

**Part 1        General****1.1        RELATED REQUIREMENTS**

- .1    Section 07 21 16   BLANKET INSULATION.
- .2    Section 07 84 00   FIRE STOPPING.
- .3    Section 07 92 00   JOINT SEALANTS.
- .4    Section 09 91 23   INTERIOR PAINTING.

**1.2        REFERENCES**

- .1    Aluminum Association (AA)
  - .1    AA DAF 45-03(R2009), Designation System for Aluminum Finishes.
- .2    ASTM International
  - .1    ASTM C1396/C1396M-09a, Standard Specification for Gypsum Wallboard.
  - .2    ASTM C475/C475M-02(2007), Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - .3    ASTM C514-04(2009)e1, Standard Specification for Nails for the Application of Gypsum Board.
  - .4    ASTM C645-09a, Standard Specification for Nonstructural Steel Framing Members.
  - .5    ASTM C754-09a, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
  - .6    ASTM C840-08, Standard Specification for Application and Finishing of Gypsum Board.
  - .7    ASTM C954-10, 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 0.122 in. (2.84 mm) in Thickness.
  - .8    ASTM C1002-07, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
  - .9    ASTM C1047-10, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
  - .10   ASTM C1178/C1178M-08, Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
  - .11   ASTM C1280-99, Standard Specification for Application of Gypsum Sheathing.

- .12 ASTM C1396/C1396M-09a, Standard Specification for Gypsum Wallboard.
- .3 Association of the Wall and Ceilings Industries International (AWCI)
  - .1 AWCI Levels of Gypsum Board Finish-97.
- .4 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
  - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
  - .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .5 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102-07, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

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

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for gypsum, framing, sealants and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
  - .1 Submit 300 mm size samples of non- standard finishing trim.
- .4 Test and Evaluation Reports: submit test reports in accordance with Section 01 45 00 - Quality Control, from approved independent testing laboratory, certifying partition system complies with sound transmission rating, fire-resistance rating as specified.
- .5 Seismic submittals:
  - .1 Drywall contractor to provide seismic restraint shop drawings. Drawings to be stamped and signed by professional Departmental Representative registered or licensed in the Province of Ontario, Canada.
  - .2 General contractor to provide signed letter that the contracted work has been installed in compliance with the approved shop drawings. Letter to be signed by professional Departmental Representative registered or licensed in the Province of Ontario, Canada.

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

- .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

- .2 Storage and Handling Requirements:
  - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store materials inside, level, under cover. Protect from weather, damage from construction operations and other causes, in accordance with manufacturer's printed instructions.
  - .3 Handle materials to prevent damage to edges or surfaces. Protect metal accessories and trim from being bent or damaged.
  - .4 Store and protect partition materials from nicks, scratches, and blemishes.
  - .5 Replace defective or damaged materials with new.

## **1.5 SITE 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 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Performance / Design Criteria:
  - .1 Partition assembly to be non-combustible construction.
  - .2 Minimum sound transmission class rating of installed panel partition to be STC 45, tested to ASTM E90.
- .2 Non-structural Metal Framing:
  - .1 Non-load bearing channel stud framing: to ASTM C645, 64 mm and 92 mm stud size, roll formed from 25-gauge hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres for stud lengths up to 3400 mm.
  - .2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 32 mm flange height. Top track slotted when attached to underside of structure.
  - .3 Top track to slotted for 62mm and 92mm metal studs at 406mm on centre, track to be 25g steel with white polyester finish, track to be attached to with T-bar clip, provide 90-degree, 135-degree corners and end caps.

- .4 Metal channel stiffener: 19 x 1.4 mm thick cold rolled steel, coated with rust inhibitive coating.
- .3 Gypsum Board:
  - .1 Recycled content: pre-consumer 82%, post-consumer 12%
  - .2 Standard board: to ASTM C1396/C1396M regular, 13mm and 16mm thick x 1200 mm wide x maximum practical length, ends square cut, edges tapered.
  - .3 Metal furring runners, hangers, tie wires, inserts, anchors: to CSA A82.30 galvanized.
  - .4 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
  - .5 Steel tapping screws: to ASTM C1002.
  - .6 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, Zinc, 0.5 mm base thickness, perforated flanges, one piece length per location.

