

Part 1 General

1.1 SECTION INCLUDES

- .1 Gypsum board.
- .2 Gypsum backer board.
- .3 Cementitious backer board.
- .4 Acoustic insulation.
- .5 Installation of access doors in walls and ceilings.

1.2 RELATED SECTIONS

- .1 Section 05 41 00 - Structural Metal Stud Framing: Exterior wall framing
- .2 Section 06 16 00 - Sheathing: exterior glass mat faced gypsum board
- .3 Section 07 84 00 - Firestopping.
- .4 Section 08 31 13 - Access Doors and Frames: Metal access panels and frames.
- .5 Section 09 22 16 - Non-structural Metal Stud Framing: Partition framing

1.3 REFERENCES

- .1 American National Standards Institute (ANSI)
 - .1 ANSI A118.9 - Specifications for Test Methods and Specifications for Cementitious Backer Units
- .2 ASTM International (ASTM)
 - .1 ASTM C475/C475M-15 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board
 - .2 ASTM C665-12 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
 - .3 ASTM C840-13 - Standard Specification for Application and Finishing of Gypsum Board
 - .4 ASTM C954-15 - 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
 - .5 ASTM C1002-14 - 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
 - .6 ASTM C1047-14a - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base
 - .7 ASTM C1177/C1177M-13 - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
 - .8 ASTM C1325-14 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units
 - .9 ASTM C1396/C1396M-14a - Standard Specification for Gypsum Board
 - .10 ASTM D3273-16 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber

- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction
- .4 ECD Energy & Environment Canada
 - .1 Green Globes Canada, Design for New Construction and Major Retrofits v.2 2014
- .5 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S101-07, Fire Endurance Tests of Building Construction and Materials
 - .2 CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
 - .3 CAN/ULC-S702-14 - Standard for Mineral Fibre Thermal Insulation for Buildings

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data:
 - .1 Provide data on each type of gypsum board and cementitious backer board.

1.5 QUALITY ASSURANCE

- .1 Products of This Section: Shall have Environmental Product Declaration (EPD) certification.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 20 – Waste Management and Disposal.

Part 2 Products

2.1 PERFORMANCE REQUIREMENTS

- .1 Acoustic Attenuation for Identified Interior Partitions: STC rating indicated.

2.2 REGULATORY REQUIREMENTS

- .1 Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to CAN/ULC-S101 by an independent testing agency. Refer to Drawings for design assemblies.

2.3 GYPSUM BOARD MATERIALS

- .1 Interior Standard Gypsum Board: ASTM C1396/C1396M, paper-faced; 1220 mm wide, maximum available length in place; tapered edges, ends square cut.
 - .1 Regular core, 13 mm thick.
 - .2 Regular and fire rated core, 16 mm thick.

- .2 Moisture-Resistant Interior Gypsum Board: to ASTM C 1396M, moisture-resistant, treated core, mould resistance rating 10 to ASTM D 3273. Type X, 16 mm thick for walls, 12 mm thick for ceilings by 1200 mm wide by maximum practical length, ends square cut, long edges bevelled. Location: for use behind ceramic tile in dry areas, janitor rooms, and where indicated.
 - .1 Manufacturer/Model:
 - .1 Georgia-Pacific; ToughRock Mold-Guard.
 - .2 CGC; Sheetrock Brand Panels Mold Tough.
 - .3 CertainTeed; M2Tech.
- .3 Moisture-Resistant Interior Glass-Mat Faced Gypsum Board: to ASTM C 1177, glass-mat faced, moisture-resistant, treated core, mould resistance rating 10 to ASTM D 3273; 13 mm thick by 1200 mm wide by maximum practical length, ends square cut, long edges bevelled. Location: Crawlspace.
 - .1 Manufacturer/Model:
 - .1 Georgia-Pacific; DensArmor Plus Interior Panel.
- .4 Cementitious Backer Panels: to ANSI A118.9 or ASTM C 1325, mould-resistant to ASTM D 3273, 11 to 12.7 mm thick, in maximum lengths available to minimize end-to-end butt joints.
 - .1 Manufacturer/Model:
 - .1 CGC; Durock Cement Board Next Gen.
 - .2 Custom Building Products; Wonderboard.

2.4 ACCESSORIES

- .1 Acoustic Insulation: CAN/ULC-S702 or ASTM C665 Type I; preformed mineral fibre, in batt form; friction fit type, unfaced, minimum 40 kg/m³ density, thickness indicated. Flame/Smoke Properties: 0/0 to CAN/ULC-S102, non-combustible to CAN/ULC S114.
 - .1 Manufacturer/Model:
 - .1 Roxul; AFB.
 - .2 Thermafiber; SAFB.
- .2 Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.
- .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 Polyethylene: to CAN/CGSB-51.34, 0.15 mm thick.
- .5 Steel Drill Screws:
 - .1 For metal framing less than 0.91 mm thick: to ASTM C 1002.
 - .2 For metal framing 0.91 mm and thicker: to ASTM C 954.
- .6 Casing Beads, Corner Beads, Control Joints and Edge Trim: to ASTM C 1047, zinc-coated by hot-dip process, 0.46 mm base thickness, laminated to paper tape, one piece length per location.
- .7 Cornice Cap: 12 mm deep by partition width, of 1.6 mm base thickness galvanized sheet steel, prime painted. Include splice plates for joints.
- .8 Joint Materials: ASTM C475/C475M.
 - .1 Reinforcing tape, adhesive, and water.
 - .2 Joint compound: Asbestos-free.

- .9 Cementitious Board Fasteners: Board manufacturer's purpose made screws, corrosion resistant steel, self-drilling points, counter-sink heads to prevent strip-out, for steel substrate.
- .10 Framing and Furring for Suspended Gypsum Board Ceilings: 0.455 mm thick metal furring, or purpose-made grid suspension system to ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.
 - .1 Manufacturer/Model:
 - .1 Armstrong; Drywall Grid Systems.
 - .2 CertainTeed; 1-1/2" Drywall System.
 - .3 Chicago Metallic; Drywall Grid System.
 - .4 USG; Corporation Drywall Suspension System.

Part 3 Execution

3.1 EXAMINATION

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that site conditions are ready to receive work.
- .3 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work is reviewed.

3.2 ACOUSTIC ACCESSORIES INSTALLATION

- .1 Place acoustic insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
- .2 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.
- .3 Seal full perimeter of cut-outs around electrical boxes, ducts, and all penetrations in partitions where perimeter sealed with acoustic sealant.

3.3 GYPSUM BOARD INSTALLATION

- .1 Install gypsum board to ASTM C840 and manufacturer's written instructions.
- .2 Erect gypsum board with ends and edges occurring over firm bearing.
- .3 Apply gypsum board to metal furring or framing using screw fasteners. For double layer application, use screw fasteners for both layers. Maximum spacing of screws 300 mm on centre.
 - .1 Single-Layer Application:
 - .1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C 840.
 - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
 - .2 Double-Layer Application:
 - .1 Install gypsum backing board for base layer and exposed gypsum board for face layer.
 - .2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.

- .3 Apply base layers at right angles to supports unless otherwise indicated.
- .4 Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.
- .4 Erect exterior gypsum soffit board perpendicular to supports, with staggered end joints over supports.
- .5 Treat cut edges and holes in moisture resistant gypsum board with sealant.
- .6 Install backing board over metal studs to manufacturer's written instructions.

