

**Part 1            General**

**1.1                REFERENCES**

- .1    Aluminum Association (AA)
  - .1        AA DAF 45-03(R2009), Designation System for Aluminum Finishes.
- .2    ASTM International
  - .1        ASTM C475-02(2007), Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - .2        ASTM C514-04(2009e1), Standard Specification for Nails for the Application of Gypsum Board.
  - .3        ASTM C557-03(2009)e1, Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
  - .4        ASTM C840-08, Standard Specification for Application and Finishing of Gypsum Board.
  - .5        ASTM C954-07, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
  - .6        ASTM 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.
  - .7        ASTM C1047-09, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
  - .8        ASTM C1280-99, Standard Specification for Application of Gypsum Sheathing.
  - .9        ASTM C1177/C1177M-08, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
  - .10       ASTM C1178/C1178M-08, Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
  - .11       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    Canadian General Standards Board (CGSB)
  - .1        CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
  - .2        CAN/CGSB-71.25-M88, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.
- .5    Underwriters' Laboratories of Canada (ULC)
  - .1        CAN/ULC-S102-07, Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.

## **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

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

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

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store gypsum board assemblies materials level indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect gypsum board assemblies from nicks, scratches, and blemishes.
  - .3 Protect from weather, elements and damage from construction operations.
  - .4 Handle gypsum boards to prevent damage to edges, ends or surfaces.
  - .5 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse as specified in in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **1.4 AMBIENT CONDITIONS**

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

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Standard board: to ASTM C1396/C1396M Type X, lightweight for bulkheads (rooms 667, 658, 650, 651), thickness as indicated, 1200 mm wide x maximum practical length, ends square cut, edges rounded and bevelled.
- .2 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.

- .3 Resilient drywall furring : 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.
- .4 Angles: identical fabrication as metal studs 38 x 38mm x width of the core, thickness of 1.6mm minimum.
- .5 Nails: to ASTM C514.
- .6 Steel drill screws: to ASTM C1002.
- .7 Laminating compound: as recommended by manufacturer, asbestos-free.
- .8 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, zinc-coated by electrolytic process, 0.5 mm base thickness, perforated flanges, one piece length per location.
- .9 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
  - .1 Acoustic sealant: in accordance with Section 07 92 00 - Joint Sealants.
- .10 Insulating strip: rubberized, moisture resistant, 3 mm thick open cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.
- .11 Joint compound: to ASTM C475, asbestos-free.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for gypsum board assemblies installation in accordance with manufacturer's written instructions.
  - .1 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**

- .1 Do application and finishing of gypsum board to ASTM C840 except where specified otherwise.
- .2 Do application of gypsum sheathing to ASTM C1280.
- .3 Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C840 except where specified otherwise.
- .4 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

- .5 Install work level to tolerance of 1:1200.
- .6 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles, .
- .7 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
- .8 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .9 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .10 Install wall furring for gypsum board wall finishes to ASTM C840, except where specified otherwise.
- .11 Furr openings and around built-in equipment, cabinets, access panels, , on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- .12 Furr duct shafts, beams, columns, pipes and exposed services where indicated.
- .13 Erect drywall resilient furring transversely across studs or between the layers of gypsum board, spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 38 mm common nail 25 mm drywall screw.
- .14 Install 150 mm continuous strip of 12.7 mm gypsum board along base of partitions where resilient furring installed.

### 3.3

#### APPLICATION

- .1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work have been approved.
- .2 Apply a single or double layer gypsum board to metal furring or framing using screw fasteners for all layers. Maximum spacing of screws 300 mm on centre.
- .3 Apply 12 mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, , in partitions where perimeter sealed with acoustic sealant.
- .4 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .5 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.
- .6 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

### 3.4 INSTALLATION

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre 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 Locate control joints at approximate 10 m spacing on long corridor runs.
- .5 Install control joints straight and true.
- .6 Install access doors to electrical and mechanical fixtures specified in respective sections.
  - .1 Rigidly secure frames to furring or framing systems.
- .7 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.
- .8 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- .9 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
- .10 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .11 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.
- .12 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.
- .13 Mix joint compound slightly thinner than for joint taping.
- .14 Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.
- .15 Allow skim coat to dry completely.
- .16 Remove ridges by light sanding or wiping with damp cloth.

### 3.5 CLEANING

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

- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.6 PROTECTION**

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

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 09 22 14 - Furring and Lathing.
- .2        Section 09 21 16 - Gypsum Board Assemblies.