## 2.2 ACCESSORIES

- .1 Acoustical insulation: section 07 21 16 - Blanket Insulation.
- .2 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
  - .1 VOC limit 250 g/L maximum to SCAQMD Rule 1168.
- .3 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.
- .4 Joint compound: to ASTM C475, asbestos-free.
- .5 Mullion trim caps
  - .1 Provide sound barrier mullion trim caps of design, basic profile, materials, and operation indicated. Provide units with capability to accommodate variations in adjacent surfaces.
  - .2 Furnish units in lengths of sufficient additional length to allow for field trimming to required length to match variations in construction tolerances of adjacent systems.
  - .3 Allow for thermal movements from ambient and surface temperature changes.
  - .4 STC 50 or higher.
  - .5 Aluminum Extrusions:
    - .1 Thickness: 3mm.
    - .2 Profile: As selected and approved by Departmental Representative to allow solid attachment and fastening to the partition wall framing.

- .3 Finish, clear anodized finish in accordance with AA-M10 C22 A41 Class I (0.7 to 1.0 thick anodic coating)
- .6 Compressible Foam: Between edge of extrusion and interior face of curtain wall glass.
  - .1 Thickness: Standard 12.7 mm.
  - .2 Colour charcoal

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions prior to partition installation.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

### **3.2 ERECTION OF FRAMING**

- .1 Install steel framing members to receive screw-attached gypsum board in accordance with ASTM C754 except where specified otherwise.
- .2 Align partition tracks at floor and ceiling and secure at 610 mm on centre maximum.
- .3 Place studs vertically at 405 mm on centre and maximum of 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
- .4 Erect metal studding to tolerance of 1:1000.
- .5 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .6 Include two studs extending from floor to ceiling 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.
- .7 Install heavy gauge single jamb studs at openings.

- .8 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.
- .9 Include 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.
- .10 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .11 Extend partitions to ceiling height except where indicated.
- .12 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use double track slip joint.
- .13 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .14 Install insulating strip under studs and tracks around perimeter of sound control partitions.

### **3.3 ERECTION OF GYPSUM BOARD AND ACCESSORIES**

- .1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.
- .2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.
- .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 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles, .
- .5 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
- .6 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .7 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .8 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.
- .9 Install acoustical sealant in sound rated partitions to correspond with tested assembly.

- .10 Install gypsum boards in direction that will minimize number of end-butt joints. Stagger end joints 250 mm minimum.

### **3.4 APPLICATION**

- .1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.
- .2 Apply single layer gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.
- .3 Apply water-resistant gypsum board adjacent to janitors closets. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Do not apply joint treatment on areas to receive tile finish.

### **3.5 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 using contact adhesive for full length.
- .2 Install casing beads around perimeter of suspended ceilings.
- .3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
- .4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- .5 Install access doors to electrical and mechanical fixtures.
  - .1 Rigidly secure frames to furring or framing systems.
- .6 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- .7 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.
- .8 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
- .9 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.
- .10 Level 1 finish for all non-visible areas and plenum areas above ceilings.
- .11 Level 4 finish for remainder.

**3.6 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

**3.7 PROTECTION**

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

**END OF SECTION**



**Part 1 General****1.1 REFERENCES**

- .1 ASTM International
  - .1 ASTM F 710: Practice for Preparing Concrete Floors to Receive Resilient Flooring.
  - .2 ASTM E 648: Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy
  - .3 ASTM E 662: Test Method for Specific Optical Density of Smoke Generated by Solid Materials
  - .4 ASTM F 1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
  - .5 ASTM F 1700: Standard Specification for Solid Vinyl Tile. Class III, Type B Embossed
  - .6 ASTM 2055: Standard Test Method for Determining Size and Squareness of Resilient Floor Tile by Dial Gauge Method
  - .7 ASTM F 386: Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
  - .8 ASTM 2199: Standard Test Method for Determining Dimensional Stability of Resilient Floor Tile after Exposure to Heat
  - .9 ASTM 970: Standard Test for Static Load Limit
  - .10 ASTM 1914: Standard Test Method for Short-Term Indentation and Residual Indentation of Resilient Floor Covering
  - .11 ASTM D2047: Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
  - .12 ASTM F925: Standard Test Method for Resistance to Chemicals of Resilient Flooring
  - .13 ASTM F137: Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus
  - .14 ASTM F1515: Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change
  - .15 ASTM F1514: Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color Change
  - .16 ASTM D 2047, Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring of 0.5 or greater.
- .2 South Coast Air Quality Management District (SCAQMD)

- .1 SCAQMD Rule 1113-13, Architectural Coatings.
- .2 SCAQMD Rule 1168-A2011, Adhesive and Sealant Applications.

## **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

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

## **1.3 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Extra Materials:
  - .1 Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Extra materials one piece and from same production run as installed materials.
  - .3 Identify each roll of sheet flooring and each container of adhesive.
  - .4 Deliver to Departmental Representative, upon completion of the work of this section.
  - .5 Store where directed by Departmental Representative.