3.4 INSTALLATION - ACCESSORIES

- .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 joint compound 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 Control Joints:
 - .1 Construct of preformed units in ceilings, and of preformed units or two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint elsewhere.
 - .2 Provide continuous polyethylene dust barrier behind and across control joints.
 - .3 Locate control joints at 6 metres o.c. maximum or at changes in substrate construction. Where control joints occur at door frames, align control joint with outside edge of door frame.
 - .4 Install control joints straight and true.
- .6 Expansion Joints:
 - .1 Construct expansion joints as detailed, at building expansion and construction joints. Provide continuous dust barrier.
 - .2 Install expansion joint straight and true.
 - .3 Splice corners and intersections together and secure to each member with three screws.
- .7 Install cornice cap where gypsum board partitions do not extend to ceiling.
- .8 Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300 mm on centre.
- .9 Splice corners and intersections together and secure to each member with three screws.
- .10 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - .1 Rigidly secure frames to furring or framing systems.
- .11 Where gypsum board is installed above finished ceilings, fit work tight to items penetrating gypsum board work. Seal around full perimeter of items with caulking. Use fire retardant caulking at fire rated enclosures, acoustical caulking elsewhere.

3.5 JOINT TREATMENT

- .1 Finish to ASTM C840. Refer to article "Schedule" for levels of finishing.
- .2 Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- .3 Feather coats on to adjoining surfaces so that camber is maximum 0.8 mm.
- .4 Taping, filling, and sanding is not required at surfaces behind ceramic tile.

3.6 SCHEDULES

- .1 Gypsum Finishing Levels:
 - .1 Level 1: Above finished ceilings concealed from view; smoke partitions in crawlspace.
 - .2 Level 2: Behind ceramic tile.
 - .3 Level 4: Walls and ceilings exposed to view.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Formed metal framing of studs and furring, at interior locations.
- .2 Framing accessories.

1.2 RELATED REQUIREMENTS

- .1 Section 05 41 00 - Structural Metal Lightweight Framing: Structural load bearing metal stud framing for exterior applications
- .2 Section 05 50 01 - Metal Fabrications: Metal fabrications attached to stud framing
- .3 Section 06 10 00 - Rough Carpentry: Rough wood blocking within stud framing
- .4 Section 08 31 13 - Access Doors and Frames
- .5 Section 09 21 16 - Gypsum Board Assemblies: Gypsum board on metal studs for partitioning
- .6 Section 10 44 13 - Fire Extinguisher Cabinets: Recessed cabinets

1.3 REFERENCES

- .1 ASTM International (ASTM)
 - .1 ASTM A123/A123M-15 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - .2 ASTM A653/A653M-13 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
 - .3 ASTM C645-14 - Standard Specification for Nonstructural Steel Framing Members
 - .4 ASTM C754-15 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
 - .5 ASTM C954-15 - 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 C1002-14 - 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

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination:
 - .1 Coordinate with other work having a direct bearing on work of this section.
 - .2 Coordinate the placement of components recessed within the stud framing assemblies including but not limited to access doors and frames, recessed washroom accessories, fire extinguisher cabinets.
 - .3 Coordinate simultaneous erection of studs with installation of services lines.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 20 – Waste Management and Disposal.

Part 2 Products

2.1 PERFORMANCE REQUIREMENTS

- .1 Maximum Allowable Deflection: L/360 for walls with ceramic tile; L/240 elsewhere at a lateral force of 240 Pa for maximum heights indicated.
- .2 Design stud and track connections to accommodate vertical deflection movement of structure without imposing axial loads onto framing.

2.2 MANUFACTURERS

- .1 Clark Detrich.
- .2 Bailey.

2.3 STUD FRAMING MATERIALS

- .1 Framing Assembly Components: ASTM C 645.
- .2 Studs: ASTM A653/A653M, non-load bearing rolled steel, channel shaped, punched for utility access at 460 mm on centre, and as follows:
 - .1 Depth: indicated.
 - .2 Thickness: 0.836 mm where required for unrestrained heights, for jamb studs and where cementitious backerboard is scheduled; 0.53 mm elsewhere, unless indicated otherwise.
- .3 Floor Tracks and Headers: Same material and thickness as studs, bent leg retainer notched to receive studs; 50 mm flange height.
- .4 Ceiling Track: Single leg track consisting of 50 mm deep leg ceiling track, 38 mm x 1.6 mm thick U-channel, and 38 x 38 mm x 1.6 mm thick U-channel support clips. U channel installed continuous through top knock-out service hole, maximum 300 mm from top track, with support clip at each stud location.
- .5 Furring and Bracing Members: Of same material as studs; thickness to suit purpose.
- .6 Fasteners:
 - .1 Framing less than 0.84 mm: ASTM C 1002, self-drilling, self tapping screws.
 - .2 Framing 0.84 mm thick or thicker: to ASTM C 954 screws.
- .7 Sheet Metal Backing: 0.91 mm thick, galvanized steel for reinforcement.
- .8 Anchorage Devices: Drilled expansion bolts.
- .9 Acoustic Sealant: As specified in Section 09 21 16.
- .10 Insulating Strip: 3 mm thick by 13 mm side rubberized, moisture-resistant self-adhesive foam strip or strip of self-adhesive air/vapour barrier specified in Section 07 27 00.
- .11 Resilient furring channels: 13-mm- deep, steel sheet members designed to reduce sound transmission.
 - .1 Configuration: Asymmetrical.

2.4 FINISHES

- .1 Framing Materials: Galvanize to Z180 zinc coating designation.
- .2 Accessories: Same finish as framing members.

Part 3 Execution

3.1 EXAMINATION

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that rough-in utilities are in proper location.

3.2 ERECTION

- .1 Install framing in accordance with ASTM C754.
- .2 Align and secure bottom and bottom tracks at 600 mm on centre.
- .3 Place insulating strip under floor tracks, and to isolate studs from uninsulated surfaces.
- .4 Place two beads of acoustic sealant between tracks and substrate to achieve an acoustic seal.
- .5 Place two beads of acoustic sealant between studs and adjacent vertical surfaces to achieve an acoustic seal.
- .6 Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.
- .7 Install studs vertically at 400 mm on centre where cementitious backerboard is used; 600 mm on centre elsewhere, unless otherwise indicated.
- .8 Align stud web openings horizontally.
- .9 Secure studs to tracks using fastener method. Do not weld. Screw penetration beyond joined material: minimum three exposed threads.
- .10 Stud Splicing: Not permissible.
- .11 Fabricate corners using minimum three studs.
- .12 Provide double studs extending from floor to ceiling at wall openings wider than stud centres specified, not more than 50 mm from each side of openings. Secure studs together.
- .13 Brace stud framing assembly rigid.
- .14 Frame openings and around built-in equipment, cabinets, access panels on four sides. Extend framing into reveals. Coordinate clearances with equipment suppliers.
- .15 Install steel studs or furring channels between studs for attaching electrical and other boxes.
- .16 Coordinate erection of studs with requirements of door and window frames; install supports and attachments.
- .17 Blocking: Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, and opening frames.
 - .1 Secure steel channels to studs.
- .18 Refer to Drawings for indication of partitions extending stud framing through the ceiling to the structure above or to height above ceiling indicated. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide extended leg ceiling runners.
- .19 Coordinate placement of insulation in stud spaces after stud frame erection.

3.3 CEILINGS AND BULKHEADS

- .1 Erect hangers and runner channels or use purpose-made grid suspension system for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.

- .2 Install work level to tolerance of 1:1200.
- .3 Do not support light fixtures on suspension system.
- .4 Frame perimeter of openings for access panels, light fixtures, diffusers, grilles and other openings with furring channels.
- .5 Install 19 by 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. Extend gypsum board to underside of structure except where indicated otherwise. Allow for deflection.

