Part 1 General

1.1 SECTION INCLUDES

.1 Gypsum board and joint treatment.

.2 Backer board.

.3 Metal channel ceiling framing.

1.2 RELATED SECTIONS

.1 Section 06 10 13 - Wood Blocking and Curbing.

.2 Section 07 21 13 – Board & Semi Rigid Insulation.

.3 Section 07 21 19 – Foamed-in-Place Insulation.

.4 Section 07 84 00 - Firestopping.

.5 Section 09 22 16 – Non-Structural Metal Stud Framing

.6 Section 09 30 13 - Ceramic Tiling.

1.3 REFERENCES

.1 ANSI A118.9-1999 (R2005) - Cementitious Backer Units.

.2 ASTM C553, Type 1 - Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.

.3 ASTM C1104 - Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation.

.4 ASTM C1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.

.5 ASTM E84 - Surface Burning Characteristics of Building Materials.

.6 ASTM C475/C475M-02 (R2007) - Joint Compound and Joint Tape for Finishing Gypsum Board.

.7 ASTM C514-04(2009)e1 - Nails for the Application of Gypsum Board.

.8 ASTM C557-03(2009)e1 - Adhesives for Fastening Gypsum Wallboard to Wood Framing.

.9 ASTM C645-09a - Non-Structural Steel Framing Members.

.10 ASTM C754-09a - Installation of Steel Framing Members to Receive Screw-Attached Gypsum Board.

.11 ASTM C840-08 - Application and Finishing of Gypsum Board.

.12 ASTM C954, 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.

.13 ASTM C1002-07 - Steel Self-Piercing, Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

.14 ASTM C1047-09 - Accessories for Gypsum Wallboard and Gypsum Veneer Base.

.15 ASTM C1177/C1177M, Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

.16 ASTM C1178/C1178M, Specification for Glass Mat Water Resistant Gypsum Backing Board.

.17 ASTM C1280, Specification for Application of Gypsum Sheathing Board.

.18 ASTM C1278/C1278M-07a - Fiber-Reinforced Gypsum Panel.

.19 ASTM C1325-08b - Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units.

.20 ASTM C1396/C1396M-09a - Gypsum Board.

.21 ASTM E90-09 - Test Method for Laboratory Measurement of Airborne-Sound Transmission Loss of Building Partitions and Elements.

.22 CAN/CGSB 51.34, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.23 CAN/CGSB-71.25-M88 - Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

.24 CAN/ULC-S101-07 - Methods of Fire Endurance Tests of Building Construction and Materials.

.25 CAN/ULC-S102-07 - Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

.26 CAN/ULC-S702-09 - Thermal Insulation Mineral Fibre for Buildings.

.27 GA-214-07 (Gypsum Association) - Recommended Levels of Gypsum Board Finish.

.28 GA-216-07 (Gypsum Association) - Application and Finishing of Gypsum Panel Products.

.29 GA-600-09 (Gypsum Association) - Fire Resistance Design Manual.

.30 GA-801-07 (Gypsum Association) - Handling and Storage of Gypsum Panel Products: A Guide for Distributors, Retailers, and Contractors.

.31 UL - Fire Resistance Directory.

.32 ULC - Fire Resistance Directory.

.33 Association of the Wall and Ceilings Industries International (AWEI)

1.4 SYSTEM DESCRIPTION

.1 Acoustic Attenuation for identified Interior Partitions: STC as indicated on Drawings.

1.5 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submittal Procedures.

.2 Product Data:

.1 Provide data on steel stud framing gypsum board, backer board, and joint tape.

.3 Shop Drawings:

.1 Indicate special details associated with acoustic seal for openings.

1.6 QUALITY ASSURANCE

.1 Perform Work in accordance with ASTM C840, GA-214, GA-216, and GA-600. Maintain one (1) copy on Site.

.2 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience.

1.7 DELIVERY, STORAGE, AND PROTECTION

.1 Section 01 61 00: Transport, handle, store, and protect products.

.2 Deliver materials in original packages, containers or bundles bearing manufacturer's brand name and identification.