**1.2                REFERENCES**

- .1        American Society for Testing and Materials International, (ASTM).
  - .1        ASTM C645-00, Specification for Nonstructural Steel Framing Members.
  - .2        ASTM C754-00, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .2        Canadian General Standards Board (CGSB).
  - .1        CAN/CGSB-1.40-97, Primer, Structural Steel, Oil Alkyd Type.
- .3        Environmental Choice Program (ECP).
  - .1        CCD-047a -98, Paints - Surface Coatings.
  - .2        CCD-048-98, Surface Coatings - Recycled Water-borne.
- .4        Expanded Metal Manufacturers Association
  - .1        EMMA 557-99, Standard for Expanded Metal, Introduction, Product Selection Considerations, Terminology, Manufacturing Process, Manufacturing Tolerances and Applications.

**1.3                QUALITY ASSURANCE**

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

**1.4                WASTE MANAGEMENT AND DISPOSAL**

- .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 packaging materials at appropriate recycling facilities.
- .3        Collect and separate for disposal packaging material for recycling in accordance with Waste Management Plan.

- .4 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.
- .5 Divert unused gypsum materials from landfill to recycling facility approved by Departmental Representative.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Non-load bearing channel stud framing: to ASTM C645, stud size as indicated on drawings, roll formed from 0.91 mm (20 gauge) thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board and flattened metal mesh.
  - .1 Knock-out service holes at 460 mm centres.
- .2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 32 mm flange height.
- .3 Acoustical sealant: type 3 in accordance with Section 07 92 10.
- .4 Insulating strip: rubberized, moisture resistant 3 mm thick foam strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.
- .5 For secure walls :
  - .1 Flat expanded metal mesh : 1.78 mm thickness, diamond openings of 45mm x 16mm, 68% open area, style 19mm (0.75-#10(13)-F), according to standard ASTM F1267, type 1, class 1.
  - .2 Protective fender washers of 38mm exterior diameter and 4.8mm interior diameter, with ultragrip steel rivets of 4.8mm diameter or pilferprof.

## **Part 3 Execution**

### **3.1 ERECTION**

- .1 Align partition tracks at floor and ceiling and secure at 600 mm on centre maximum.
- .2 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- .3 Place studs vertically at 400 mm on centre and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
- .4 Erect metal studding to tolerance of 1:1000.
- .5 Attach studs to bottom and ceiling track using screws.
- .6 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.

- .7 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .8 Provide 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.
- .9 Install heavy gauge single jamb studs at openings.
- .10 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
- .11 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.
- .12 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .13 Extend partitions to ceiling height except where noted otherwise on drawings.
- .14 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use 50 mm leg ceiling tracks.
- .15 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .16 Install two continuous insulating strips under ceiling track and the ceiling tee bar.
- .17 Install two continuous insulating strips under bottom track of ceiling wall and the ceiling tee bar.
- .18 Install two continuous beads of acoustical sealant under studs and tracks around perimeter of sound control partitions.
- .19 For secure walls :
  - .1 Fasten flattened metal mesh to metal studs according to location identified on plans, with protective fender washers and ultragrip steel rivets at 200 mm o/c.
  - .2 Double studs, slab to slab, at walls corners.

### **3.2 CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

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**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Section 09 21 16 – Gypsum Board Assemblies  
              Section 07 92 00 – Joint Sealants

**1.2                REFERENCES**

- .1            American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
  - .1            ANSI A108.1-99, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
  - .2            CTI A118.3-92, Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).
  - .3            CTI A118.4-92, Specification for Latex Cement Mortar (included in ANSI A108.1).
  - .4            CTI A118.5-92, Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (included in ANSI A108.1).
  - .5            CTI A118.6-92, Specification for Ceramic Tile Grouts (included in ANSI A108.1).
- .2            American Society for Testing and Materials International (ASTM)
  - .1            ASTM C144-04, Specification for Aggregate for Masonry Mortar.
  - .2            ASTM C207-06, Specification for Hydrated Lime for Masonry Purposes.
  - .3            ASTM C847-06, Specification for Metal Lath.
  - .4            ASTM C979-0, Specification for Pigments for Integrally Coloured Concrete.
- .3            Canadian General Standards Board (CGSB)
  - .1            CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
  - .2            CGSB 71-GP-22M-78(AMEND.), 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            Canada Green Building Council (CaGBC)
  - .1            LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum 2007).
  - .2            LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.
- .5            Canadian Standards Association (CSA International)

- .1 CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.
- .2 CAN/CSA-A3000-03(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .6 South Coast Air Quality Management District (SCAQMD), California State
  - .1 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.
- .7 Terrazzo Tile and Marble Association of Canada (TTMAC)
  - .1 Tile Specification Guide 09 30 00 2006/2007, Tile Installation Manual.
  - .2 Tile Maintenance Guide 2000.

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

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Include manufacturer's information on:
    - .1 Ceramic tile, marked to show each type, size, and shape required.
    - .2 Chemical resistant mortar and grout.
- .3 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Base tile: submit duplicate, 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.