3.4 ERECTION TOLERANCES

- .1 Section 01 73 00: Tolerances.
- .2 Erect metal studding to tolerance of 1:1000.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Ceramic tiling
- .2 Waterproofing membrane
- .3 Tile accessories
- .4 Mortar and grout

1.2 RELATED REQUIREMENTS

- .1 Section 07 92 00 - Joint Sealants: Mildew resistant sealant
- .2 Section 08 31 13 - Access Doors and Frames
- .3 Section 09 21 16 - Gypsum Board Assemblies: Tile backer
- .4 Section 22 42 03 – Commercial Washroom Fixtures
- .5 Section 22 42 16 – Commercial Lavatories and Sinks
- .6 Section 22 42 20 – Commercial Showers and Bathtubs

1.3 REFERENCES

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
 - .1 ANSI A108/A118/A136.1-2009, Specification for the Installation of Ceramic Tile
 - .2 ANSI A118.10-1993, Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installations
- .2 International Standards Organization (ISO)
 - .1 ISO 10545, Ceramic Tiles
 - .2 ISO 13007-1: 2010 Ceramic tiles -- Grouts and adhesives -- Part 1: Terms, definitions and specifications for adhesives
- .3 Terrazzo Tile and Marble Association of Canada (TTMAC)
 - .1 Tile Specification Guide 09 30 00 Tile Installation Manual, 2012-2014
 - .2 Tile Maintenance Guide, latest edition

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Submit manufacturer's product data for each type of product specified.

1.5 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Submission procedures.
- .2 Operation and Maintenance Data: Submit TTMAC Maintenance Guide and additional information as follows.
 - .1 Manufacturer's maintenance data sheets for floor sealers and other non-tile maintenance materials and accessories.

- .2 Warning of maintenance practices or materials that may damage or disfigure finished Work.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- .1 Section 01 78 10: Maintenance and extra material requirements.
- .2 Extra Stock Materials: Provide 2% of each size, colour, and surface finish of tile specified.
 - .1 Store in original containers, clearly marked to identify the following:
 - .1 Manufacturer and distributor's name.
 - .2 Material series name and stocking number.
 - .3 Material description, including colour and pattern.

1.7 QUALITY ASSURANCE

- .1 Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience and having completed tile installations similar in material, design and extent to this Project.
- .2 Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.

1.8 DELIVERY, STORAGE, AND PROTECTION

- .1 Section 01 61 00: Transport, handle, store, and protect products.
- .2 Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- .3 Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- .4 Store liquid materials in unopened containers and protected from freezing.
- .5 Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.9 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 20 – Waste Management and Disposal.

1.10 AMBIENT CONDITIONS

- .1 Apply tile after completion of Work by other sections, to dry, clean, firm, level and plumb surfaces, free from oil or wax or any other material detrimental to tile adhesion.
- .2 Maintain tile materials and substrate temperature between manufacturer's recommended minimum and maximum temperature range.
- .3 Maintain temperature range for minimum 48 hours before and during installation and until materials are fully set and cured to manufacturer's recommendations.
- .4 Maintain adequate ventilation where Work generates toxic gases or where there is a risk of raising relative humidity to levels detrimental to building finishes and assemblies.

Part 2 Products

2.1 PRODUCTS, GENERAL

- .1 ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TTMAC installation methods specified in tile installation schedules, and other requirements specified.
- .2 Factory Blending: For tile exhibiting colour variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colours as those taken from other packages and match accepted samples.

2.2 CERAMIC TILE MATERIALS

- .1 Floor Tile (CT):
 - .1 Composition: Porcelain.
 - .2 Moisture Absorption: 0 to 0.5%.
 - .3 Size: 610 by 610 mm by 10 mm thick.
 - .4 Surface Finish: Unpolished.
 - .5 Glaze: Matte.
 - .6 Chemical Resistance: Pass Rating to EN 14411.
 - .7 Frost Resistance: Not Required.
 - .8 Slip Resistance: R10 ramp test; 0.8 wet COF.
 - .9 Colour: Selected by Contract Administrator from manufacturer's standard range. Allow for one colour.
 - .10 Manufacturer/Product:
 - .1 C&S Basaltina.
 - .2 Dal tile, Ambassador, Colorbody Porcelain.
 - .3 Ames Tile & Stone, Durastone Series.
- .2 Wall Tile (CWT-1):
 - .1 Size: 203 by 508 mm by 9 mm thick.
 - .2 Surface Finish: Glazed, satin matte.
 - .3 Colour: Selected by Contract Administrator from manufacturer's standard range. Allow for one colour.
 - .4 Product:
 - .1 Cerasec Harmony Collection, Light by Novabell.
 - .2 Ames Tile & Stone, Design Positive Series.
- .3 Wall Tile (CWT-2):
 - .1 Size: 98.5 by 600 mm by 9 mm thick.
 - .2 Surface Finish: Matte.
 - .3 Colour: Selected by Contract Administrator from manufacturer's standard range. Allow for one colour.
 - .4 Product:
 - .1 Unicolour Series, by Olympia Tile.

2.3 TRIMS AND EDGING

- .1 Purpose-made stainless steel tile trim, including wall tile edge trim, profiles to suit application, finishes and colours to be selected by the Contract Administrator from the manufacturer's complete finish/colour range. Acceptable manufacturers:
 - .1 Acceptable Manufacturers: Schluter, Wedi, Haogin, Blanke.

2.4 MORTAR AND GROUT MATERIALS

- .1 Mortar and grout materials: product of a single manufacturer.
- .2 Self-Levelling Underlayment: Latex-modified, portland cement-based, as recommended by tile-setting manufacturer.
- .3 Wall Tile Mortar: Modified non-sagging dry-set lightweight cement mortar complying with ANSI A118.4, A118.11 and ISO 13007 C2TES1P1.
 - .1 Manufacturer/Product :
 - .1 Mapei Ultralite Mortar.
 - .2 Laticrete 4 XLT.
 - .3 Flextile 66 Flexlite Mortar.
 - .4 Floor Tile Mortar: Improved modified dry-set cement mortar, fast setting non-sagging for large and heavy tile thin-set applications, complying with ANSI A118.4, A118.11 and ISO 13007 C2TFS1P1.
 - .1 Manufacturer/Product:
 - .1 Mapei Ultraflex LFT Rapid.
 - .2 Laticrete 4 XLT Rapid.
 - .3 Flextile 62 Full Coverage Mortar.
- .5 Tile Grout:
 - .1 Polymer-Modified Grout: Fast-setting, sanded polymer-modified grout, complying with ANSI A118.6, ANSI A118.7 and ISO 13007 CG2WAF.
 - .1 Colour: selected by Contract Administrator from manufacturer's standard range.
 - .2 Location: Typical, except Staff WC.
 - .3 Manufacturer/Product:
 - .1 Mapei Ultracolor Plus.
 - .2 Laticrete Permacolor Select.
 - .3 Flextile 1600 RSG.
 - .2 Epoxy Grout: to ISO 13007 classification R2T/RG, ANSI A118.3, two-component, 100% solid, water-cleanable, non-sagging, epoxy grout, chemical- and stain-resistant.
 - .1 Colour: selected by Contract Administrator from manufacturer's standard range.
 - .2 Location: Walls in Staff WC.
 - .3 Manufacturer/Product: Mapei Kerapoxy CQ, or approved equal by one of the following manufacturers, in accordance with B6.
 - .1 Flextile Ltd., Laticrete International; Custom Building Products.

2.5 ACCESSORIES

- .1 Waterproofing and Crack Isolation Membrane: Manufacturer's standard fabric-reinforced, fluid-applied membrane system consisting of liquid-latex rubber or elastomeric polymer and fabric reinforcement that complies with ANSI A118.10 and ANSI A118.12. Include fabric reinforcement and accessories recommended by manufacturer.
 - .1 Manufacturer/Product:
 - .1 Mapei Mapelastick AquaDefense, with reinforcing fabric.
 - .2 Flextile WP-980, Laticrete Hydro Ban (no reinforcing fabric required).
 - .2 Cementitious Backing Board Joint Tape: Fibre mesh tape, nominal 50 mm wide.
 - .3 Joint Sealant: As specified in Section 07 92 00.
 - .4 Tile Cleaner: Neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
 - .5 Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout recommended by tile manufacturer.