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

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect specified materials from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

## **1.5 SITE CONDITIONS**

- .1 Ambient Conditions:

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

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 LVT-1
  - .1 Floating Luxury Vinyl tile: to ASTM F-1700 Class III, B- Embossed.
  - .2 Gauge: 5.0 mm
  - .3 Size: max 235 mm x 1505mm
  - .4 Wear layer: 20 mil (0.5mm)
  - .5 Design: Wood look, textured
  - .6 Recycled Content: 37% post-consumer content, 22% pre-consumer content.
  - .7 Product must have an enhanced urethane wear layer.
  - .8 Use perimeter glue only.
- .2 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.
  - .1 Cove base adhesives:
    - .1 Adhesive: maximum VOC limit 50 g/L to SCAQMD Rule 1168.
- .3 Sub-floor filler and leveler: white premix latex requiring water only to produce cementitious paste as recommended by flooring manufacturer for use with their product.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for resilient sheet flooring 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 and after receipt of written approval to proceed from Departmental Representative.

### **3.2 SITE VERIFICATION OF CONDITIONS**

- .1 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.

### **3.3 PREPARATION**

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

### **3.4 APPLICATION: FLOORING**

- .1 Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system. Maintain extra ventilation for at least 1 month following building occupation.
- .2 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .3 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.
- .4 Cut flooring around fixed objects.
- .5 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.

### **3.5 APPLICATION: BASE**

- .1 Lay out base to keep number of joints at minimum.
- .2 Clean substrate and prime with one coat of adhesive.
- .3 Apply adhesive to back of base.
- .4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
- .5 Install straight and level to variation of 1:1000.

- .6 Scribe and fit to door frames and other obstructions.
- .7 Use compound miter saw with carbide blade 80 teeth of greater.

### **3.6 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
  - .1 Clean flooring base surfaces to flooring manufacturer's printed instructions.

### **3.7 PROTECTION**

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

**END OF SECTION**

**Part 1 General****1.1 RELATED REQUIREMENTS**

- .1 Section 09 65 16 RESILIENT SHEET FLOORING

**1.2 REFERENCES**

- .1 American Association of Textile Chemists and Colorists (AATCC)
  - .1 AATCC Test Method 16-2014, Colorfastness to Light.
  - .2 AATCC Test Method 23-2015, Colorfastness to Burn Gas Fumes.
  - .3 AATCC Test Method 129-2016, Colourfastness to Ozone in the Atmosphere Under High Humidity's.
  - .4 AATCC Test Method 134-2016, Electrostatic Propensity of Carpets.
  - .5 AATCC 165, 2013, Colorfastness to Crocking.
  - .6 AATCC Test Method 171-2014, Carpets: Cleaning of; Hot Water Extraction Method.
  - .7 AATCC Test Method 174-2016, Antimicrobial Activity Assessment of New Carpets.
  - .8 AATCC Test Method 175-2013, Stain Resistance: Pile Floor Coverings.
  - .9 AATCC Test Method 189-2012, Fluorine Content of Carpet Fibers.
- .2 ASTM International
  - .1 ASTM D297-15, Standard Test Methods for Rubber Products-Chemical Analysis.
  - .2 ASTM D1055-09, Specification for Flexible Cellular Materials - Latex Foam.
  - .3 ASTM D1335 12, Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings.
  - .4 ASTM D2646-11, Standard Test Method for Backing Fabric Characteristics of Pile Yarn Floor Coverings.
  - .5 ASTM D1667-05, Standard Specification for Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
  - .6 ASTM D3574-16, Standard Test Methods for Flexible Cellular Materials - Slab, Bonded, and Molded Urethane Foams.
  - .7 ASTM D3936-12, Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering.

- .8 ASTM D5252-15, Standard Practice for the Operation of the Hexapod Drum Tester.
- .9 ASTM D5848-10e1, Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Coverings,
- .10 ASTM E8-16, Test Method for Surface Burning Characteristics of Building Materials.
- .11 ASTM E2471-05. Standard Test Method for Using Seeded-Agar for the Screening Assessment of Antimicrobial Activity in Carpets
- .12 ASTM E648-15e1, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
- .13 ASTM E662-17, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-4.2 No. 22-2004, Textile Test Methods - Colourfastness to Rubbing (Crocking).
  - .2 CAN/CGSB-4.2 No.27.6M-M 91, Textile Test Methods - Flame Resistance - Methenamine Tablet Test for Textile Floor Coverings.
  - .3 CAN/CGSB-4.2 No. 76-94/ISO 2551: 1981, Textile Test Methods - Machine-Made Textile Floor Coverings - Determination of Dimensional Changes Due to the Effects of Varied Water and Heat Conditions.
  - .4 CAN/CGSB-4.2 No.77.1-94/ISO 4919:2000, Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.
  - .5 CAN/CGSB-4.129-93, Carpets for Commercial Use.
  - .6 CAN/CGSB-25.20-95, Surface Sealer Floors.
- .4 Carpet and Rug Institute (CRI)
  - .1 CRI Carpet Installation Standard 104-2015.
- .5 Health Canada
  - .1 C.R.C., c.923-10, Hazardous Products Act - Carpet Regulations, Part II of Schedule 1.
- .6 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .7 National Floor Covering Association (NFCA)
  - .1 National Floor Covering Specification Manual 2007.
- .8 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