.3 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

.4 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.8 ENVIRONMENTAL REQUIREMENTS

.1 Ambient Conditions:

.1 Maintain temperature between 10 degrees C minimum and 21 degrees C maximum, for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.

.2 Apply board and joint treatment to dry, frost free surfaces.

.3 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 MANUFACTURERS

.1 Substitutions: Refer to Bid Opportunity.

2.2 FRAMING MATERIALS

.1 Studs and Tracks: Specified in Section 09 22 16.

.2 Furring, Framing, and Accessories: Specified in Section 09 22 16 - Non-Structural Metal Stud Framing.

.3 Fasteners: ASTM C1002.

.4 Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

.5 Adhesive: CAN/CGSB-71.25, ASTM C557, GA-216.

.6 Contractor has the option of using either a proprietary suspension system or a three-component direct-hung system to suspend gypsum board ceilings.

.1 Cable suspension system:

.1 Standard of Acceptance:

.1 CGC Drywall Suspension System - direct hung drywall system.

.2 Approved method using steel studs and channels.

.2 Three Component System:

.1 (1 ½ inches x ½ inches x 12') 16 gauge channel suspended by 9 gauge (minimum) hanger wire at a maximum of 48" o.c.

.2 Tie the furring bar to the channel at (48 inches) o.c.

.3 The perimeter support shall be a (1 ½ inches x 1 ¼ inches) 25 gauge galvanized angle.

.4 The gypsum board shall be 16mm (5/8 inches) unless noted otherwise.

2.3 GYPSUM BOARD MATERIALS

.1 Standard Gypsum Board: ASTM C1396/C1396M, paper-faced; 1 220 mm (48 inches) wide, maximum available length in place; tapered edges, ends square cut.

.1 Fire rated core (Type X), 16 mm (5/8 inch) thick.

.2 Abuse Resistant (Type X), 16 mm (5/8 inch) thick.

.1 Product: VHI abuse resistant drywall panel (Fiberock Brand).

.2 Fibreglass Mat Gypsum Backer Board: ASTM C1178; ASTM D6329, EPA 12-week protocol; water-resistant treated core with glass mat coating, 16 mm thick; maximum available size in place; smoothed edges, ends square cut.

.1 Product: DensShield; Manufactured by Georgia-Pacific Gypsum LLC.

.3 Ceramic Tile Backer Board (interior applications): ASTM E96, C518 and E84. Manufactured from extruded polystyrene foam, with a cement-free reinforcement layer laminated to both sides, 16mm thick, ends square cut.

.1 Product: Kerdi-Board; Manufactured by Schluter (interior applications)

.4 Cementitious Fiber-Mat Reinforced Sheathing for Ceramic Tile Substrate (exterior applications): ASTM C 1325, ANSI A118, 16mm thick, ends square cut.

.2 Product: Durock Cement Backer Board by USG

2.4 ACCESSORIES

.1 Fire Rated Insulation: as specified in Section 07 21 13 – Board & Semi Rigid Insulation.

.2 Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

.3 Corner Beads: ASTM C1047, GA-216, metal commercial grade sheet steel with G90 Zinc finish perforated and knurled 32mm (1 ¼ inch) flanges; one piece length per location.

.4 Casing Beads: ASTM C1047, GA-216, metal, G90 Zinc finish, perforated flanges; one piece length per location.

.1 Standard of Acceptance:

.1 Product: D-100; Manufactured by Bailey Metal Products Ltd.

.5 Edge Trim: ASTM C1047, GA-216; Type U casing bead.

.6 Resilient Channels: 0.5mm (25ga.) base steel thickness galvanized steel.

.1 Standard of Acceptance:

.1 Product: RC-1 resilient channel; Manufactured by UGC.

.7 Channel Trim: galvanized steel.

.1 Standard of Acceptance:

.1 Product: D-4411; Manufactured by Bailey Metal Products Ltd.

.8 Drywall metal trim: galvanized steel.

.1 Standard of Acceptance:

.1 Product: D-200; Manufactured by Bailey Metal Products Ltd.

.9 Angle Framing Trim: 32 x 38mm (1 ¼ inch x 1 ½ inch) 25 ga.

.1 Standard of Acceptance:

.1 Product: D-700; Manufactured by Bailey Metal Products Ltd.