2.6 MIXING MORTARS AND GROUT

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

Part 3 Execution

3.1 EXAMINATION

- .1 Examine substrates, areas, and conditions where tile will be installed, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - .1 Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - .2 Verify that concrete substrates for tile floors comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - .1 Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - .2 Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 - .3 Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 - .4 Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Contract Administrator.
- .2 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- .1 Prepare substrate in accordance with manufacturer's recommendations, and as follows:
 - .1 Apply thin levelling coat of levelling compound as required to provide installation tolerances as required by manufacturer.
 - .2 Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
 - .3 Prime gypsum board surface with manufacturer's recommended multi-purpose acrylic latex primer. Allow to dry completely before applying mortar.
 - .4 Prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1:50 toward drains.
- .2 Blending: For tile exhibiting colour variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colours as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- .3 Before installation ensure back of tile is free of contaminants.

3.3 WATERPROOFING MEMBRANE INSTALLATION

- .1 Install waterproofing membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.
- .2 Do not install tile or setting materials over crack isolation membrane until membrane has cured.

3.4 TILE INSTALLATION

- .1 Comply with TTMAC's "Specification Guide 09 30 00 Tile Installation Manual" for TTMAC installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile", that are referenced in TTMAC installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - .1 For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
 - .1 Tile floors in wet areas.
 - .2 Tile larger than 300 mm in any dimension.
 - .3 Tile with raised, ribbed or textured back.
 - .4 Tile installed with chemical resistant mortars and grout.
 - .5 Tiles with installation rated for heavy or extra heavy duty.
 - .2 Tile Installation Method:
 - .1 Floor Tile:
 - .1 Staff WC shower area: TTMAC Detail 319SR Detail B.
 - .2 Elsewhere: TTMAC 329 LFT.
 - .2 Ceramic Wall Tile:
 - .1 Staff WC shower area: TTMAC Detail 319SR Detail B.
 - .2 Elsewhere: TTMAC Detail 330LFTW.
- .3 Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

- .4 Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
 - .1 Cut tile to 100 by 100 mm for shower area.
- .5 Jointing Pattern: Lay tile in pattern indicated. Lay out tile work and centre tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - .1 Floor: square grid, joints aligned.
 - .2 Wall: stack bond.
 - .3 Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 - .4 Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- .6 Joint Widths: 1.6 mm, unless otherwise indicated
- .7 Grouting:
 - .1 Allow proper setting time before grouting.
 - .2 Grout joints solidly with grout mixed to proper consistency to flow into and fill joints.
 - .3 Apply grout in dust free environment. Protect for minimum seven days.
 - .4 Ensure that grout is free of pits or voids. When sufficiently set tool surface to a slightly concave profile. Repoint as necessary.
 - .5 Maintain uniform colour throughout.
 - .6 As work progresses, remove excess grout and polish with clean cloths.
 - .7 Do not grout joints around fixtures, pipes or other fittings. Fill joints with mildew resistant silicone sealant.
 - .8 Grout Sealer: Apply grout sealer to grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.
- .8 Metal Edge and Transition Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated, and at edges of exposed wall tile.

3.5 MOVEMENT JOINTS

- .1 Expansion Joints: Provide sealant-filled joints, including control, contraction, and isolation joints. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 - .1 Provide movement joints in accordance with TTMAC detail 301MJ.
 - .2 Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
 - .3 Provide control joints around perimeter of large areas, around columns, in locations where area changes direction and where tile abuts other hard material.
- .2 Fill non-prefabricated movement joints with sealant.

3.6 LIPPAGE TOLERANCES

- .1 Field Verification of Finished Installation: To TTMAC Manual.

3.7

CLEANING

- .1 Section 01 74 00: Cleaning installed work.
- .2 Clean tile and grout surfaces with manufacturer's recommended cleaning methods.

3.8

PROTECTION OF FINISHED WORK

- .1 Protect finished areas from traffic until setting materials have sufficiently cured to TTMAC requirements.
- .2 Protect finished floor areas from foot and wheel traffic from floors for a minimum 72 hours after completion of grouting.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Suspended metal grid ceiling system and perimeter trim.
- .2 Acoustic panels.

1.2 RELATED REQUIREMENTS

- .1 Division 23 - Heating, Ventilating, and Air-Conditioning (HVAC): Air diffusion devices in ceiling system.
- .2 Division 26 - Electrical: Light fixtures in ceiling system.
- .3 Division 27 - Communications: Speakers in ceiling system.
- .4 Division 28 - Electronic Safety and Security: Fire alarm components in ceiling system.

1.3 REFERENCES

- .1 ASTM International (ASTM)
 - .1 ASTM C635/C635M-13a - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
 - .2 ASTM E1264-14 - Standard Classification of Acoustical Ceiling Products
- .2 ECD Energy & Environment Canada
 - .1 Green Globes Canada, Design for New Construction and Major Retrofits v.2 2014

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Sequencing:
 - .1 Sequence work to ensure acoustic ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
 - .2 Install acoustic units after interior wet work is dry.

1.5 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on metal grid system components, and acoustic units.
- .3 Samples:
 - .1 Submit two samples, manufacturer's standard sample size, illustrating material and finish of acoustic units.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- .1 Section 01 78 10: Maintenance and extra material requirements.
- .2 Extra Stock Materials: Provide 5% of total acoustic unit area of extra panels to Contract Administrator.

1.7 QUALITY ASSURANCE

- .1 Products of This Section: Shall have Environmental Product Declaration (EPD) certification.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- .2 Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- .3 Handle acoustical panels carefully to avoid chipping edges or damaging units.

1.9 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 20 – Waste Management and Disposal.

1.10 AMBIENT CONDITIONS

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

Part 2 Products

2.1 SUSPENSION GRID MATERIALS

- .1 Non-fire-rated, two-directional, wide-face, capped, double-web, steel suspension system. Main and cross runners roll formed from cold-rolled steel sheet; pre-painted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than Z90 coating designation; with prefinished 24-mm wide metal caps on flanges.
 - .1 Structural Classification: Intermediate-duty system
 - .2 Face Design: Flat, flush.
 - .3 Cap Material: Steel cold-rolled sheet.
 - .4 Cap Finish: Painted white.
 - .5 Manufacturer/Model:
 - .1 Armstrong; Prelude XL.
 - .2 CertainTeed; Classic Stab System.
 - .3 CGC; Donn DX.
- .2 Hanger Wire:
 - .1 Galvanized soft annealed steel wire.
 - .2 Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but no less than 2.6 mm diameter wire.
- .3 Hanger Inserts: purpose made. Provide hangers and fasteners for independent suspension of light boxes.

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

2.2 ACOUSTIC PANEL MATERIALS

- .1 Acoustic Panels: to ASTM E1264, conforming to the following:
 - .1 Size: 610 by 610 mm.
 - .2 Thickness: 19 mm.
 - .3 Composition: Wet-formed mineral fibre.
 - .4 Light Reflectance: minimum 84%.
 - .5 NRC: minimum 0.70.
 - .6 CAC: minimum 40.
 - .7 Edge: Angled reveal.
 - .8 Surface Colour: White.
 - .9 Surface Finish: Non-directional fissured with factory applied latex paint.
 - .10 Manufacturer/Model:
 - .1 Armstrong; School Zone Fine Fissured 1717.
 - .2 CertainTeed; Sereno Fine Fissured SFF-450- HNRC/HCAC.
 - .3 CGC; RADAR High-NRC/High-CAC 22523.

2.3 ACCESSORIES

- .1 Acoustical Sealant: Manufacturer's standard sealant complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - .1 Exposed Joints: Non-sag, paintable, non-staining latex sealant.
 - .2 Concealed Joints: Non-drying, non-hardening, non-skinning, non-staining, gunnable, synthetic-rubber sealant.
- .2 Touch-up Paint: Type and colour to match acoustic and grid units.