- .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
- .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .9 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102-07, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
  - .2 CAN/ULC-S102.2-07, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.

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

- .1 Submit performance specifications at time of tender submission in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit verification to demonstrate compliance with CAN/ULCS102 and CAN/ULCS102.2.
  - .2 Submit proof that carpet has been tested and passed the Indoor Air Quality (IAQ) Carpet Testing Program requirements of the Carpet and Rug Institute. (CRI)
  - .3 Submit manufacturer's instructions, printed product literature and data sheets for each carpet protection and adhesive and include product characteristics, performance criteria, physical size, finish and limitations.
  - .4 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Shop Drawings:
  - .1 Information on shop drawings to indicate:
    - .1 Nap: direction, open edges, special patterns.
    - .2 Cut-outs: show locations where cut-outs are required.
    - .3 Edgings: show location of edge moldings and edge bindings.
- .4 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit duplicate samples of each type of carpet tile specified and duplicate tiles for each colour selected, base.
- .5 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .6 Test and Evaluation Reports:



- .1 Certified test reports showing compliance with specified performance characteristics and physical properties.
- .7 Manufacturer's Instructions: submit manufacturer's installation storage instructions.
- .8 Manufacturers Reports:
  - .1 Manufacturer's Field Reports: submit manufacturer's written reports within 3 days of review, verifying compliance with specifications.
- .9 Qualification Statements:
  - .1 Compliance: to CAN/ULC-S102.2.
  - .2 Tuft bind: meets requirements of CAN/CGSB-4.129 when tested to CAN/CGSB-4.2 No.77.1.

#### **1.4 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for installed products for incorporation into manual.
- .3 Include information on recycling of carpet including manufacturer's reprocessing program. Indicate which portions of material are recyclable.
- .4 Carpet Reclamation:
  - .1 Schedule of carpet reclamation activities indicating following:
    - .1 Vacuum used carpet before removal.
    - .2 Detailed sequence of removal work.
    - .3 Inventory of items to be removed and reclaimed.
    - .4 Proposed packing and transportation measures.
  - .2 Reclamation agencies' records indicating receipt and disposition of used carpet.
  - .3 Certification: Reclamation Agency to verify in writing that used carpet was removed and recycled in accordance with fibre manufacturers' reclamation program.
    - .1 Record off-site removal of debris and materials and provide following information regarding removed materials.
      - .1 Time and date of removal.
      - .2 Type of material.
      - .3 Weight and quantity of materials.
      - .4 Final destination of materials.

**1.5 EXTRA MATERIALS**

- .1 Extra stock materials deliver extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section .01 78 00 - Closeout Submittals
  - .1 Quantity: provide minimum 2% of:
    - .1 Each type of carpet tile.
    - .2 Each type of carpet base.
  - .2 Deliver to Departmental Representative and store where directed by Departmental Representative.

**1.6 QUALITY ASSURANCE**

- .1 Regulatory Requirements:
  - .1 Prequalification: to CAN/CGSB-4.2 No. 27.6.

**1.7 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials 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 adhesive in original containers or wrapping with manufacturer's seals and labels intact.
  - .4 Store and protect carpet tile and accessories in location as directed by Departmental Representative.
  - .5 Store carpet and adhesive at minimum temperature of 18 degrees C and relative humidity of maximum 65% for minimum of 48 hours before installation.
  - .6 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
  - .7 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
  - .8 Replace defective or damaged materials with new.

**1.8 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 Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans. and Departmental Representative will co-ordinate operation of ventilation system during installation of carpet.
  - .2 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.

**Part 2 Products****2.1 MATERIALS****.1 Description:**

- .1 Adhesives: VOC limit 150 g/L maximum to SCAQMD Rule 1168.
- .2 Sealer: in accordance with manufacturer's recommendations for surface conditions:
  - .1 VOC limit: 100 g/L maximum to SCAQMD Rule 1113
- .3 Carpet and Accessories:
  - .1 5% minimum Post-consumer recycled content.
  - .2 30% minimum Pre-consumer recycled content.