.10 Flexible Column Trim: 14mm (9/16 inch) flexible PVC trim angle.

.1 Standard of Acceptance:

.1 Product: Flex-Grid Angle; Manufactured by Trim-Tex.

.2 Uniflex®.

.11 Acoustic sealant: to CGSB 19-GP-21M, non-hardening, non-skinning, for use in conjunction with gypsum board.

.1 Standard of Acceptance:

.1 Product: Acoustical Sealant; Manufactured by Tremco.

.12 Sealants: Type in accordance with Section 07 92 00 - Joint Sealing.

.13 Polyethylene: to CAN 2-52.33-M77, Type 2. Minimum 0.15mm (6mil) thickness.

.14 Insulating strip: rubberized, moisture resistant, 3mm (1/8") thick cork or closed cell neoprene strip, 12mm (1/2") wide, with self-sticking permanent adhesive on one face; lengths as required.

.15 Track sill gasket: 3mm (1/8") thick semi-rigid fiberglass strips or closed cell foam.

.16 Isolation hanger: ARH-1, high tensile rubber 11 gauge interlocked wire, size for 5mm (3/16 inch) deflection with maximum load. Available at Tri-Tec Drywall Services.

.17 Channel Studs: 18ga. channel studs at corners as backing for corner guards.

.18 Joint Materials: ASTM C475, GA-216, compatible with products specified.

.19 Reinforcing tape, adhesive, and water.

.20 Joint compound: Asbestos-free dust-controlled.

.1 Standard of Acceptance:

.1 SHEETROCK® All Purpose Joint Compound.

.2 SHEETROCK® Topping Joint Compound.

.3 DURABOND 90® Compound.

.4 SHEETROCK MC® Ready-to-Use.

.5 SHEETROCK® First Coat Paint primer/sealer.

.21 Protect ready-to-use compounds from freezing and extreme heat. Product that has been frozen is to be discarded.

.22 Ceiling Access Doors: 20 gauge galvanized formed door panel, flanged on four sides with 26 gauge galvanized frame, concealed hinge with spanner head cam latch. Size: 610mm x 610mm. Finish to be white colour, baked on polyester powder coat on door panel. Finish painting to be by Section 09 91 99.

.1 Standard of Acceptance:

.1 Acudor, Model DW-5040

Part 3 Execution

3.1 EXAMINATION

.1 Verify that Site conditions are ready to receive work and opening dimensions are as indicated on shop drawings and as verified by Contractor.

3.2 INSTALLATION

.1 Install in accordance with manufactures instructions.

.2 Components shall be lifted with suitable devices.

.3 Components shall be installed plum and true. Shim where necessary.

.4 Fasten components with self drilling, self tapping bugle head screws through face or back as indicated on shop drawings.

.5 Where components are suspended, use as a minimum 12 gauge galvanized steel wire and the suspension points indicated on the shop drawings.

.6 Framing, hangers etc. as specified for Gypsum Board.

.7 Butt joints are to be adhered together using “Liquid Nail” or approved equal in accordance with B7.

.8 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.

.9 Do application of gypsum sheathing in accordance with ASTM C1280.

.10 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.

.11 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

.12 Install work level to tolerance of 1:1200.

.13 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, and grilles.

.14 Install 19 x 64 (3/4 x 2 ½ inch) mm furring channels parallel to, and at exact locations of steel stud partition header track.

.15 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.

.16 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

.17 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.

.18 Furr openings and around built in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

.19 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

.20 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 (6 inches) on centre using contact adhesive for full length.

.21 Install casing beads around perimeter of suspended ceilings.

.22 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

.23 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

.24 Install shadow mould at gypsum board/ceiling juncture as indicated. Minimize joints; use corner pieces and splicers.

.25 Construct control joints of preformed units two back to back casing beads set in gypsum board facing and supported independently on both sides of joint.

.26 Provide continuous polyethylene dust barrier behind and across control joints.

.27 Locate control joints where indicated, at changes in substrate construction, at approximate 10 m (30 ft) spacing on long corridor runs and at approximate 15 m (45 ft) spacing on ceilings.