### **1.4 QUALITY ASSURANCE**

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

### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal:
  - .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

### **1.6 AMBIENT CONDITIONS**

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

## 1.7 MAINTENANCE

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

## 1.8 ACCEPTABLE MATERIALS OR PRODUCTS

- .1 Where materials are specified by trade name refer to the “Instructions to Tenderers” for a procedure to be followed in applying for approval of alternatives.

## Part 2 Products

### 2.1 WALL TILES

- .1 **CER1** : Glass mosaic mural ceramic, matte finish, according to CAN/CGSB-75.1, slightly rounded edges, uniform color and texture ; 300 mm x 300 mm x 6mm module with staggered assembly of 23mm x 23mm units.
  - Acceptable products :
    - 1. Mosaic " PICA", color "crème" by Céra Grès.

### 2.2 MORTAR AND ADHESIVE MATERIALS

- .1 Tilesetting mortar for walls: high performance adhesive as per ANSI A136.1 Type 1, for gypsum substrate.
  - Acceptable products :
    - 1. "# 200 Type 1" by Flextile.
    - 2. "Ultra/Mastic ECO" by Mapei.
    - 3. Or replacement product approved by addenda in conformity with the Instructions to Bidders.

### 2.3 GROUT

- .1 Grout for ceramic tile walls: Portland cement base, polymer additives with high adherence and resistance, mildew resistant, for mixing with water, as per ANSI A108.6; colours to be selected from manufacturer’s color chart and approved by Departmental Representative.
  - Acceptable products :
    - 1. "# 500" by Flextile.
    - 2. "KER 800" by Mapei.
    - 4. Or replacement product approved by addenda in conformity with the Instructions to Bidders.

## **2.4 ACCESSORIES**

- .1 Sealant: in accordance with Section 07 92 00 - Joint Sealants.
  - .1 Sealants: maximum VOC limit 250 g/L to SCAQMD Rule 1168.

## **2.5 CLEANING COMPOUNDS**

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

## **Part 3 Execution**

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

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

### **3.2 WORKMANSHIP**

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007, "Ceramic Tile", except where specified otherwise.
- .2 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 tiles uniform to match width of mosaic tiles, 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 Allow minimum 24 hours after installation of tiles, before grouting.
- .11 Clean installed tile surfaces after installation and grouting cured.

### **3.3 WALL TILE**

- .1 Install in accordance with TTMAC detail.

### **3.4 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1            Section 09 53 00.01 - Acoustical Suspension.

**1.2                REFERENCES**

- .1            American Society for Testing and Materials International (ASTM)
  - .1            ASTM C423-02a, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
  - .2            ASTM E1264-98, Standard Classification for Acoustical Ceiling Products.
  - .3            ASTM E1477-98a(2003), Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
- .2            Canadian General Standards Board (CGSB)
  - .1            CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction and Amendment No. 1 1988.
  - .2            CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
- .3            Canadian Standards Association (CSA International)
  - .1            CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
- .4            Department of Justice Canada (Jus)
  - .1            Canadian Environmental Protection Act (CEPA), 1999, c. 33.
  - .2            Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
- .5            Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1            Material Safety Data Sheets (MSDS).
- .6            Underwriter's Laboratories of Canada (ULC)
  - .1            CAN/ULC-S102-2003, Surface Burning Characteristics of Building Materials and Assemblies.

**1.3                SUBMITTALS**

- .1            Submit samples in accordance with Section 01 33 00 - Submittal Procedures .
- .2            Product Data: submit WHMIS MSDS.
- .3            Submit duplicate 2 samples of each type acoustical units.

**1.4                QUALITY ASSURANCE**

- .1            Regulatory Requirements:
  - .1            Fire-resistance rated floor/ceiling and roof/ceiling assembly: certified by Canadian Certification Organization accredited by Standards Council of Canada.

- .2 Mock-up:
  - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control .
  - .2 Construct mock-up 10 m<sup>2</sup> minimum of each type acoustical panel tile ceiling including one inside corner and one outside corner.
  - .3 Construct mock-up where directed.
  - .4 Allow 24 hours for inspection of mock-up by Departmental Representative before proceeding with ceiling work.
  - .5 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of the finished work.
- .3 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements .

### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Protect on site stored or installed absorptive material from moisture damage.
- .2 Store extra materials required for maintenance, where directed by Departmental Representative.
- .3 Waste Management and Disposal:
  - .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction /Demolition Waste Management and Disposal.
  - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
  - .3 Collect and separate for disposal packaging material for recycling in accordance with Waste Management Plan (WMP).
  - .4 Ensure emptied containers are sealed and stored safely in accordance with Section 01 35 43 - Environmental Procedures .
  - .5 Fold up metal anding, flatten and place in designated area for recycling.