**2.2 Resilient Woven Flooring (Modular Tiles) – C1**

- .1 Pill Test / DOC-FF-1-70 (ASTM D-2589) - Requirement: Pass
- .2 Flooring Radiant Panel / ASTM E-648 - Requirement: Class I (Above .45 w/cm)

- .3 Optical Smoke Density: Rating not more than 400
- .4 Lightfastness: Rating of not less than 5 on International Grey Scale after 40 SFU's when tested in accordance with AATCC Test Method 16E.
- .5 Dimensional Stability; Change not greater than 0.01"
- .6 Impact Insulation Classification (ASTM E 492-09): IIC Rating of 59
- .7 Slip Resistance (ASTM 1028-96): Complies with ADA Guidelines for level surface
- .8 Face Fabric: Woven Vinyl fabric
- .9 Backing: Felt backing system comprising recycled polyester and polyurethane
- .10 Total Weight (Nominal Average): 8.5- 9.5 ounce / square foot
- .11 Standard Size: 457mm X 457mm approx. (45.7cm x 45.7cm)
- .12 Thickness: Manufacture's standard.
- .13 Testing Specifications - Pill Test: Yes
- .14 Testing Specifications - Flooring Radiant Panel: Class 1
- .15 Testing Specifications - Smoke Density: Less than 450 flaming (ASTM E 662)
- .16 Recycled content: Minimum of 50% recycled content with 7% renewable content
- .17 Colors and Patterns: Departmental Representative to select from manufacturers full range.

## **2.3 PERFORMANCE**

- .1 Carpet: to CAN/CGSB-4.2 No 27.6 M91 and as follows.
  - .1 Flammability: certified for flammability to Health Canada regulations under "Hazardous Products - Carpet Regulations", Part II of Schedule 1.
  - .2 Flame Spread: maximum flame spread rating 300, maximum smoke developed classification 500, when tested to CAN/ULC-S102.2.
  - .3 Smoke Development: 450 or less per ASTM E662.
- .2 Carpet to: CAN/CGSB-4.129M, CAN/CGSB-4.161M and as follows
- .3 Aachen/ISO 2551 Dimensional Stability, maximum .15 % change
- .4 Pile Density (calculation not test) - minimum 10 Kilotex. Provide calculations of determined kilotex.
- .5 Appearance Retention Hexapod Drum Test, ASTM D5252 for 12,000 cycles, minimum rating of 3.0 using CRI TM-101 Reference Scales

- .6 Dry Breaking Strength: to ASTM D2646, minimum acceptable tear strength in both length and width:
  - .1 11.3 kg for carpets installed by glue down installation.
- .7 Wear: maximum 10% of pile face fiber by weight for 15 years.
- .8 Edge Ravel: none for 15 years.
- .9 Static Resistance: permanent static control to AATCC 134, 3000 V maximum at 20% RH and 22 degrees C.
- .10 Static Generation: less than 3.0 kV per AATCC 134 for 15 years.
- .11 Tuft Bind: Tuft Lock: to ASTM D1335, minimum acceptable 3.6 for loop pile product.
- .12 De-lamination of Secondary Backing: Lamination Strength of Secondary Backing: to ASTM D3936, minimum acceptable peel strength of 1.6 kg/25 mm.
- .13 Stain resistance: to AATCC 175, 8.
- .14 Soil Resistance: Fluorine Durability Level to AATCC 189.
- .15 Colourfastness to light: to AATCC 16.
- .16 Colourfastness to atmosphere: to AATCC 23.
- .17 Colourfastness to crocking: to AATCC 165.
- .18 ASTM E2471-05. Standard Test Method for Using Seeded-Agar for the Screening Assessment of Antimicrobial Activity in Carpets

## 2.4 FABRICATION

- .1 Modular carpet tile
- .2 Face construction:
  - .1 Level Loop.
- .3 Pile Surface Appearance:
  - .1 C-1, Field Carpet: Refer to Interior Design drawings for details.
  - .2 C-2, Accent Carpet: Refer to Interior Design drawings for details.
  - .3 C-3, Accent Carpet: Refer to Interior Design drawings for details.
- .4 Pile fibre: to CAN/CGSB-4.129.
  - .1 Nylon: BCF- bulked continuous filament.
    - .1 Type: Nylon 6 or Nylon 6.6.
    - .2 Face Fiber Denier: minimum 18 DFP (denier per filament)
    - .3 Fiber shape modification ratio of: 1.9 min to 2.2 max.
- .5 Pile weight:

- .1 Minimum 678 g/sq. m.
- .6 Pile density factor:
  - .1 Minimum 10 Kilotex/cm<sup>2</sup>
- .7 Dyeing Method: 100% solution dyed.
- .8 Tufted Carpet Backing: to CAN/CGSB-4.129.
  - .1 Primary backing: non-woven
- .9 Secondary and Unitary Backings: PVC, polyolefin and other polymeric systems
  - .1 Density: as per ASTM D 1667
  - .2 Dimensional Stability: ISO 2551 (Aachen Test), maximum 0.15% change.
  - .3 Delamination: ASTM D3936: minimum 5N/cm
- .10 Stitches: 35 pu/100 mm.
- .11 Gauge: 47.2 rows/ 100 mm
- .12 Finished Pile Height: minimum 4.1 mm average.
- .13 Performance Rating: 3.5 minimum at 12,000 cycles to Hexapod test.

## **2.5 ACCESSORIES**

- .1 Base: .
  - .1 See section 09 65 16 Resilient Sheet Flooring.
- .2 Adhesive:
  - .1 Pressure Sensitive Type: recommended by carpet tile manufacturer for direct glue down installation of specialty backed carpet tiles.
  - .2 On site application VOC limit: 150 g/L maximum to SCAQMD Rule 1168.
  - .3 Adhesive in compliance with CCD-152.
- .3 Transition Moldings:
  - .1 Carpet edge / reducer strip: applies to transitions varying height.
- .4 Carpet protection: non-staining heavy duty kraft paper.
- .5 Subfloor patching compound: Portland cement base filler, mix with latex to form cementitious paste.

**Part 3 Execution****3.1 EXAMINATION**

- .1 Examine conditions, substrates and work to receive work of this Section.
- .2 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts 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 and after receipt of written approval to proceed from Departmental Representative.

**3.2 PREPARATION**

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

- .2 Maintain possession of removed used carpet.
- .3 Remove used tiles and pack in trailer. Use effective packing techniques to maximize amount of material in container.
- .4 Sort only clean, dry carpet tiles for reclamation. Clean is defined as carpet free from demolition debris, asbestos contamination, garbage, knife blades and tack strips.

### **3.3 INSTALLATION**

- .1 Co-ordinate tile carpeting work with work of other trades, for proper time and sequence to avoid construction delays.
- .2 Install carpet tile after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets are installed.
- .3 Install carpet tile as per manufacturer's recommendation. This can include quarter-turn 90-degree format, monolithic, random, quarter turn ashlar, horizontal, herringbone or vertical ashlar.
- .4 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.
- .5 Apply thin film of pressure-sensitive adhesive according to manufacturer's recommendations.
- .6 Ensure finished installation presents smooth wearing surface free from conspicuous seams, burring and other faults.
- .7 Use material from same dye lot.
  - .1 Ensure colour, pattern and texture match within visual areas.
  - .2 Maintain constant pile direction.
- .8 Fit around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
- .9 Extend carpet tiles into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- .10 Install carpet tiles smooth and free from bubbles, puckers, and other defects.
- .11 Protect exposed carpet tile edges at transition to other flooring materials with suitable transition strips.

### **3.4 SITE QUALITY CONTROL**

- .1 Site Tests and Inspections:



- .1 Co-ordinate site test with Section 01 45 00 - Quality Control.

### **3.5 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
    - .1 Vacuum carpets clean immediately after completion of installation.

### **3.6 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Prohibit traffic on carpet for period of 24 hours minimum after installation and until adhesive is cured.
- .3 Install carpet protection to satisfaction of Departmental Representative.
- .4 Repair damage to adjacent materials caused by tile carpeting installation.

**END OF SECTION**

**Part 1        General****1.1        RELATED REQUIREMENTS**

- .1        Section 09 21 99 PARTITIONS FOR MINOR WORKS

**1.2        REFERENCES**

- .1        ASTM International
  - .1        ASTM E 84-16, Standard Test Method for Surface Burning Characteristics of Building Materials
  - .2        ASTM D92- 16b, Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester
  - .3        ASTM D522, Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings
  - .4        ASTM D523- 14, Standard Test Method for Specular Gloss
  - .5        ASTM D2805-11, Standard Test Method for Hiding Power of Paints by Reflectometry
  - .6        ASTM D2486-06, Standard Test Methods for Scrub Resistance of Wall Paints
  - .7        ASTM D2801-69, Method of Test for Leveling Characteristics of Paints by Draw-Down Method
  - .8        ASTM D3450-15, Standard Test Method for Washability Properties of Interior Architectural Coatings
  - .9        ASTM D4400-15, Standard Test Method for Plastics: Dynamic Mechanical Properties Melt Rheolog
- .2        Department of Justice Canada (Jus)
  - .1        Canadian Environmental Protection Act (CEPA), 1999, c. 33
- .3        Environmental Protection Agency (EPA)
  - .1        EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 - 1995, (for Surface Coatings).
- .4        Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1        Material Safety Data Sheets (MSDS).
- .5        Master Painters Institute (MPI)
  - .1        MPI Architectural Painting Specifications Manual, 2004.
- .6        National Fire Code of Canada - 1995

