 Weldon St. Shediac, NB		
Project No. R.039554.001		2013-07-17

## PART 1 - GENERAL

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|----------------------------|---|
| <u>1.1 REATED SECTIONS</u> | <ul style="list-style-type: none"> <li>.1 Section 06 10 00 - Rough Carpentry.</li> <li>.2 Section 08 11 14 - Metal Doors and Frames.</li> <li>.3 Section 09 21 16 - Gypsum Board Assemblies.</li> <li>.4 Section 09 91 12 - Exterior Painting.</li> </ul>   |
| <u>1.2 REFERENCES</u>      | <ul style="list-style-type: none"> <li>.1 American Society for Testing and Materials (ASTM) <ul style="list-style-type: none"> <li>.1 ASTM D 3960-05, Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.</li> </ul> </li> <li>.2 Canadian General Standards Board (CGSB) <ul style="list-style-type: none"> <li>.1 CAN/CGSB-85.10-99, Protective Coating for Metals.</li> <li>.2 CAN/CGSB-85.100-93 Painting.</li> </ul> </li> <li>.3 National Fire Code of Canada 2010.</li> <li>.4 Steel Structures Painting Council (SSPC). <ul style="list-style-type: none"> <li>.1 Systems and Specifications Manual 2005.</li> </ul> </li> <li>.5 Architectural Painting Specifications Manual by the Master Painters Institute(MPI).</li> </ul> |
| <u>1.3 PRODUCT DATA</u>    | <ul style="list-style-type: none"> <li>.1 Submit product data in accordance with Section 01 33 00 - Shop Drawings and other Submittal Procedures.</li> </ul>  |
| <u>1.4 SAMPLES</u>         | <ul style="list-style-type: none"> <li>.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.</li> <li>.2 Submit 300 x 200 mm sample panels of each paint, and stain type, colour, and texture specified.</li> <li>.3 Submit full range of available colours where colour availability is restricted.</li> </ul>   |

<u>1.4 SAMPLES (Cont'd)</u>	.4	Use 3 mm plate steel for finishes over metal surfaces. Use 12.5 mm birch plywood for finishes over wood surfaces. Use 50 mm concrete block for finishes over concrete or concrete masonry surfaces. Use 12.5 mm gypsum board for finishes over gypsum board and other smooth surfaces.
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<u>1.5 QUALITY ASSURANCE</u>	.1	Retain purchase orders, invoices and other documents to prove that all materials utilized in this contract meet requirements of the specifications. Produce documents when requested by Departmental Representative.
	.2	Standard of Acceptance: .1 Walls: No defects visible from a distance of 1000 mm at 90 degrees to surface. .2 Ceilings: No defects visible from floor at 45 degrees to surface when viewed using final lighting source. .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.
	.3	All materials, preparation, and workmanship shall conform to requirements of the latest edition of the Architectural Painting Specifications Manual by the Master Painters Institute(MPI).
	.4	All paint manufacturers and products shall be listed under the approved product list section of the MPI painting manual.

<u>1.6 DELIVERY, STORAGE AND HANDLING</u>	.1	Deliver and store materials in original containers, sealed, with labels intact.
	.2	Indicate on containers or wrappings: .1 Manufacturer's name and address. .2 Type of paint. .3 Compliance with applicable standard. .4 Colour number in accordance with established colour schedule.
	.3	Remove damaged, opened and rejected materials from site.