### **1.6 ENVIRONMENTAL REQUIREMENTS**

- .1 Permit wet work to dry before beginning to install.
- .2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20 -40 % before and during installation.
- .3 Store materials in work area 48 hours prior to installation.

### **1.7 EXTRA MATERIALS**

- .1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals .
- .2 Provide acoustical units amounting to 2 % of gross ceiling area for each pattern and type required for project.

- .3 Ensure extra materials are from same production run as installed materials.
- .4 Clearly identify each type of acoustic unit, including colour and texture.
- .5 Deliver to Departmental Representative, upon completion of the work of this section.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Acoustic units for suspended ceiling system: to ASTM E1264 .
  - .1 Acoustic tiles in rooms (**type 1**)
    - .1 Mineral fibre with acoustical membrane.
    - .2 Acoustical performance: CRB minimum 0.70
    - .3 Fire rate: classe A
    - .4 Textures : to match sample of «Ultima #1913» tile by Armstrong.
    - .5 Luminous reflectance: 0.90 according to standard ASTM E1477
    - .6 Flame-spread rating : 25 or less.
    - .7 Smoke developed classification : 50 or less.
    - .8 Profile: square lay-in
    - .9 Color: white
    - .10 Dimension: 600 x 1200 x 19 mm thick.
    - .11 Finish: acrylic latex paint shop applied
  - .2 Acoustic tiles in open areas 243 et 257 (**type 2**)
    - .1 Mineral fibre with acoustical membrane.
    - .2 Acoustical performance: CRB minimum 0.90
    - .3 Fire rate: classe A
    - .4 Textures : to match sample of «Optima Vector for open areas #3906» tile by Armstrong.
    - .5 Luminous reflectance: 0.90 according to standard ASTM E1477
    - .6 Flame-spread rating : 25 or less.
    - .7 Smoke developed classification : 50 or less.
    - .8 Profile: à rainures pour suspentes dissimulées.
    - .9 Color: white
    - .10 Dimensions: 600 x 1200 x 22 mm thick cut to required dimensions or according to dimensions on plans.
    - .11 Finish: acrylic latex paint shop applied
- .2 Adhesive: low VOC type recommended by acoustic unit manufacturer.

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**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 OF PANELS ON ACOUSTICAL SUSPENSION**

- .1 Install acoustical panels and tiles in ceiling suspension system according to manufacturer's recommendations. Ensure that all elements are perfectly supported at their extremities.
- .2 Cut acoustical panels in accordance to profile of adjoining work. Join end to end joints in an adjusted manner.
- .3 Replace all damaged element.

**3.3 INSTALLATION OF ACOUSTICAL TILES IN OPEN AREA**

- .1 Ceiling sections with acoustical tiles **type 2** :
  - .1 All cut sections of tiles to be located on perimeter of tile ceiling sections and borders of straight edge cuts to be supported by aluminum sections according to section 09 53 00.01 – Acoustical suspension.
  - .2 All borders on inside perimeter of ceiling sections to be supported with concealed recessed suspension rods according to indications on plans.
- .2 All acoustical tiles to be cut to required length or according to indications on plans in order to allow their installation inside indicated ceiling sections.
- .3 All visible acoustical tiles cuts to be painted on site in order to match panels colors and finishes.

**3.4 INTERFACE WITH OTHER WORK**

- .1 Co-ordinate with Section 09 53 00.01 - Acoustical Suspension .
- .2 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

**END OF SECTION**

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 095113 - Acoustical Panel Ceilings
- .2 Section 092116 - Gypsum Board Assemblies.
- .3 Divisions 23 and 26.

**1.2 REFERENCES**

- .1 ASTM International
  - .1 ASTM C635/C635M-07, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
  - .2 ASTM C636/C636M-08, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
  - .3 ASTM E 580-10a « Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint - Areas Subject to Light to Moderate Seismic Disturbance ».
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

**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 acoustical suspension and include product characteristics, performance criteria, physical size, finish and limitations.

**1.4 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

**1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect acoustical ceiling tiles and tracks from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

- .4 Packaging Waste Management: remove for reuse of packaging materials as specified in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **Part 2 Products**

### **2.1 DESIGN CRITERIA**

- .1 Design Requirements: maximum deflection: 1/360th of span to ASTM C635/ASTM C635M deflection test.