.28 Install control joints straight and true.

.29 Construct expansion joints as detailed, at building expansion and construction joints. Provide continuous dust barrier.

.30 Install expansion joint straight and true.

.31 Install cornice cap where gypsum board partitions do not extend to ceiling.

.32 Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300 mm (12 inches) on centre.

.33 Splice corners and intersections together and secure to each member with 3 screws.

.34 Install access doors to electrical and mechanical fixtures specified in respective sections. Rigidly secure frames to furring or framing systems.

.35 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.

.36 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:

.1 Levels of finish:

.1 Level 0: No tapping, finishing or accessories required.

.2 Level 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.

.3 Level 2: Embed tape for joints and interior angles in joint compound and apply one separate coat of joint compound over joints, angles, fastener heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable.

.4 Level 3: Embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

.5 Level 4: 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; surfaces smooth and free of tool marks and ridges.

.6 Level 5: 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.

.37 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.

.38 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.

.39 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

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

.41 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.

.42 Mix joint compound slightly thinner than for joint taping.

.43 Apply thin coat to entire surface using trowel or drywall broadknife to fill surface texture differences, variations or tool marks.

.44 Allow skim coat to dry completely.

.45 Remove ridges by light sanding or wiping with damp cloth.

.46 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of substantial completion.

3.3 CEILING FRAMING INSTALLATION

.1 Install to ASTM C754 and GA-216.

.2 Coordinate location of hangers with other work.

.3 Install ceiling framing independent of walls, columns, and above ceiling work.

.4 Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 600 mm (24 inches) past each end of openings.

.5 Laterally brace entire suspension system.

.6 Contractor has the option of using either a proprietary suspension system or a three-component direct-hung system to suspend gypsum board ceilings.

.1 Cable suspension system: Erect hangers and runner channels or suspended gypsum board ceilings where specifically noted to CSA A82.31M. Approved method using steel studs and channels.

.2 Three Component System:

.1 (1 ½ inches x ½ inches x 12') 16 gauge channel suspended by 9 gauge (minimum) hanger wire at a maximum of 48" o.c.

.2 Tie the furring bar to the channel at (48 inches) o.c.

.3 The perimeter support shall be a (1 ½ inches x 1 ¼ inches) 25 gauge galvanized angle.

.4 The gypsum board shall be 16mm (5/8 inches) unless noted otherwise.

.7 Construct ceilings to a tolerance of 1:1200.

.8 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, and grilles.

.9 Fire and sound rated partitions to be continuous to underside of roof structure above suspended or furred ceiling.

.10 Do not erect ceiling suspension system until anchors, blocking, sound or fire barriers, electrical, and mechanical work above ceiling have been inspected and approved by Contract Administrator.

.11 Ensure suspended system is co-ordinated with location of related components.

.12 Support suspension system main runners with hanger wire secured to the building's structural system. Do not attach suspension system to ductwork or building services. Review mechanical drawings for areas requiring special attention. Completed assembly to support super-imposed loads, such as lighting fixtures, diffusers, and grilles.

.13 Support fluorescent light fixtures with supplemental hangers within 150mm (6 inches) of each corner and at maximum 600mm (24 inches) around perimeter.

.14 Provide isolation hangers where noted.

3.4 ACOUSTIC ACCESSORIES INSTALLATION

.1 Install acoustic sealant within partitions in accordance with manufacturer's written instructions.

.2 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 150mm (6") o.c. or using contact adhesive for full length.

.3 Install casing beads around perimeter of suspended ceilings.

.4 Install channel trim where gypsum board butts against surfaces having no trim and at control joints. Cement and sand to finish.

.5 Install insulating strips continuously at edges of gypsum board or casing beads abutting metal window or exterior doorframes, to provide thermal break.

3.5 GYPSUM BOARD INSTALLATION

.1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.

.2 Apply gypsum board to wood or metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm (12 inches) on centre.

.3 Apply 13 mm (1/2 inch) diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut outs around electrical boxes, ducts, and in partitions where perimeter sealed with acoustic sealant.

.4 Install ceiling boards in direction that will minimize number of end butt joints. Stagger end joints at least 250 mm.

