

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 56 00 - Temporary Barriers and Enclosures.
- .3 Section 01 74 11 – Cleaning.
- .4 Section 01 78 00 – Closeout Submittals
- .5 Section 07 21 16 – Blanket Insulation
- .6 Section 07 92 00 – Joint Sealant

1.2 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 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.
- .4 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-[07], Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance 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 off ground, indoors and 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.

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 GYPSUM BOARD MATERIALS

- .1 Standard board: to ASTM C1396/C1396M 16 mm thick Type X, 1200 mm wide x maximum practical length, ends square cut, edges tapered.
- .2 Exterior grade: Purpose made exterior grade high performance water resistant surface sheathing board to ASTM C1177
 - .1 Standard of Acceptance:
 - .1 Dens Glass Gold (Georgia Pacific)

2.2 ACCESSORIES

- .1 Nails: to ASTM C514.
- .2 Steel drill screws: to ASTM C1002.
- .3 Stud adhesive: to CAN/CGSB-71.25 ASTM C557.
- .4 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
- .5 Polyethylene: to CAN/CGSB-51.34, Type 2.
- .6 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.
- .7 Joint compound: to ASTM C475, asbestos-free.

2.3 FRAMING MATERIALS

- .1 Exterior wall framing: 20 Ga. Steels studs for exterior wall framing at 16" o.c.

2.4 FINISHES

- .1 Texture finish: asbestos-free standard white texture coating and primer-sealer, recommended by gypsum board manufacturer.

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.
 - .2 Inform Contract Administrator 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 Contract Administrator.

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 joists 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 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 single layer gypsum board to metal furring or framing using screw fasteners
Maximum spacing of screws 300 mm on centre.
 - .1 Single-Layer Application:
 - .1 Apply gypsum board on ceilings prior to application of walls to ASTM C840.
 - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
 - .2 Double-Layer Application:
 - .1 Install gypsum board for base layer and exposed gypsum board for face layer.
 - .2 Apply base 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.
- .3 Exterior Soffits and Ceilings: install exterior gypsum board perpendicular to supports; stagger end joints over supports. Install with 6 mm gap where boards abut other work.
- .4 Install gypsum board with face side out.
- .5 Do not install damaged or damp boards.
- .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 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- .5 Install shadow mould at gypsum board/ceiling juncture [as indicated]. Minimize joints; use corner pieces and splicers.
- .6 Construct control joints of preformed units set in gypsum board facing and supported independently on both sides of joint.
- .7 Provide continuous polyethylene dust barrier behind and across control joints.
- .8 Locate control joints at changes in substrate construction at approximate 10 m spacing on long corridor runs at approximate 15 m spacing on ceilings.
- .9 Install control joints straight and true.
- .10 Construct expansion joints at building expansion and construction joints. Provide continuous dust barrier.
- .11 Install expansion joint straight and true.
- .12 Install cornice cap where gypsum board partitions do not extend to ceiling.
- .13 Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300 mm on centre.
- .14 Splice corners and intersections together and secure to each member with 3 screws.

- .15 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - .1 Rigidly secure frames to furring or framing systems.
- .16 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.
- .17 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWCI Levels of Gypsum Board Finish:
 - .1 Levels of finish:
 - .1 Level 1: Areas above ceiling:
 - .1 embed tape for joints and interior angles in joint compound. Surfaces to be free of excess joint compound; tool marks and ridges are acceptable.
 - .2 Level 5: All other areas not specified above:
 - .1 embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.
- .18 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.
- .19 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.
- .20 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .21 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.
- .22 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.
- .23 Mix joint compound slightly thinner than for joint taping.
- .24 Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.
- .25 Allow skim coat to dry completely.
- .26 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.

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 01 33 00 – Submittal Procedures.
- .2 Section 01 73 00 Execution.
- .3 Section 01 74 11 – Cleaning.
- .4 Section 01 78 00 – Closeout Submittals
- .5 Section 05 55 00 – Metal Fabrications
- .6 Section 07 92 00 – Joint Sealant

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-[05], 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 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 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Sample: Submit 12" x 12" sample panel. Adhere tile samples to ½" thick plywood and grout joints to represent project installation.