### **2.2 MATERIALS**

- .1 Intermediate duty system to ASTM C635/ASTM C635M.
- .2 Basic materials for suspension system: commercial quality cold rolled steel.
- .3 Suspension system: non fire rated, made up as follows:
  - .1 1 directional exposed tee bar grid.
- .4 Exposed tee bar grid components: shop painted satin sheen white. Components die cut.
  - .1 Main tee with double web, rectangular bulb and 25 mm rolled cap on exposed face.
  - .2 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 Hanger inserts: fabricated to suit supports in accordance to suspension manufacturer's recommendations.
- .7 Carrying channels: 38 x 19 mm channel, galvanized steel.
- .8 Accessories: anti-seismic splices, clips, wire ties, retainers and wall moulding flush "reveal" type as indicated on drawings, to complement suspension system components, as recommended by system manufacturer.
- .9 Prefinished extruded aluminum perimeter trims, as indicated in ceiling details of suspended ceilings of open areas 243 and 257 (type 2 tiles):
  - .1 Perimeter trim system, with pin-joint plates, mitred corners, joining fasteners and direct load suspension fasteners according to ceiling system manufacturer's recommendations. Extruded aluminum perimeter trim, commercial grade 6063 alloy, 19mm (3/4'') width x 54mm (2-1/4'') height, pure white polyester paint satin finish. Extrusion profile and color to match sample of « CONTURA – No CA-2 » series by GORDON Interior specialties.
  - .2 Prefinished aluminum finishing and closing plates assemblies, in accordance with dimensions and indications on plans, to be installed on perimeter of suspended ceiling sections. Pure white polyester paint satin finish.

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**Part 3 Execution**

**3.1 INSTALLATION**

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Installation: to ASTM C636/C636M and ASTM E 580-10a except where specified otherwise.
- .3 Install suspension system to manufacturer's instructions and Certification Organizations tested design requirements.
- .4 Do not erect ceiling suspension system until work above ceiling has been inspected and approved by Departmental Representative.
- .5 Secure hangers to overhead structure using attachment methods acceptable to Departmental Representative.
- .6 Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.
- .7 Lay out centre line of ceiling both ways, to provide balanced borders at room perimeter . System according to reflected ceiling plan.
- .8 Ensure suspension system is co-ordinated with location of related components.
- .9 Install wall moulding to provide correct ceiling height.
- .10 Completed suspension system to support super-imposed loads, such as lighting fixtures diffusers grilles and speakers.
- .11 Support at light fixtures diffusers with additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .12 Attach cross member to main runner to provide rigid assembly.
- .13 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
- .14 Install access splines to provide ceiling access.
- .15 Finished ceiling system to be square with adjoining walls and level within 1:1000.

**3.2 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

**3.3 PROTECTION**

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

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Section 09 68 13 - Tile Carpeting

**1.2                REFERENCES**

- .1            ASTM International
  - .1            ASTM F1303-04, Standard Specification for Sheet Vinyl Floor Covering with Backing.
  - .2            ASTM F1344-04, Standard Specification for Rubber Floor Tile.
- .2            Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1            Material Safety Data Sheets (MSDS).
- .3            Canadian General Standards Board (CGSB)
  - .1            CAN/CGSB-25.20-95, Surface Sealer for Floors.
  - .2            CAN/CGSB-25.21-95, Detergent-Resistant Floor Polish.
- .4            South Coast Air Quality Management District (SCAQMD)
  - .1            SCAQMD Rule 1113-04, Architectural Coatings.
  - .2            SCAQMD Rule 1168-05, Adhesive and Sealant Applications.

**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 resilient sheet flooring and resilient base, include product characteristics, performance criteria, physical size, finish and limitations.
- .3            Samples:
  - .1            Submit duplicate 300 x 300 mm sample pieces of sheet material, 300 mm long resilient base.
- .4            Closeout Submittals:
  - .1            Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

**1.4                DELIVERY, STORAGE AND HANDLING**

- .1            Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2            Waste Management and Disposal:
  - .1            Separate waste materials for recycling in accordance with Section 01 74 21 - Construction /Demolition Waste Management and Disposal.

## **1.5 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.

## **1.6 MAINTENANCE MATERIAL SUBMITTALS**

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

## **1.7 WARRANTY**

- .1 In regards to Section 09 65 16, the warranty period of 12 months is extended to à sixty (60) months, against delamination and cracking of joints.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Linoleum sheet flooring: composed of natural ingredients which are mixed and calendered onto a jute backing:
  - .1 Pattern: marbleized.
  - .2 Thickness: 2.5 mm.
  - .3 Colour: indicated on drawings.
- .2 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.
  - .1 Rubber floor adhesives:
    - .1 Adhesive: maximum VOC limit 60 g/L to SCAQMD Rule 1168.
  - .2 Resilient base adhesives:
    - .1 Adhesive: maximum VOC limit 50] g/L [to SCAQMD Rule 1168.
- .3 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.
- .4 Metal edge strips:
  - .1 Aluminum extruded, smooth, polished stainless steel with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

- .5 Welding strands with colors to match different colors of linoleum sheets.
- .6 Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.
- .7 Sealant at junction of metal frames and flooring.
- .8 Resilient base: to rubber, coved, in roll length and 100 mm high x 3.17 mm thick, including premoulded end stops and external corners for coved base only, of colour selected by Departmental Representative.