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1.7 ENVIRONMENTAL  
REQUIREMENTS  
(Cont'd)

- .2 (Cont'd)
- .2 Provide continuous ventilation during and after application of paint. Run ventilation system 24 hours per day; provide continuous ventilation for 7 days after completion of application of paint.
- .3 Apply paint finishes only when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.
- .4 Substrate and ambient temperature must be within limits prescribed by manufacturer to approval of Departmental Representative.
- .5 Maintain minimum substrate and ambient air temperature of 5°C for Alkyd and 7°C for latex paints. Maximum relative humidity 85%. Maintain supplemental heating until paint has cured sufficiently.
- .6 Provide temporary heating where permanent facilities are not available to maintain minimum recommended temperatures.
- .7 Apply paint finish only in areas where dust is no longer being generated by related construction operations such that airborne particles will not affect the quality of the finished surface.
- .8 Apply paint only when surface to be painted is dry, properly cured and adequately prepared.
- .9 Painting in occupied facilities to be carried out during silent hours only. Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.
- .10 Provide minimum 270 lx on surfaces to be painted.

1.8 SCHEDULING

- .1 Submit work schedule for various stages of painting to Departmental Representative for approval. Submit schedule minimum of 48 hours in advance of proposed operations.

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|----------------------------|----|---|
| 1.8 SCHEDULING<br>(Cont'd) | .2 | Obtain written authorization from Departmental Representative for any changes in work schedule. |
|                            | .3 | Schedule painting operations to prevent disruption of occupants in and about the building.      |

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|---------------------|----|--|
| 1.9 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, and finish coating. Identify colour and paint type in relation to established colour schedule and finish formula. Paint can to be unopened. |
|                     | .3 | Deliver to Departmental Representative and store where directed.   |

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|--------------------------|----|---|
| 1.10 WASTE<br>MANAGEMENT | .1 | Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.   |
|                          | .2 | Return solvent and oil soaked rags for containment recovery and laundering or for proper disposal.  |
|                          | .3 | Close and seal tightly all partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.   |
|                          | .4 | Do not dispose of paints or solvents by pouring on the ground. Place in designated containers and ensure proper disposal.   |
|                          | .5 | Solvent based paints, wood preservatives, stains and finishes which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner in accordance with hazardous waste regulations. Empty paint cans are to be dry prior to disposal or recycling (where available). |
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1.10 WASTE  
MANAGEMENT  
(Cont'd)

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- .6 Where paint recycling is available, collect all waste paint by type and provide for delivery to recycling or collection facility.
- .7 Paints, stains, and finishes are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from the Provincial Ministries of Environment and Regional levels of Government.

PART 2 - PRODUCTS

2.1 MATERIALS

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- .1 Only materials (primers, paints, coatings, fillers, etc.) listed in the latest edition of the MPI approved product list (APL) are acceptable for use on this project. All such materials shall be from a single manufacturer.
- .2 All materials used shall be lead and mercury free, and shall have a low VOC content where possible.
- .3 Use only materials having a MPI rating of E2.
- .4 Wall Coverings:
  - .1 Vinyl wall covering, type II, 20 oz/lin.yard.
  - .2 Vinyl wall covering to meet the following according to ASTM-E-84.
    - .1 Class 'A' Fire Rating.
    - .2 Flame spread 5
    - .3 Smoke development 15.
  - .3 Vinyl wall covering to be RECORE Certified.
  - .4 Departmental Representative will provide colour schedule after contract award.
  - .5 Colour Schedule will be based upon the selection of no more than 3 colours from the manufacturers full range of colours.

2.2 FINISH &  
COLOURS

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- .1 Departmental Representative will provide Colour Schedule after contract award.
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2.2 FINISH &  
COLOURS  
(Cont'd)

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- .2 Colour schedule will be based upon the selection of no more than 20 base colours and 8 accent colours with a maximum of one deep or bright colour.
- .3 Selection of colours will be from manufacturers full range of colours.
- .4 Perform all colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials not permitted.
- .5 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.
- .6 Except as noted herein or indicated on the finish schedule, interior walls and ceiling surfaces shall be painted in accordance with the following criteria over an appropriate prime/sealer coat:
  - .1 All areas (except as noted): washable latex with G3 (eggshell) finish.
  - .2 Washrooms, shower areas: epoxy G5 (semi-gloss) finish for wet surfaces.
  - .3 Food preparation areas: epoxy G5 (semi-gloss) for dry surfaces.
- .7 Doors shall be painted a different colour than frames, with a G5 (semi-gloss) finish.
- .8 Access doors, prime coated butts and other prime coated hardware, and exposed mechanical and electrical panels/heaters are to match adjacent wall/ceiling surface colour, sheen, and texture.