Part 3 Execution

3.1 EXAMINATION

- .1 Do not erect ceiling suspension system until work above ceiling including anchors, blockings, sound and fire barriers, mechanical and electrical work has been reviewed by Contract Administrator.
- .2 Verify that layout of hangers will not interfere with other work.

3.2 PREPARATION

- .1 Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION - LAY-IN GRID SUSPENSION SYSTEM

- .1 Install suspension system to ASTM C636/C636M, and manufacturer's written instructions, and as supplemented in this section.

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- .2 Install system capable of supporting imposed loads to a deflection of 1/360 maximum.
 - .3 Install after major above ceiling work is complete. Coordinate the location of hangers with other work.
 - .4 Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.
 - .5 Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
 - .6 Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - .7 Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads independent of suspension grid.
 - .8 Do not eccentrically load system, or produce rotation of runners.
 - .9 Do not kink, or bend hanger wires to level system.
 - .10 Perimeter Moulding:
 - .1 Install edge moulding at intersection of ceiling and vertical surfaces.
 - .2 At sound rated partitions, install edge moulding into bed of acoustic sealant or gasket. Ensure sealant or sealant are not exposed below perimeter moulding.
 - .3 Use longest practical lengths.
 - .4 Mitre corners.
 - .5 Provide moulding at junctions with other interruptions.
 - .6 Do not use exposed fasteners, including pop rivets, on mouldings and trim.

3.4 INSTALLATION - ACOUSTIC UNITS

- .1 Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.
- .2 Install units after above ceiling work is complete.
- .3 Install acoustic units level, in uniform plane, and free from twist, warp, and dents.
- .4 Cutting Acoustic Units:
 - .1 Cut to fit irregular grid and perimeter edge trim.
 - .2 Double cut and field paint exposed edges of reveal edge units.
- .5 Where round obstructions occur, provide preformed closures to match perimeter molding.
- .6 Install hold-down clips to retain panels tight to grid system within 6 m of an exterior door.
- .7 Do not use scratched, damaged or broken panels. Replace scratched, damaged and broken panels.

3.5 ERECTION TOLERANCES

- .1 Section 01 73 00: Tolerances.
- .2 Maximum Variation from Flat and Level Surface: 3 mm in 3650 mm.
- .3 Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.6

CLEANING

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

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Carpet tile
- .2 Rubber base
- .3 Edge strips

1.2 REFERENCES

- .1 ASTM International (ASTM)
 - .1 ASTM F1861-08(2012)e1 - Standard Specification for Resilient Wall Base
- .2 Carpet and Rug Institute (CRI)
 - .1 CRI Carpet Installation Standard
 - .2 Green Label Plus Program (Carpet and Carpet Adhesive)
- .3 ECD Energy & Environment Canada
 - .1 Green Globes Canada, Design for New Construction and Major Retrofits v.2 2014
- .4 National Fire Protection Association (NFPA)
 - .1 NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source, 2011 Edition
- .5 South Coast Air Quality Management District (SCAQMD)
 - .1 SCAQMD Rule 1168, Adhesives and Sealants Applications Amended January 7, 2005; Rules in affect July 1 2005
- .6 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102.2-10 - Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies

1.3 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on specified products, describing performance, physical characteristics; sizes, patterns, colours available.
- .3 Samples:
 - .1 Submit two carpet tiles illustrating colour, and pattern for each carpet colour selected.
 - .2 Duplicate 300 mm long sample of edge protection strips, and rubber base.

1.4 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Submission procedures.
- .2 Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- .1 Section 01 78 10: Maintenance and extra material requirements.
- .2 Extra Stock Materials: Provide 2% of installed areas of each colour and pattern selected in full size tiles.

1.6 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.
- .3 Products of This Section: Shall have Environmental Product Declaration (EPD) certification.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 20 – Waste Management and Disposal.

1.8 AMBIENT CONDITIONS

- .1 Store materials for three days prior to installation in area of installation, to achieve temperature stability.
- .2 Maintain minimum 21 degrees C ambient temperature three days prior to, during and 24 hours after installation materials.

Part 2 Products

2.1 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for carpet flammability requirements for flooring in accordance with CAN/ULC-S102.2.
- .2 Conform to NFPA 253 Class I for flooring radiant panel test.

2.2 SUSTAINABILITY REQUIREMENTS

- .1 Carpet: Comply with prescribed limits of VOCs in accordance with the Reference Exposure Levels (REL) developed by the California Office of Environmental Health and Hazard Assessment (OEHHA) for volatile organic compounds, or have third-party certifications showing compliance to predetermined indoor air quality standards, in accordance with Green Globes Canada, Design for New Construction and Major Retrofits, and Section 01 35 63 - Sustainability Certification Project Requirements.
- .2 Carpet and Rug Institute Green Label Indoor Plus Air Quality Test Program

2.3 MANUFACTURERS

- .1 Carpet Manufacturer/Product:
 - .1 Shaw Contract, Collection Places, Style Sea Tile 5T172 and Sea Edge Tile 5T173, or subject to compliance with specified requirements, or approved equal by one of the following manufacturers, in accordance with B6.
 - .1 Tandus Centiva Flooring
 - .2 Interface.

- .2 Rubber Base Manufacturer/Product:
 - .1 Johnsonite; Mandalay.
 - .2 Roppe; Pinnacle Plus Wall Base #65.
 - .3 Mannington; Edge Effects Simplicity.

2.4 CARPET TILE

- .1 Carpet Tile (CPT): Multi-level pattern loop, solution dyed, conforming to the following criteria:
 - .1 Pile Fibre: Nylon 6.
 - .2 Max. Electrostatic Charge: 3 kV. @ 20% R.H.
 - .3 Gauge: 47 per 10 cm.
 - .4 Tufted Weight: 576 g/sq m.
 - .5 Density Factor: minimum 13.25 kilotex.
 - .6 Stitch Count: 35 per 10 cm.
 - .7 Primary Backing Material: Synthetic.
 - .8 Secondary Backing Material: Manufacturer's proprietary.
 - .9 Tile Size: Nominal 610 by 610 mm.
 - .10 Thickness:
 - .1 Overall: 5.8 mm.
 - .2 Pile: 2 mm.
 - .11 Soil and stain resistance: manufacturer's standard.
 - .12 Pattern Repeat: None.
 - .13 Colours: Allow for one colour of each style, as selected by Contract Administrator from manufacturer's full colour range.

2.5 MATERIALS - BASE

- .1 Base (RUB): ASTM F1861, Type TS vulcanized rubber or Type TP thermoplastic rubber; rectangular profile with 45 deg chamfered top edge. Allow for one colour selected by Contract Administrator from manufacturer's full colour range.
 - .1 Height: 114 to 117 mm.
 - .2 Thickness: 8 to 9.5 mm thick.
 - .3 Length: 2400 mm long minimum.

2.6 ACCESSORIES

- .1 Sub-Floor Filler: White premix latex; type recommended by flooring material manufacturer.
- .2 Primers: Recommended by carpet manufacturer.
- .3 Adhesive for Carpet Tile:
 - .1 Water-resistant, mildew-resistant, non-staining, pressure-sensitive type to suit products and subfloor conditions indicated, complies with flammability requirements for installed carpet tile, and is recommended by carpet tile manufacturer for releasable installation.
 - .2 Complies with Carpet and Rug Institute's (CRI) Green Label Plus program.
- .4 Adhesive for Rubber Base: Water-resistant type recommended by rubber base manufacturer for specific material on applicable substrate.
 - .1 VOC Content: Maximum 50 g/L (less water) to SCAQMD Rule 1168.

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- .5 Edge Strips: Metal, mill-finished aluminum, suitable for wheeled carts.

Part 3 Execution

3.1 EXAMINATION

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that surfaces are smooth and flat with maximum variation of 6 mm in 3 m, and are ready to receive work.
- .3 Verify concrete floors are dry to maximum moisture content recommended by carpet manufacturer.