### **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 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.

#### **3.3 SITE VERIFICATION OF CONDITIONS**

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

#### **3.4 PREPARATION**

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

#### **3.5 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 Lay flooring with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material.
- .4 Run sheets in direction of traffic. Double cut sheet joints according to manufacturer's printed instructions.
- .5 Heat weld seams of linoleum sheet flooring in accordance with manufacturer's printed instructions.
- .6 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.
- .7 Cut flooring around fixed objects.
- .8 Install feature strips and floor markings where indicated. Fit joints tightly.
- .9 Install flooring in pan type floor access covers. Maintain floor pattern.
- .10 Continue flooring over areas which will be under built-in furniture.
- .11 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .12 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.
- .13 Install metal edge strips at unprotected or exposed edges where flooring terminates.

### **3.6 BASE APPLICATION**

- .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.

### **3.7 CLEANING**

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

- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
  - .1 Clean flooring and base surfaces to flooring manufacturer's printed instructions.
- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**3.8 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 16-2004, Colorfastness to Light.
  - .2 AATCC Test Method 23-2005, Colorfastness to Burn Gas Fumes.
  - .3 AATCC Test Method 129-2005, Colourfastness to Ozone in the Atmosphere Under High Humidities.
  - .4 AATCC Test Method 134-2006, Electrostatic Propensity of Carpets.
  - .5 AATCC Test Method 171-2005, Carpets: Cleaning of; Hot Water Extraction Method.AATCC Test Method 175-2008, Stain Resistance: Pile Floor Coverings.
  - .6 AATCC Test Method 189-2007, Fluorine Content of Carpet Fibers.
- .2 ASTM International
  - .1 ASTM D297-93(2006), Standard Test Methods for Rubber Products-Chemical Analysis.
  - .2 ASTM D1335-05, Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings.
  - .3 ASTM D2661-08, Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings.
  - .4 ASTM D1667-05, Standard Specification for Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
  - .5 ASTM D3574-08, Standard Test Methods for Flexible Cellular Materials - Slab, Bonded, and Molded Urethane Foams.
  - .6 ASTM D3936-05, Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering.
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-4.2 No. 22-2004, Textile Test Methods - Colourfastness to Rubbing (Crocking).
  - .2 CAN/CGSB-4.2 No.27.6M-2004, Textile Test Methods - Flame Resistance - Methemine Tablet Test for Textile Floor Coverings.
  - .3 CAN/CGSB-4.2 No. 76-94/ISO 2551: 1981, Textile Test Methods - Machine-Made Textile Floor Coverings - Determination of Dimensional Changes Due to the Effects of Varied Water and Heat Conditions.
  - .4 CAN/CGSB-4.2 No.77.1-94/ISO 4919:2000, Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.
  - .5 CAN/CGSB-4.129-93(R1997), Carpets for Commercial Use.
- .4 Carpet and Rug Institute (CRI)

- .1 CRI Carpet Installation Standard 2009.
- .2 CRI Green Label Indoor Air Quality Testing Program.
- .3 CRI Green Label Plus Indoor Air Quality Testing Program.
- .5 Environmental Choice Program (ECP)
  - .1 CCD-152-2009, Flooring Products, Commercial Non-modular Textile Flooring.
- .6 Health Canada
  - .1 C.R.C., c.923-10, Hazardous Products Act - Carpet Regulations, Part II of Schedule 1.
- .7 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .8 National Floor Covering Association (NFCA)
  - .1 National Floor Covering Specification Manual 2007.
- .9 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards SCAQMD Rule 1113-A2007, Architectural Coatings.
  - .1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .10 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 ADMINISTRATIVE REQUIREMENTS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

### **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.

### **1.5 QUALITY ASSURANCE**

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

## **1.6 DELIVERY, STORAGE AND HANDLING**

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

## **1.7 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 Departmental Representative will co-ordinate operation of ventilation system during installation of carpet. Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.
  - .5 Install carpet after space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete.