- .7 Society for Protective Coatings (SSPC)
  - .1 SSPC Painting Manual, Volume Two, 8th Edition, Systems and Specifications Manual.
- .8 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

### **1.3 QUALITY ASSURANCE**

- .1 Mock-Ups:
  - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
    - .1 Prepare and paint rooms 04010, 19154 to specified requirements, with specified paint or coating showing selected colours, gloss/sheen, textures.
    - .2 Mock-up will be used:
      - .1 To judge workmanship, substrate preparation, operation of equipment and material application and workmanship to MPI Architectural Painting Specification Manual standards.
    - .3 Allow 24 hours for inspection of mock-up before proceeding with work.
    - .4 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.
  - .2 Health and Safety:
    - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

### **1.4 SCHEDULING**

- .1 Submit work schedule for various stages of painting to Departmental Representative for review. Submit schedule minimum of 48 hours in advance of proposed operations.
- .2 Obtain written authorization from Departmental Representative for changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants.

### **1.5 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:

- 
- .1 Submit product data and instructions for each paint and coating product to be used.
  - .2 Submit product data for the use and application of paint thinner.
  - .3 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOCs during application and curing.
- .3 Samples:
- .1 Submit full range colour sample chips to indicate where colour availability is restricted.
  - .2 Submit duplicate mm sample panels of each clear coating with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on following substrate materials:
    - .1 Gypsum board for finishes over gypsum board and other smooth surfaces.
    - .2 All substituted products to be submitted with manufacturers' sample of original specification.
  - .3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.
  - .4 Test reports: submit certified test reports for paint from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
    - .1 Lead, cadmium and chromium: presence of and amounts.
    - .2 Mercury: presence of and amounts.
    - .3 Organochlorines and PCBs: presence of and amounts.
  - .5 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .6 Manufacturer's Instructions:
    - .1 Submit manufacturer's installation application instructions.
  - .7 Closeout Submittals: submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals include following:
    - .1 Product name, type and use.
    - .2 Manufacturer's product number.
    - .3 Colour numbers.

**1.6 MAINTENANCE**

- .1 Extra Materials:
  - .1 Deliver to extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals.
  - .2 Quantity: provide one - four litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish system.
  - .3 Delivery, storage and protection: comply with Departmental Representative requirements for delivery and storage of extra materials.

**1.7 DELIVERY, STORAGE AND HANDLING**

- .1 Acceptance at Site:
  - .1 Identify products and materials with labels indicating:
    - .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.
- .2 Remove damaged, opened and rejected materials from site.
- .3 Storage and Protection:
  - .1 Provide and maintain dry, temperature controlled, secure storage.
  - .2 Store materials and supplies away from heat generating devices.
  - .3 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.
- .4 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
- .5 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.
- .6 Remove paint materials from storage only in quantities required for same day use.
- .7 Waste Management and Disposal:
  - .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

- .2 Collect and separate for disposal polystyrene packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan (WMP).
- .3 Separate for reuse and place in designated containers Steel waste in accordance with Waste Management Plan (WMP).
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Handle and dispose of hazardous materials in accordance with CEPA, regulations.
- .6 Ensure emptied containers are sealed and stored safely.
- .7 Unused paint materials must be disposed of at official hazardous material collections site as approved by Departmental representative.
- .8 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) 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.
- .9 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
- .10 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .11 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:
  - .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 approved legal manner in accordance with hazardous waste regulations.
  - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
- .12 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

- .13 Set aside and protect surplus and uncontaminated finish materials: Deliver to or arrange collection by employees, individuals, or organizations for verifiable re-use or re-manufacturing.