3.2 PREPARATION

- .1 Prepare floor to CRI Carpet Installation Standard.
- .2 Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.
- .3 Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- .4 Vacuum clean substrate.

3.3 INSTALLATION - CARPET

- .1 Install carpet tile, accessories and adhesive to manufacturer's written instructions and CRI Carpet Installation Standard.
- .2 Installation Method: Glue down; install tile with full-spread, releasable, pressure-sensitive adhesive.
- .3 Integrate and blend carpet from different cartons to ensure minimal variation in colour match.
- .4 Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
- .5 Lay carpet tile to pattern directed by Contract Administrator, set parallel to building lines.
- .6 Locate change of material between rooms under door centerline. Where change of material occurs between open areas, locate transition at location directed by Contract Administrator.
- .7 Bind cut edges where not concealed by edge strips.
- .8 Install edge strips at unprotected or exposed edges, and where flooring terminates.
 - .1 Secure resilient strips by adhesive.

3.4 INSTALLATION – RUBBER BASE

- .1 Lay out base to keep number of joints at minimum. Base joints at maximum length available or at corners.
- .2 Clean substrate and prime with one coat of adhesive.
- .3 Apply adhesive to back of base.
- .4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
- .5 Install straight and level to variation of 1:1000.
- .6 Scribe and fit to door frames and other obstructions.
- .7 Job-Formed Corners: Mitred. Apply contact adhesive to both mitred edges.

3.5 CLEANING

- .1 Section 01 74 00: Cleaning installed work.
- .2 Remove excess adhesive without damage, from floor, base, and wall surfaces.
- .3 Clean and vacuum carpet surfaces.

3.6 PROTECTION OF FINISHED WORK

- .1 Do not permit traffic over unprotected floor surface.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Interior vegetated wall system (referenced on the drawings as "living wall")

1.2 RELATED REQUIREMENTS

- .1 Bid Opportunity, item B9.2
- .2 Section 06 16 00 - Sheathing, for plywood substrate behind wall system
- .3 Section 08 31 13 - Access Doors and Frames, for access door to remote controls
- .4 Division 22 - Plumbing, for water supply, connection and drains
- .5 Division 26 - Electrical, for electrical connections

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-installation Meetings:
 - .1 Convene one week before starting work of this section.
 - .2 Review preparation and installation procedures and coordinating and scheduling required with related work.
- .2 Coordination:
 - .1 Coordinate the work with placement of support framing and anchors in wall.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on specified products including plants.
- .3 Shop Drawings:
 - .1 Indicate materials, terminations, transitions, mechanical plumbing requirements.
 - .2 Provide three planting design options using variety of plants, for selection by Contract Administrator.
- .4 Samples: Submit two representative models of vegetated wall system components, except plants.

1.5 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Submission procedures.
- .2 Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials.

1.6 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Store non-plant materials indoors in dry ventilated area, minimum 10 deg C.

- .2 Store plant materials in area providing healthy environment in accordance with manufacturer's instructions.
- .3 If planted materials are not installed within two days of delivery to site, store plants in original containers, and care for plants accordance with manufacturer's instructions.
- .4 Environmental Limitations: Do not deliver or install plants until building is enclosed and weatherproof, lighting, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 20 – Waste Management and Disposal.

1.9 WARRANTY

- .1 Section 01 78 10: Warranties.
- .2 Manufacturer's material warranty in which manufacturer agrees to repair or replace components of vegetated wall system, except plants, that fail within specified warranty period.
 - .1 Material integrity of panels, frames, edging and gutters: 5 years from date of Substantial Performance.
 - .2 Material integrity of irrigation system including drip lines, supply lines and fittings, control unit components, valves and wiring: two years from date of Substantial Performance.

Part 2 Products

2.1 MANUFACTURERS

- .1 Basis of Design: G-Sky Green VersaWall, Style VTR-7N (7" Baseboards, Built-in Recessed), or subject to compliance with specified requirements, an approved equal in accordance with B6.

2.2 SYSTEM DESCRIPTION

- .1 Interior single-sided, recessed, vegetated wall system made up of waterproofing, plant trays, potted plants, and drip irrigation system with remote controls.
- .2 Wall Size: indicated.
- .3 System Components:
 - .1 Waterproofing: Manufacturer's recommended 1.5 mm thick self-adhesive rubberized asphalt laminated to polyethylene film reinforcement, complete with release liner.
 - .2 Plant Trays: 100% recycled polypropylene trays designed to support pots and hold water for irrigation purposes.
 - .3 Potted Plants: 100 mm dia. pots, nursery planted, species selected by Contract Administrator from manufacturer's standard range of plants.
 - .4 Remote Irrigation System: Closed system where water is pumped to top and flows from tray to tray to bottom of system. Irrigation control system comprised of supply line and drip lines, fittings, control valves, filters, pressure compensator, controller, flow sensor, liquid fertilizer injection assembly, timer, and leak detection alarm. Location: Behind vegetated wall.
 - .5 Base Trim: Removable base trim, supplied as part of vegetated wall system. Trim colour: White.

Part 3 Execution

3.1 EXAMINATION

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that surfaces are ready to receive work, and that plywood backing has been installed.

3.2 INSTALLATION

- .1 Install system to manufacturer's written instructions, reviewed shop drawings, and as follows.
- .2 Install waterproofing membrane to prepared substrate.
- .3 Install plant trays onto backing starting at base. Install trays level.
- .4 Align base trim with edge of vegetated wall.
- .5 Irrigation System:
 - .1 Install irrigation system to permanent water supply.
 - .2 Connect return drain line to supply tank.
 - .3 Connect overflow to drain tied to building sanitary system.
 - .4 Connect power supply to irrigation control unit.
 - .5 Test system before placing potted plants.
- .6 Place potted plants in plant trays.

3.3 MANUFACTURER'S FIELD SERVICE

- .1 Arrange for manufacturer's representative to:
 - .1 Review vegetated wall substrate before installation begins.
 - .2 Review work during installation of vegetated wall system.
 - .3 Review work at completion to confirm installation conforms to manufacturer's instructions.

3.4 MAINTENANCE SERVICE

- .1 Provide renewable one-year maintenance service contract as follows:
 - .1 Plant Health Inspection and Maintenance:
 - .1 Trim and clean foliage.
 - .2 Provide replacement of dead and unsightly plants subject to conditions set out in "plant replacement terms";
 - .3 Implement integrated pest and disease management program, to inspect for foliar pests and take preventative measures if required, by licensed pesticide applicator.
 - .4 Inspect growth medium for erosion and for signs of break-down on surface of vegetated wall, and repair or replacement as necessary.
 - .2 Irrigation and Drainage Inspection and Maintenance:
 - .1 Inspect moisture levels and adjust irrigation system as required.
 - .2 Deliver fertilizer through irrigation system as required.
 - .3 Inspect and test components and zones monthly; adjust, repair or clean heads, valves, emitters, filters, timers, sensors and control system.
 - .3 Reporting:
 - .1 Provide maintenance checklist with report and invoice.

- .2 Facility Maintenance Responsibilities:
 - .1 Provide water of adequate pressure and flow.
 - .2 Provide access to irrigation system controls.
 - .3 Provide access to plants, and control box.
 - .4 Provide level of lighting appropriate to type of plants.
 - .5 Provide ladder to access full vegetated wall system.
- .3 Plant Replacement Terms:
 - .1 Manufacturer will replace plants determined to be dead during maintenance service period.
 - .2 Plants will be replaced with comparable type and quality as original plants specified.
 - .3 Costs to replace plants will be borne by manufacturer, except for plants damaged by:
 - .1 Catastrophes including fire, flooding.
 - .2 Vandalism or theft.
 - .3 Failure of City to meet its responsibilities, including over- and under-watering.
 - .4 Accidental or malicious damage.
 - .5 Introduction of phyto-toxic liquids or chemicals to foliage or soil, such as cleaning solutions, chlorine, or other chemicals.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Surface preparation.
- .2 Interior and exterior painting.
- .3 Site painting of factory- and shop-primed surfaces.