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**Part 2 Products**

**2.1 MATERIALS**

- .1 Existing :
  - .1 Considering that a specific model of carpet is used for the new offices refit throughout the entire building, for continuity and uniformity reasons, the required product is: GEO Accents by BOLYÜ.
  - .2 Tiling characteristics required by PWGSC:
    - .1 yarn weight tufted : 746 g/m<sup>2</sup> (22 oz/yd<sup>2</sup>)
    - .2 machine gauge : 1/12 in
    - .3 stitch count : 10.3 S.P.I.
    - .4 finished pile thickness : 3.2mm (0.127 pouces)
    - .5 yarn content : Avalar RE Nylon
    - .6 average density : 6,236
    - .7 tile size : 610 x 610 mm
    - .8 Pattern: Pattern Scroll
    - .9 dry method : solution Dye
    - .10 primary backing : non-woven
    - .11 secondary backing : Nexterra
    - .12 total recycled content : 40% minimum post consumer recycled content
    - .13 product :
      - .1 Tile T1 (general) : GF45-3, style TGEO-GF453, series GEO Accents by BOLYÜ;
      - .1 Tile T2 (green accent) : #BT607 Extreme Green, series The Brights by BOLYÜ.
      - .2 Tile T3 (blue accent) : #BT708 Mood Indigo, series The Brights by BOLYÜ.

**2.2 ACCESSORIES**

- .1 Base: in accordance with Section 09 65 16.
- .2 Binder Bars / Edge strips: aluminum. Designed for carpet being installed.
- .3 Adhesive : type as recommended by tile carpeting manufacturer : Nexterra adhesive by BOLYÜ.
- .4 Transition Mouldings:Carpet edge / reducer strip: vinyl.
- .5 Concrete floor sealer: To CAN/CSBG-25.20 type 11.
- .6 Subfloor patching compound:
  - .1 patching compound cementitious fast setting, polymer modified.
  - .2 Filling material self-leveling: self-leveling cementitious compound fast hardening designed for leveling up to 25 mm thick.

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### **2.3 INSTALLERS**

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

### **2.4 EXAMINATION**

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

### **2.5 PREPARATION**

- .1 Subfloor Preparation:
  - .1 Inspect concrete and determine special care required to make it suitable for carpet.
  - .2 Fill and level cracks 3 mm wide or protrusions over 0.8 mm with appropriate and compatible latex 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 recommendations and co-ordinate with Section 01 71 00 - Examination and Preparation.
  - .1 Prepare floor surfaces in accordance with CRI Carpet Installation Standard.
- .3 Tile Carpeting Preparation: Pre-condition carpeting: following manufacturer's written instructions.

### **2.6 INSTALLATION**

- .1 Install carpet tiles in accordance with manufacturer's written instructions, and CRI Carpet Installation Standard and co-ordinate with Section 01 73 00 - Execution.
- .2 Co-ordinate tile carpeting work with work of other trades, for proper time and sequence to avoid construction delays.

- .3 Install carpet tile after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets are installed.
- .4 Install carpet tile as per manufacturer's recommendation : quarter-turn 90 degree format, monolithic (seamless).
- .5 Snugly join carpet tiles in completed installation.
  - .1 Measure distance covered by 11 carpet tiles (10 joints) and ensure distance is in compliance with manufacturer specifications.
  - .2 Do not trap yarn between carpet tiles.
- .6 Apply thin film of pressure-sensitive adhesive according to manufacturer's recommendations.
- .7 Ensure finished installation presents smooth wearing surface free from conspicuous seams, burring and other faults.
- .8 Use material from same dye lot.
  - .1 Ensure colour, pattern and texture match within visual areas.
  - .2 Maintain constant pile direction.
- .9 Fit around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
- .10 Install carpet tiles to underfloor duct system and to access covers.
- .11 Install carpeting in pan type floor access covers.
- .12 Extend carpet tiles into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- .13 Install carpet tiles smooth and free from bubbles, puckers, and other defects.
- .14 Protect exposed carpet tile edges at transition to other flooring materials with suitable transition strips.
- .15 Base Installation: in accordance with Section 09 65 19.

## **2.7 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
    - .1 Vacuum carpets clean immediately after completion of installation.
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

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**2.8 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. Install carpet protection to satisfaction of Departmental Representative.
- .3 Repair damage to adjacent materials caused by tile carpeting installation.

**END OF SECTION**

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 08 11 00 - Metal Doors and Frames.
- .2 Section 08 14 16 - Flush Wood Doors
- .3 Section 09 21 16 - Gypsum Board Assemblies

**1.2 REFERENCES**

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .2 The Master Painters Institute (MPI)
  - .1 Architectural Painting Specification Manual - current edition.
  - .2 Maintenance Repainting Manual - current edition.

**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 paint and coating products and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements et 01 35 43 - Environmental Procedures.
- .3 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit duplicate 200 x 300 mm sample panels of each with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards.