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Prepare all surfaces in accordance with MPI requirements.
  - .2 As painting operations progress, place "WET PAINT" signs in occupied areas to approval of Departmental Representative.
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### 3.2 PROTECTION

- .1 Cover or mask floors, windows and other ornamental hardware adjacent to areas being painted to prevent damage and to protect from paint drops and splatters. Use non-staining coverings.
- .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
- .3 Protect factory finished products and equipment.

### 3.3 EXISTING CONDITIONS

- .1 Investigate moisture content of surfaces to be painted and report findings to Departmental Representative. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- .2 Maximum moisture content as follows:
  - .1 Wallboard: 12%.
  - .2 Masonry/Concrete: 12%.

### 3.4 CLEANING

- .1 Clean all surfaces to be painted as follows:
    - .1 Remove all dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths.
    - .2 Wash surfaces with solution of T.S.P. bleach and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
    - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
    - .4 Allow surfaces to drain completely and allow to dry thoroughly.
    - .5 To prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
    - .6 Use trigger operated spray nozzles for water hoses.
    - .7 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or any such organic solvents to clean up water-based paints.
-

### 3.5 APPLICATION

- .1 Method of application to be as approved by Departmental Representative. Apply paint by roller. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Departmental Representative.
- .3 Apply each coat of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .4 Tint each coat of paint progressively lighter to enable confirmation of number of coats.
- .5 Unless otherwise approved apply a minimum of 4 coats of paint to deep or bright colours to achieve satisfactory results.
- .6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .7 Sand and dust between each coat to remove visible defects from a distance up to 1000mm.
- .8 Finish closets and alcoves as specified for adjoining rooms.
- .9 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

### 3.6 MECHANICAL ELECTRICAL EQUIPMENT

- .1 In finished areas: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment. Colour and texture to match adjacent surfaces, except as noted otherwise.
  - .2 In mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.
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3.6 MECHANICAL  
ELECTRICAL  
EQUIPMENT  
(Cont'd)

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- .3 In other unfinished areas: paint conduits, piping, hangers, ductwork and other mechanical and electrical equipment.
- .4 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- .5 Do not paint over nameplates.
- .6 Keep sprinkler heads free of paint.
- .7 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
- .8 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .9 Paint all fire protection piping red.
- .10 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items. Paint to be fire retardant.

3.7 INTERIOR PAINT  
AND COATING SYSTEM

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- .1 Formula 1 (Latex): for concrete, and concrete block walls apply:
    - .1 One coat Interior/Exterior Latex Block Filler MPI#4.
    - .2 One coat Interior Latex Primer Sealer MPI#50.
    - .3 Two coats Interior Latex, Gloss Level 3 MPI#52.
  - .2 Formula 2 (Latex): for gypsum board walls and ceiling apply:
    - .1 One coat Interior Latex Primer Sealer MPI#50.
    - .2 Two coats Interior Latex, Gloss Level 3 MPI#52.
  - .3 Formula 4 (Latex): for shop primed ferrous metal surfaces, joist and ductwork apply:
    - .1 Touch up shop primer with primer as provided by fabricator.
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3.7 INTERIOR PAINT .3  
AND COATING SYSTEM  
(Cont'd)

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- (Cont'd)
- .2 Spot repairs of Surface Tolerent Metal Primer MPI#23.
  - .3 Two coats Interior Latex, Gloss Level 3 MPI#52.
  - .4 Clean and re-install all hardware items that were removed before undertaken painting operations.
  - .5 Remove protective coverings and warning signs as soon as practical after operations cease.
  - .6 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
  - .7 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.
  - .8 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.