1.4 QUALITY ASSURANCE

- .1 Conform to TTMAC Manual

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
- .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

1.6 AMBIENT CONDITIONS

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12degrees C for 48 hours before, during, and 48 hours after, installation.

Part 2 Products

2.1 FLOOR TILE

- .1 Porcelain Ceramic Tile: More Tile, Mocha MRM1224, 12" x 24"
 - .1 Install tile with the 24" length running North South.

2.2 MORTAR AND ADHESIVE MATERIALS

- .1 Adhesive Standard of Acceptance:
 - .1 Laticrete

2.3 BOND COAT

- .1 Dry set cement mortar: to ANSI A108.1.
- .2 Latex Cement mortar: to ANSI A108.1, two-component universal dry-set mortar.
- .3 Epoxy bond coat: non-toxic, non-flammable, non-hazardous during storage, mixing, application, and when cured. To produce shock and chemical resistant mortars having the following physical characteristics:
 - .1 Compressive Strength: 246 kg/cm².
 - .2 Bond Strength: 53 kg/cm².
 - .3 Water Absorption: 4.0% Max.
 - .4 Ozone Resistance, 200 hours @ 200 ppm: no loss of strength.
 - .5 Smoke Contribution Factor: 0.
 - .6 Flame Contribution Factor: 0.
 - .7 Finished mortar and grout to be resistant to urine, dilute acid, dilute alkali, sugar, brine and food waste products, petroleum distillates, oil and aromatic solvents.

- .4 Chemical-Resistant Bond Coat:
 - .1 Epoxy Resin Type: CTI A118.3.
 - .2 Furan Resin Type: CTI A118.5.
 - .3 Bond Coat: maximum VOC limit 65 g/L to SCAQMD Rule 1168.

2.4 GROUT

- .1 Colouring Pigments:
 - .1 Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.
 - .2 Colouring pigments to be added to grout by manufacturer.
 - .3 Job coloured grout are not acceptable.
 - .4 Use in Commercial Cement Grout, Dry-Set Grout, and Latex Cement Grout.
- .2 ANSIA118.6, tile grout, colour as selected by Contract Administrator
- .3 Commercial Cement Grout: to CTI A118.6.

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 tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .6 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .8 Make internal angles square.
- .9 Use round edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.
- .10 Install divider strips at junction of tile flooring and dissimilar materials.

- .11 Allow minimum 24 hours after installation of tiles, before grouting.
- .12 Clean installed tile surfaces after installation and grouting cured.
- .13 Make control joints as per manufacturers recommendation. Make joint width same as tile joints.

3.3 FLOOR TILE

- .1 Install in accordance with TTMAC.

3.4 FLOOR SEALER AND PROTECTIVE COATING

- .1 Apply in accordance with manufacturer's instructions.

3.5 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.6 CLEANING

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

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 73 00 – Execution.
- .3 Section 01 74 11 – Cleaning.
- .4 Section 07 92 00 – Joint Sealant
- .5 Section 08 11 16 – Aluminum Door and Frames
- .6 Section 08 42 29 – Automatic Entrances
- .7 Section 08 44 13 – Glazed Aluminum Curtain Walls

1.2 REFERENCES

- .1 Aluminum Association
 - .1 AA DAF45-[03], Designation System for Aluminum Finishes.
- .2 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A653/A653M-[06a], Standard Specification for Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
 - .2 ASTM A1008/A1008M-[06a], Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
 - .3 ASTM C665-[06], Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - .4 ASTM C1063-[06], Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster.
 - .5 ASTM C1320-[05], Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.
- .3 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-[03], Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures
- .2 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Provide 12” x 12” samples in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

- .1 Shop drawings: submit drawings stamped and signed by professional engineer registered or licensed in Province of Manitoba, Canada.
- .2 Submit reflected ceiling plans for special patterns as indicated.
- .3 Indicate lay-out, hanger spacing and fastening details, lateral bracing and accessories.
- .5 Quality Assurance Submittals:
 - .1 Manufacturer's Instructions: manufacturer's installation instructions.
- .6 Closeout Submittals:
 - .1 Provide operation and maintenance data for linear metal ceilings for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 QUALITY ASSURANCE