.5 Install gypsum board with face side out.

.6 Do not install damaged or damp boards.

.7 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

.8 Erect single layer standard gypsum board horizontal or vertical orientation (whichever results in fewest ends), with ends and edges occurring over firm bearing.

.9 Use screws when fastening gypsum board to wood furring or framing.

.10 Erect exterior gypsum soffit board perpendicular to supports, with staggered end joints over supports.

.11 Treat cut edges and holes in moisture resistant gypsum board with sealant.

.12 Place control joints consistent with lines of building spaces as indicated or required. Confirm all locations with Contract Administrator.

.13 Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

.14 Install ceramic tile backing board over metal studs, plywood sheet, or gypsum board to manufacturer's written instructions. Refer to Drawings.

3.6 PROPRIETARY BACKER BOARDS

.1 Install proprietary paperless exterior sheathing, wallboards, cement board and tile backer boards in accordance with the manufacturer's technical literature.

3.7 ACCESS DOORS

.1 Install access doors to electrical and mechanical fixtures specified in respective Sections and to the approval of the Contract Administrator for location. Refer to Drawings for locations of ceiling access doors.

.2 Rigidly secure frames to furring or framing systems.

3.8 JOINT TREATMENT

.1 Finish in accordance with ASTM C840 and GA-214, Level 5 for all areas exposed to view and Level 2 for all areas not exposed.

.2 Feather coats on to adjoining surfaces so that camber is maximum 0.8 mm (1/32 inch).

.1 Fill and finish joints and corners of cementitious backing board.

.2 Control Joints:

.1 Construct control joints of preformed units or (2) back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.

.2 Provide continuous 150mm (6 inches) wide polyethylene dust barrier behind and across control joints.

.3 Locate control joint at approximate 10000mm (30') spacing on long runs, at approximate 15000mm (45') spacing on ceilings or where indicated on drawings. Locate control joints over door openings aligned with corner of doorframe and carry up to top of partition.

.4 Install control joints straight and true.

.5 Install expansion joint covers at Bridge connection in accordance with manufacturer's instructions. Blend into wall.

.3 Taping and Filling:

.1 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.

.2 Finish corner beads, control joints, and trim as required with (2) coats of joint compound and (1) coat of taping compound, feathered out onto panel faces.

.3 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after painting is completed.

.4 Tape and fill joints above ceiling line to underside of structure in all walls and to floor line for proper installation of cove base.

.5 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.6 Completed installation to be smooth, level or plumb, free from waves and other defects, and ready for painting or other finish coatings including fabric or vinyl wall coverings.

.7 Apply a continuous skim coat at all partitions located directly below valence lighting or perpendicular to exterior windows for a length of 10000mm (30') to provide a smooth surface free of joints and imperfections.

.8 Sanding not required behind permanent fixtures and above finished ceilings.

.9 Apply a continuous skim coat of topping joint compound over the FibreBond® panels to provide a smooth and consistent painting surface, or apply SHEETROCK® First Coat paint.

3.9 TOLERANCES

.1 Maximum Variation of Finished Gypsum Board Surface from True Flatness: 3 mm in 3 m (1/8 inch in 10 ft) in any direction.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Formed metal framing of studs and furring, at interior locations.

.2 Framing accessories.

.3 Gypsum board and joint treatment.

.4 Light gauge metal stud wall framing.

.5 Refer to Section 05 41 00 for exterior steel stud framing.

1.2 RELATED SECTIONS

.1 Section 05 50 00 - Metal Fabrications.

.2 Section 06 10 13 - Wood Blocking and Curbing: Rough wood blocking within stud framing.

.3 Section 07 26 00 - Vapour Retarders.

.4 Section 07 21 13 – Board & Semi Rigid Insulation.

.5 Section 07 62 00 - Metal Flashing and Trim: Head and sill flashings.

.6 Section 09 21 16 - Gypsum Board Assemblies: Gypsum board on metal studs for partitioning.

1.3 REFERENCES

.1 ASTM A123/A123M-09 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.2 ASTM A653/A653M-09 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.3 ASTM C645-09a - Non-Structural Steel Framing Members.