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Provide and maintain dry, temperature controlled, secure storage.
  - .2 Store painting materials and supplies away from heat generating devices.
  - .3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.
- .4 Fire Safety Requirements:

- .1 Supply 1 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
- .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.
- .5 Packaging Waste Management: remove for reuse packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **1.5 SITE CONDITIONS**

- .1 Heating, Ventilation and Lighting:
  - .1 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.
  - .2 Co-ordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
  - .3 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
  - .1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.
  - .2 Test concrete, masonry and plaster surfaces for alkalinity as required.
  - .3 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.
- .3 Additional application requirements:
  - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
  - .2 Apply paint 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 Supply paint materials for paint systems from single manufacturer.
- .2 Conform to latest MPI requirements for painting work including preparation and priming.
- .3 Materials in accordance with MPI - Architectural Painting Specification Manual "Approved Product" listing.
  - .1 Primer: VOC limit 100 g/L maximum to GS-11 SCAQMD Rule 1113.
  - .2 Paint: VOC limit 100 g/L maximum to GS-11 SCAQMD Rule 1113.
- .4 Colours:
  - .1 Submit proposed Colour Schedule to Departmental Representative for review.

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

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

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

- .2 Gloss level ratings of painted surfaces as noted on Finish Schedule.
- .7 Interior painting:
  - .1 **System No 1**, For gypsumboard and cast in place concrete walls :
    - .1 One (1) coat of latex primer according to standards ONGC 1.119-2000 and MPI no.149, Green Seal approved.
    - .2 Two (2) finish coats of 100 % acrylic interior latex paint, platine finish, according to standards ONGC 1.209-2003 and MPI no.52, Green Seal approved.
  - .2 **System No 2**, For gypsumboard ceilings (including exposed ducts and conduits):
    - .1 One (1) coat of latex primer according to standards ONGC 1.119-2000 and MPI no.149, Green Seal approved.
    - .2 Two (2) finish coats of acrylic interior latex paint, matte finish, according to standards ONGC 1.100-99 and MPI no.143, Green Seal approved.
  - .3 **System No 3**, For ceiling concrete slab (including ventilation ducts, conduits, piping, exposed sprinkler piping, etc.):
    - .1 One (1) coat of latex primer according to standards ONGC 1.119-2000 and MPI no.149, Green Seal approved.
    - .2 Two (2) finish coats of acrylic interior latex paint, matte finish, according to standards ONGC 1.100-99 and MPI no.143, Green Seal approved.
    - .3 Spray paint applied.

- .4 **System No 4**, For galvanised metal, (steel doors and frames and other metals that are not prefinished or left to hot dipped galvanised finish):
  - .1 Prepare surfaces according to standard ONGC 31-GP-107 and according to primer's manufacturer's instructions.
  - .2 Treat surfaces with a metal cleaner and rust remover.
  - .3 Rinse with pressurised clear water.
  - .4 One (1) coat of latex acrylic primer, according to standard MPI no.134.
  - .5 Two (2) finish coats of 100% acrylic interior latex paint, semi-gloss finish, according to standards ONGC 1.195-99 and MPI no.153, Green Seal approved.
- .1 **System No 5**, Plywood panels used as backing for mechanical-electrical and telecom equipments:
  - .1 1 coat of primer and 1 coat of intumescent paint.
- .2 **System No 6**, Dressed Lumber: doors, door and window frames, casings, mouldings, etc.:
  - .1 INT 6.3A - Latex semi-gloss finish.

## 2.2 ACCESSORIES

- .1 Subfloor patching compound: patching compound cementitious fast setting, polymer modified, two-component, with migrating corrosion inhibitor, for repair of overhead and vertical concrete surfaces.

## Part 3 Execution

### 3.1 GENERAL

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

### 3.2 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.

### 3.3 PREPARATION

- .1 Protection of in-place conditions:
  - .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.
- .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.
  - .4 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual specific requirements and coating manufacturer's recommendations.
  - .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 pretreatment 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.
  - .9 Touch up of shop primers with primer as specified.

### **3.4 APPLICATION**

- .1 Paint only after prepared surfaces have been accepted by Departmental Representative
- .2 Use method of application approved by Departmental Representative.
  - .1 Conform to manufacturer's application recommendations.
- .3 Apply coats of paint in continuous film of uniform thickness.
  - .1 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 inside of cupboards and cabinets as specified for outside surfaces.

- .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.
- .10 Mechanical/Electrical Equipment:
  - .1 Paint conduits, piping, hangers, ductwork and other mechanical and electrical equipment exposed in finished areas, to match adjacent surfaces, except as indicated.
  - .2 Do not paint over nameplates.
  - .3 Keep sprinkler heads free of paint.
  - .4 Apply a primer and a finish coat of black mate paint on the inside surfaces of ventilation ducts that can be seen through louvers, registers and diffusers.

### **3.5 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal
- .4 Place paint defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.

**END OF SECTION**