- .1 Provide mock-up for evaluation of surface finishes and workmanship.
- .2 Provide initial production units for job-site assembly with other materials for review.
- .3 Co-ordinate type and location of mock-ups with project requirements. Accepted units will be used as standard for acceptance of production units. Remove and replace units which are not accepted.
- .4 Do not proceed with remaining work until workmanship, colour, and finish are reviewed by Contract Administrator

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle materials as recommended by manufacturer, supplemented as follows:
 - .1 Deliver materials to site in manufacturer's original, unopened containers with brand name and type marked on packaging.
 - .2 Handle and store materials in dry, watertight enclosures away from heavy traffic areas and in manner to prevent damage.
 - .3 Store linear metal ceiling units at same temperature and moisture conditions as where they are to be installed for minimum of 48 hours before installation.

1.6 SEQUENCING

- .1 Layout light fixture and penetrations at centre of panel width.
- .2 Plan HVAC inlets and outlets to occur within centre of panel system or provide for equal distance on each side parallel to length of panels.

1.7 SCHEDULING

- .1 Ensure following work is completed before installation of ceilings begins.
 - .1 Plastering, gypsum board finishing, painting and terrazzo work: completed and dry.

- .2 Mechanical, electrical, other work above ceiling: completed.
- .3 Heating, ventilating and air-conditioning systems: installed and operating.

Part 2 Products

2.1 MATERIALS

- .1 Drawings and specifications for work of this sections are based upon:
 - .1 VicWest AD300R
- .2 Metal linear ceiling:
 - .1 Manufactured from prefinished 22 Gauge steel 300mm wide by length indicated on drawings.
 - .2 Perforated Panels: Panels indicated as perforated on drawings to have .125" hole staggered @.189" apart.
- .3 Suspension System: 20 Ga Steel studs as per drawings. Manufacturer to recommend spacing.
- .4 Hangers: straight lengths of 2.5 mm diameter, galvanized, soft annealed steel wire commercial quality.
- .5 Accessories: splices, clips, end closers, side closers, light, J-mold and air seals, adjustable panel clips, as indicated on drawings or recommended by ceiling system manufacturer.

2.2 FINISHES

- .1 Baked enamel:
 - .1 Manufacturer's standard prefinished matte finish. Colour to be Cambridge White.

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 ERECTION

- .1 Do not erect linear strips until work above ceiling has been inspected by Contract Administrator.
- .2 Secure hangers to overhead structure using attachment methods acceptable to Contract Administrator.
- .3 Suspend hangers from building structural members plumb and free from contact with insulation or other objects within ceiling plenum.

- .4 Splay hangers where necessary to avoid obstructions and brace to offset resulting horizontal forces.
- .5 Install supplemental suspension members and hangers in form of trapezes or equivalent devices where obstructions interfere with required hanger spacing.
- .6 Ensure supplemental members are sized to support ceiling loads within performance limits of referenced standards.
- .7 Attach hangers securely and appropriately to structure by attaching to inserts and eyescrews.
- .8 Secure hangers in manner to prevent deterioration or failure due to age, corrosion or elevated temperatures.
- .9 Maximum spacing of hangers or supports: As per manufacturers recommendation.
- .10 Lay out linear strips in direction indicated on reflected ceiling plan.
- .11 Provide openings for recessed fixtures.
- .12 Scribe and cut metal panel units for accurate fit at borders and other ceiling penetrations.
- .13 Provide hanger at each corner of openings of fixtures.
- .14 Terminate strip ends 5 mm from walls and other vertical surfaces. Use factory made closed end units where ends are exposed to view.
- .15 Use manufacturer's field cut-off device for 90 degrees and 45 degrees end cuts.
- .16 Install between linear strips where required.
- .17 Supply and install Z shaped metal trim at each side of expansion joints. Design to accommodate plus or minus 25 mm movement and maintain visual closure. Finish to match linear strips.

3.3 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.4 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 Clean dirty or discoloured surfaces of linear metal ceiling units in accordance with manufacturer's written recommendations.
- .3 Ensure units are free from defects.
- .4 Remove and replace damaged or improperly installed units.