1.2 RELATED REQUIREMENTS

- .1 Section 05 50 00 - Exterior Metal Fabrications: Shop primed items
- .2 Section 05 50 01 - Metal Fabrications: Shop primed items
- .3 Section 06 40 00 - Architectural Woodwork: Shop finished architectural woodwork
- .4 Division 23 - Heating, Ventilating, and Air-Conditioning (HVAC): Mechanical identification
- .5 Section 32 17 23 - Pavement Markings

1.3 REFERENCES

- .1 ASTM International (ASTM)
 - .1 ASTM D6886-03 - Standard Test Method for Speciation of the VOCs in Low VOC Content Waterborne Air-Dry Coatings by Gas Chromatography
- .2 ECD Energy & Environment Canada
 - .1 Green Globes Canada, Design for New Construction and Major Retrofits v.2 2014
- .3 Master Painters Institute (MPI)
 - .1 Architectural Painting Specifications Manual
- .4 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113, Architectural Coatings

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other Work having a direct bearing on Work of this section.
- .3 Scheduling:
 - .1 Schedule painting operations to prevent disruption of and by other trades.

1.5 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data:
 - .1 Submit Product data on all specified finishing products.
- .3 Samples:
 - .1 Submit three drawdowns of each product and colour combination. Apply drawdowns using 4 mil WFT drawdown bar on Leneta form WD plain white coated cards size 100 by 150 mm, mounted on 216 by 280 mm sheets.

- .2 For natural finishes on wood: Submit duplicate samples of specified finish on specified wood species.
- .3 When approved, sample panels shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.
- .4 Label each card with the following:
 - .1 Job name.
 - .2 Date.
 - .3 Product name.
 - .4 Product number.
 - .5 Colour number as stated in the colour schedule.
 - .6 Name, address, and phone number of the supplying facility.
- .5 Submit full range of available colours where colour availability is restricted.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Submission procedures.
- .2 Record Documentation: Upon completion, provide itemized list of products used including the following:
 - .1 Manufacturer's name.
 - .2 Product name, type and use.
 - .3 Colour coding number.
 - .4 Manufacturer's Material Safety Data Sheets (MSDS).

1.7 MAINTENANCE MATERIAL SUBMITTALS

- .1 Section 01 78 10: Maintenance and extra material requirements.
- .2 Extra Stock Materials: Provide properly packaged maintenance material as follows.
 - .1 One 4 litre can of each coating type and colour.
 - .2 Label each container with colour, type, texture and room locations in addition to manufacturer's label.

1.8 QUALITY ASSURANCE

- .1 Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.
- .2 Conform to MPI Painting Manual requirements for materials, preparation and workmanship.
- .3 Paint Products: Paint manufacturers and paint Products listed under the Approved Product List section of the MPI Painting Manual.
- .4 Products of This Section: Shall have Environmental Product Declaration (EPD) certification.

1.9 DELIVERY, STORAGE, AND PROTECTION

- .1 Section 01 61 00: Transport, handle, store, and protect products.
- .2 Deliver products to site in sealed and labeled containers showing manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, colour designation, and written instructions for mixing and reducing.
- .3 Store paint materials at minimum ambient temperature of 10 degrees C and a maximum of 32 degrees C, in dry, ventilated area and as required by manufacturer's written instructions.

- .4 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
- .5 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Contract Administrator. After completion of operations, return areas to clean condition to approval of Contract Administrator.
- .6 Remove paint materials from storage only in quantities required for same day use.
- .7 Provide adequate fireproof storage lockers and warnings as required by authorities having jurisdiction for storing toxic and volatile/explosive/flammable materials.
- .8 Fire Safety Requirements:
 - .1 Provide Type ABC fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.10 AMBIENT CONDITIONS

- .1 Do not perform painting or decorating Work when ambient air and substrate temperatures are below 10 degrees C for both interior and exterior work, or as required by paint product manufacturer.
- .2 Do not perform painting or decorating Work when relative humidity is above 85% or when dew point is less than 3 degrees C variance between the air/surface temperature required by paint Product manufacturer.
- .3 Provide suitable weatherproof covering and sufficient heating facilities to maintain minimum ambient air and substrate temperatures for 24 hours before, during and after paint application.
- .4 Do not perform painting and decorating Work when maximum moisture content of substrate exceeds:
 - .1 Wood: 15%.
 - .2 Gypsum board: 12%.
 - .3 Concrete: 12%.
 - .4 Concrete Floors: 8%.
- .5 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple cover patch test.
- .6 Test concrete surfaces for alkalinity as required.
- .7 Provide minimum lighting level of 323 lux on surfaces to be painted or decorated.

1.11 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 20 – Waste Management and Disposal.
- .2 Dispose of waste materials in accordance with authorities having jurisdiction.
- .3 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .4 Place non-reusable materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

- .5 To reduce contaminants entering waterways, sanitary/storm drain systems or into the ground, adhere to the following procedures:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
 - .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
 - .5 Dry out empty paint cans prior to disposal or recycling.
 - .6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
- .6 Set aside and protect surplus and uncontaminated finish materials and deliver or arrange collection for verifiable re-use or re-manufacturing.

Part 2 Products

2.1 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for flame and smoke rating requirements for finishes, storage, mixing, application and disposal of paint and related waste materials.

2.2 SUSTAINABILITY REQUIREMENTS

- .1 Paint Products: Comply with prescribed limits of VOCs per ASTM D6886, or have third-party certifications showing compliance to predetermined indoor air quality standards in accordance with Green Globes Canada, Design for New Construction and Major Retrofits, and Section 01 35 63 - Sustainability Certification Project Requirements.
 - .1 Maximum VOC Content:
 - .1 Interior Latex, Flat: 50 g/L.
 - .2 Interior Latex, not Flat: 150 g/L.

2.3 MATERIALS

- .1 Use only materials (primers, paints, coatings, varnishes, stains, lacquers, fillers) listed in the latest edition of the MPI Approved Product List (APL) on this project.
- .2 Ancillary materials such as linseed oil, shellac, thinners, solvents to be of highest quality product and provided by an MPI listed manufacturer, and compatible with paint materials being used.
- .3 Lead- and mercury-free.
- .4 Provide material for each system from a single manufacturer.
- .5 Fire Hazard: Flame spread and smoke developed ratings in accordance with local authorities having jurisdiction.

2.4 MIXING AND TINTING

- .1 Coatings: Ready-mixed and pre-tinted; re-mix paint in containers before and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

- .2 Paste, Powder or Catalyzed Paint: Mixed in accordance with manufacturer's written instructions.
- .3 Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.
 - .1 Do not exceed paint manufacturer's recommendations for addition of thinner. Do not use kerosene or any such organic solvents to thin water-based paints.
 - .2 Thin paint for spraying in accordance with paint manufacturer's instructions.

2.5 FINISH AND COLOUR

- .1 Finish: To MPI Premium Grade finish requirements.
- .2 Colours and Finishes: Refer to Colour Schedule to be provided after award of Contract.
 - .1 Exterior Colours: Based on three colours.
 - .2 Interior Colours: Based on four base colours and two accent colours with a maximum of one deep or bright colour.

2.6 GLOSS/SHEEN RATINGS

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

Gloss Level	Description	Gloss @ 60 degrees	Sheen @ 85 degrees
G1	Matte Finish (flat)	0 to 5	10 max.
G2	Velvet-Like Finish	0 to 10	10 to 35
G3	Eggshell Finish	10 to 25	10 to 35
G4	Satin-Like Finish	20 to 35	35 min.
G5	Traditional Semi-Gloss Finish	35 to 70	
G6	Traditional Gloss	70 to 85	
G7	High Gloss Finish	More than 85	

- .2 Gloss level ratings of painted surfaces as follows, unless otherwise indicated:
 - .1 Walls: G4.
 - .2 Ceilings: G1.
 - .3 Metal Doors and Frames: G5.
 - .4 Metal Fabrications: G5.
 - .5 Wood Doors and Paneling: G4.