## **1.8 SITE CONDITIONS**

- .1 Heating, Ventilation and Lighting:
  - .1 Ventilate enclosed spaces.
  - .2 Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
  - .3 Provide continuous ventilation for seven days after completion of application of paint.
  - .4 Coordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
  - .5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
  - .6 Provide minimum lighting level of 500 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
  - .1 Unless pre-approved written approval by specifying body and product manufacturer, perform no painting when:
    - .1 Ambient air and substrate temperatures are below 10 degrees C.
    - .2 Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.
    - .3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.
    - .4 The relative humidity is under 85% or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.
    - .5 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.
  - .2 Perform painting work when maximum moisture content of the substrate is below:

- .1 15% for wood.
  - .2 12% for plaster and gypsum board.
- .3 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".
- .4 Test concrete, masonry and plaster surfaces for alkalinity as required.
- .3 Surface and Environmental Conditions:
  - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
  - .2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.
  - .3 Apply paint when previous coat of paint is dry or adequately cured.
- .4 Additional interior application requirements:
  - .1 Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.
  - .2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- .2 Provide paint materials for paint systems from single manufacturer.
- .3 Conform to latest MPI requirements for interior painting work including preparation and priming.
- .4 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI Architectural Painting Specification Manual "Approved Product" listing.
- .5 Linseed oil, shellac, and turpentine: highest quality product from approved manufacturer listed in MPI Architectural Painting Specification Manual, compatible with other coating materials as required.



- .6 Use MPI listed materials having minimum E3 rating where indoor air quality (odour) requirements exist.
- .7 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids:
  - .1 Water soluble.
  - .2 Non-flammable.
  - .3 Manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
  - .4 Manufactured without compounds which contribute to smog in the lower atmosphere.
  - .5 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
- .8 Formulate and manufacture water-borne surface coatings with no aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .9 Flash point: 61.0 degrees C or greater for water-borne surface coatings and recycled water-borne surface coatings.
- .10 Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:
  - .1 Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.
  - .2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.

## 2.2 COLOURS

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

**2.3 MIXING AND TINTING**

- .1 Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Departmental Representative for tinting of painting materials.
- .2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
- .3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
- .4 Thin paint for spraying in accordance with paint manufacturer's instructions.
- .5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

**2.4 GLOSS/SHEEN RATINGS**

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

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

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

**2.5 INTERIOR PAINTING SYSTEMS**

- .1 Metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.
  - .1 INT 5.3M - High performance architectural latex GL-4 finish.
- .2 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:
  - .1 INT 9.2B - High performance architectural latex Eggshell GL-3 finish.

- .3 Plaster and gypsum board: gypsum ceilings, drywall, "sheet rock type material", and textured finishes:

- .1 INT 9.2A - Latex matte finish- GL-1.

## **2.6 SOURCE QUALITY CONTROL**

- .1 Perform following tests on each batch of consolidated post-consumer material before surface coating is reformulated and canned. Testing by laboratory or facility which has been accredited by Standards Council of Canada.
  - .1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.
  - .2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.
  - .3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

## **Part 3 Execution**

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

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

### **3.2 GENERAL**

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

### **3.3 EXAMINATION**

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. 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". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- .3 Maximum moisture content as follows:
  - .1 Stucco, plaster and gypsum board: 12%.
  - .2 Wood: 15%.

### 3.4 **PREPARATION**

- .1 Protection:
  - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Departmental Representative.
  - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
  - .3 Protect factory finished products and equipment.
  - .4 Protect passing pedestrians, and general public in and about the building.
- .2 Surface Preparation:
  - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
  - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
  - .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.
- .3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
  - .1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloth or compressed air.
  - .2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
  - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

- .4 Allow surfaces to drain completely and allow to dry thoroughly.
- .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
- .6 Use trigger operated spray nozzles for water hoses.
- .7 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
- .4 Clean following surfaces with high pressure water washing.
- .5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.
- .6 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
  - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
  - .2 Apply wood filler to nail holes and cracks.
  - .3 Tint filler to match stains for stained woodwork.
- .7 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .8 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by vacuum cleaning.
- .9 Touch up of shop primers with primer as specified.
- .10 Do not apply paint until prepared surfaces have been accepted by Departmental representative.

### 3.5 APPLICATION

- .1 Method of application to be as approved by Departmental Representative. Apply paint by air sprayer. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
  - .1 Apply paint in uniform layer using brush and/or roller type suitable for application.
  - .2 Work paint into cracks, crevices and corners.

- .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
- .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
- .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .5 Sand and dust between coats to remove visible defects.
- .6 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.
- .7 Finish closets and alcoves as specified for adjoining rooms.
- .8 Finish top, bottom, edges and cut-outs of doors after fitting as specified for door surfaces.

### **3.6 MECHANICAL/ELECTRICAL EQUIPMENT**

- .1 Do not paint over nameplates and or signage plates.
- .2 Keep sprinkler heads free of paint.
- .3 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.

### **3.7 SITE TOLERANCES**

- .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
- .2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
- .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

### **3.8 FIELD QUALITY CONTROL**

- .1 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.
- .2 Advise Departmental Representative when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .3 Cooperate with inspection firm and provide access to areas of work.
- .4 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

**END OF SECTION**