END OF SECTION

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Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 73 00 – Execution.
- .3 Section 01 74 11 – Cleaning.
- .4 Section 05 55 00 – Metal Fabrications

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 SUBMITTALS

- .1 Samples:
 - .1 Submit one 200 x 200 mm sample panels of each paint colour 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 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .2 Storage and Handling Requirements:
 - .1 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.
- .3 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.

1.5 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
 - .1 Ensure adequate ventilation in enclosed areas

- .2 Co-ordinate use of existing ventilation system with Contract Administrator and ensure its operation during and after application of paint as required.
- .3 Provide minimum lighting level of 500 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 Contract Administrator 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] [and] [MPI - Maintenance Repainting Manual] "Approved Product" listing.
- .4 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 Contract Administrator 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.
- .5 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-Category | Gloss @ 60 degrees | Sheen @ 85 degrees |
|----------------------------|--------------------|--------------------|
| 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 indicated] [and] [as noted on Finish Schedule].
 - .6 Exterior painting:
 - .1 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.
 - .1 EXT 5.1D - Alkyd Gloss Level 3 - Eggshell finish.
 - .7 Interior painting:
 - .1 Concrete horizontal surfaces: floors.
 - .1 INT 3.2B - Alkyd floor enamel [gloss] [low gloss] finish.
 - .2 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.
 - .1 INT 5.1E Alkyd - Gloss Level 3 finish.
 - .3 Galvanized Metal: high contact/high traffic areas (doors, frames, railings and handrails, etc.).
 - .1 INT 5.3C - Alkyd Gloss Level 3 finish (over cementitious primer).
 - .4 Dressed Lumber: doors, door and window frames, casings, mouldings, etc.:
 - .1 INT 6.3A - Latex Gloss Level 5 finish.
 - .5 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock" type material, etc.
 - .1 INT 9.2A - Latex Gloss Level 3 finish (over latex sealer).
 - .2 INT 9.2C - Alkyd Gloss Level 3 finish (over latex sealer).
 - .8 Interior re-painting:
 - .1 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.
 - .1 RIN 5.1E - Alkyd Gloss Level 3.
 - .2 Galvanized Metal: high contact/high traffic areas (doors, frames, railings and handrails, etc.).
 - .1 RIN 5.3C - Alkyd Gloss Level 3.
 - .3 Plaster and Gypsum Board: gypsum wallboard, drywall, "sheet rock" type material, etc.
 - .1 RIN 9.2A - Latex Gloss Level 3.
 - .2 RIN 9.2C - Alkyd Gloss Level 3 finish.

2.2 COLOURS:

- .1 Colours to be provided by Contract Administrator
 - .1 Allowance: Allow 2 colours on exterior metal screen.

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 and MPI - Maintenance Repainting 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 Contract Administrator 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 Contract Administrator.
 - .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 Contract Administrator.
 - .4 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting 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 Use method of application approved by Contract Administrator. Conform to manufacturer's application recommendations.
- .2 Apply coats of paint in continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .3 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .4 Sand and dust between coats to remove visible defects.
- .5 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .6 Finish inside of cupboards and cabinets as specified for outside surfaces.
- .7 Finish closets and alcoves as specified for adjoining rooms.
- .8 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
- .9 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 Paint both sides and edges of backboards for telephone and electrical equipment before installation.
 - .1 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

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.

3.6 SCHEDULE

- .1 Gypsum Board at Staff Entry
 - .1 One Coat of Primer sealer
 - .2 2 coats of latex eggshell enamel. Colour to be selected by Contract Administrator
- .2 Galvanized Metal: Epoxy Paint

- .1 One Coat Vinyl Wash Primer
- .2 One coat – 2.0 mils thick epoxy zinc coating
 - .1 Standard of Acceptance: Valspar MZ-4
- .3 Two Coats - 2.0 mils acrylic enamel
 - .1 Standard of Acceptance: Phillips Paint Products Acrycote 98, 694 series
- .4 Colour to be selected by Contract Administrator. Allow up to two colours.

END OF SECTION