2.7 INTERIOR PAINT SYSTEMS

- .1 Paint interior surfaces in accordance with the following MPI Painting Manual requirements.
- .2 Structural Steel and Metal Fabrications: (columns, beams, etc.).
 - .1 INT 5.1RR: High performance architectural latex (over waterbased rust-inhibitive primer)
- .3 Galvanized Metal: (doors, frames, railings, misc. steel, pipes, overhead decking, ducts, etc.).
 - .1 INT 5.3M: High performance architectural latex.
- .4 Dressed Lumber: (including doors, door and window frames, casings, moulding, etc.).
 - .1 INT 6.3A: High performance architectural latex.
- .5 Gypsum Board: (gypsum wallboard and textured finishes).
 - .1 INT 9.2B: High performance architectural latex.

2.8 EXTERIOR PAINT SYSTEMS

- .1 Structural Steel, Metal Fabrications, and factory- or shop-primed metal including roof hatch cover:
 - .1 EXT 5.1D: Alkyd (over alkyd primer)
- .2 Galvanized Metal: (not chromate passivated; for high contact/high traffic areas (doors, frames, railings, misc. steel, pipes, etc.))
 - .1 EXT 5.3B: Alkyd.

Part 3 Execution

3.1 EXAMINATION

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- .3 Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- .4 Test shop applied primer for compatibility with subsequent cover materials.
 - .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.

3.2 PREPARATION

- .1 Prepare surfaces in accordance with MPI requirements.
- .2 Remove and store or mask miscellaneous hardware and surface fittings such as electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to painting. Clean and replace upon completion of painting Work in each area. Remove doors before painting to paint bottom and top edges and re-hang.
- .3 Protect adjacent surfaces and areas, including rating and instruction labels on doors, frames, equipment, piping, from painting operations with drop cloths, shields, masking, templates, or other suitable protective means.
- .4 Correct defects and clean surfaces which affect work of this section. Start of finish painting of defective surfaces indicates acceptance of substrate and making good defects will be at no additional cost.

3.3 APPLICATION

- .1 Apply paint or stain in accordance with MPI Painting Manual Premium Grade finish requirements.
- .2 Apply products to adequately prepared surfaces, within moisture limits and acceptable environmental conditions.
- .3 Apply paint finish in areas where dust is no longer being generated or when wind or ventilation conditions will not affect quality of finished surface.
- .4 Apply each coat to uniform finish.
- .5 Tint each coat of paint progressively lighter to enable confirmation of number of coats.

- .6 Unless otherwise approved, apply a minimum of four coats of paint where deep or bright colours are used to achieve satisfactory results.
- .7 Sand and dust between each coat to provide an anchor for next coat and to remove defects visible from a distance up to 1000 mm.
- .8 Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.
- .9 Allow applied coat to dry before next coat is applied.
- .10 Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- .11 Continue paint finish behind wall-mounted items such as markerboards and tack boards.
- .12 Prime concealed surfaces of interior woodwork with primer paint.
- .13 Prime concealed surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25% with mineral spirits.

3.4 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- .1 Refer to Section Divisions 21 through 26 for schedule of colour coding and identification banding of equipment, duct work, piping, and conduit.
- .2 Unless otherwise specified, paint unfinished conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and texture to match adjacent surfaces in the following areas:
 - .1 Exposed-to-view exterior and interior areas.
 - .2 High humidity interior areas.
 - .3 Mechanical and electrical rooms.
- .3 In unfinished areas leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish; touch up scratches and marks.
- .4 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- .5 Do not paint over nameplates.
- .6 Paint inside of ductwork where visible behind louvers, grilles and diffusers for a minimum of 460 mm or beyond sight line, whichever is greater, with primer and one coat of matte black (non-reflecting) paint.
- .7 Paint inside of light valances white.
- .8 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .9 Paint yellow or band all natural gas piping in accordance with mechanical specification requirements.
- .10 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.5 FIELD QUALITY CONTROL

- .1 Acceptable Surfaces:
 - .1 No visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 1000 mm.
 - .2 No visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1000 mm.

- .3 No visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
- .4 Uniformity of colour, sheen, texture, and hiding across full surface area.

3.6 CLEANING

- .1 Section 01 74 00: Cleaning installed work.
- .2 Collect waste material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.7 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING

- .1 Metal Fabrications (Section 05 50 01): Ladders, under-counter supports.
- .2 Roof Hatch Cover (Section 07 72 33).

END OF SECTION

ROOM FINISH SCHEDULE									
ROOM.	ROOM NAME	FLOOR	BASE	WALL				CEILING	REMARKS
				NORTH	SOUTH	EAST	WEST	MAT	
D-101	VESTIBULE	PC	RUB	GWB / CWS				PWP	
D-102	LIBRARY SERVICES COUNTER	PC	RUB				GWB / CWS	PWP	
D-103	LIBRARY SERVICES WORKROOM	PC	RUB	CWS	GWB / CWS	GWB / CWS	GWB	PWP	
D-104	STAFF WC	CT	RUB	CWT	CWT	CWT	CWT	GWB	
D-105	STAFF ROOM	PC	RUB	GWB	GWB	GWB	GWB	ACT	
D-106	CORRIDOR	PC	RUB	GWB	GWB	GWB	GWB	ACT	
D-107	MECH/ELEC. ROOM	SC	RUB	PW	PW	PW	PW		
D-108	JANITOR'S CLOSET	PC	RUB	GWB	GWB	GWB	GWB	ACT	
D-109	TUTORIAL ROOM	CPT	RUB	GWB	GWB	GWB	GWB	ACT	
D-110	TUTORIAL ROOM	CPT	RUB	GWB	GWB	GWB	GWB	ACT	
D-111	BRANCH HEAD OFFICE	CPT	RUB	GWB	GWB	GWB	GWB	ACT	
D-112	MAIN LIBRARY AREA	CPT	RUB	GWB	GWB	GWB	GWB	PWP	
D-113	PROGRAM ROOM	CPT	RUB	GWB	GWB	GWB	GWB	PWP	
D-114	STORAGE ROOM	SC	RUB	GWB	GWB	GWB	GWB		
D-115	MALE W/C	CT	CT	CWT	CWT	CWT	CWT	GWB	
D-116	UNIVERSAL TOILET ROOM	CT	CT	CWT	CWT	CWT	CWT	GWB	
D-117	FEMALE W/C	CT	CT	CWT	CWT	CWT	CWT	GWB	
D-117A	JANITOR'S CLOSET	SC	RUB	GWB	GWB	GWB	GWB		

GENERAL NOTES:

- 1 REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATION FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
- 2 ALL EXPOSED STRUCTURAL STEEL COLUMNS TO BE PAINTED.
- 3 REFER TO INTERIOR ELEVATIONS FOR EXTENT OF FINISHES
- 4 REFER TO ARCHITECTURAL FLOOR PLANS FOR ROOMS WITH PYLWOOD BACKERBOARD.

FLOOR AND WALL FINISH SCHEDULE

CPT CARPET
 CT CERAMIC TILE
 CWS CURTAIN WALL SYSTEM
 CWT CERAMIC WALL TILE
 GWB GYPSUM WALL BOARD
 PC POLISHED CONCRETE
 PW PLYWOOD
 RUB RUBBER BASEBOARD
 SC SEALED CONCRETE
 SV SHEET VINYL

CEILING FINISH SCHEDULE

ACT ACOUSTIC CEILING TILE
 GWB GYPSUM WALL BOARD
 PWP PLYWOOD PANEL