.4 ASTM C754-04 - Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

.5 ASTM C1002-07 - Steel Self-Piercing, Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

.6 CAN/CGSB-1.181-99 - Ready-Mixed, Organic Zinc-Rich Coating.

.7 CAN/CGSB-7.1-98 - Lightweight Steel Wall Framing Components.

.8 SSPC (The Society for Protective Coatings) - Steel Structures Painting Manual.

.9 Association of Wall and Ceiling Contractors (A.W.C.C.) Specification Standards Manual.

.10 CAN/CSA-S136-07 - North American Specification for the Design of Cold-Formed Steel Structural Members.

.11 CSA W47.1-03 (R2008) - Certification of Companies for Fusion Welding of Steel Structures.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Coordination:

.1 Coordinate with other work having a direct bearing on work of this section.

.2 Coordinate the placement of components within the stud framing assembly specified elsewhere.

1.5 QUALITY ASSURANCE

.1 Perform Work to ASTM C754 Association of Wall and Ceiling Contractors (A.W.C.C.) Specification Standards Manual.

.2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years experience.

.3 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience.

Part 2 Products

2.1 STUD FRAMING MATERIALS

.1 Studs: ASTM A653/A653M, non-load bearing rolled steel, channel shaped, punched for utility access, as indicated on Drawings.

.1 Thickness (Interior): 0.53 mm (25 gauge) unless otherwise noted.

.2 Tracks and Headers: Same material and thickness as studs, bent leg retainer notched to receive studs.

.1 Compression Track: Supply electrogalvanized 0.9mm (20ga.) nominal core thickness steel track with minimum 50mm (2 inch) deep leg and sufficient width to accommodate deflection movement in structure with compressing wall studs.

.3 Ceiling Runners: Interior Steel Studs and Furring of the Association of Wall and Ceiling Contractors (A.W.C.C.) Specification Standards Manual With extended leg retainer.

.1 20ga. 0.88mm (0.035 inch), as detailed with leg length to allow for 50mm (2 inch) movement.

.4 Furring and Bracing Members: Of same material as studs; thickness to suit purpose.

.1 0.5mm (25ga.) core thickness.

.2 22 x 65mm (7/8 inch x 2 ½ inch) hat section, galvanized.

.5 Fasteners: ASTM C1002, self drilling, self tapping screws.

.1 Non-load bearing channel stud framing: to ASTM 645-76. "Non-load Bearing Steel Studs, runners (Track), and Rigid Furring Channels for Screws".

.2 Screws for the application to steel studs, runners and furring channels: to ASTM C646-78a "Steel Drill Screws for the Application of Gypsum Sheet Material to Light Gauge Steel Studs".

.3 Screw penetration beyond joined materials shall not be less than 3 exposed threads.

.4 Thread types and drilling capability shall conform to the manufacturer's recommendations.

.5 Screws covered by sheathing materials shall have low profile heads.

.6 Acoustical Insulating Tape: Interior Steel Studs and Furring of the Association of Wall and Ceiling Contractors (A.W.C.C.) Specification Standards Manual.

.7 Bracing: cross bracing 25mm (1 inch) x 16ga. galvanized metal strapping for diagonal bracing.

.8 Sill Gasket: Neoprene purpose made closed cell sill gasket to be installed under base track of exterior steel studs.

.9 Acoustic Sealant: As specified in Section 09 21 16.

.10 Touch-Up Primer for Galvanized Surfaces: CAN/CGSB-1.181.

2.2 FABRICATION

.1 Fabricate assemblies of framed sections to sizes and profiles required.

.2 Fit, reinforce, and brace framing members to suit design requirements.

.3 Fit and assemble in largest practical sections for delivery to Site, ready for installation.

2.3 FINISHES

.1 Accessories: Same finish as framing members.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that rough-in utilities are in proper location.

3.2 ERECTION

.1 Align and secure top and bottom runners at 600 mm (24 inches) on centre.

.2 Place two (2) beads of acoustic sealant between runners and substrate to achieve an acoustic seal.

.3 Place one (1) beads of acoustic sealant between studs and adjacent vertical surfaces to achieve an acoustic seal.

.4 Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.

.5 Install studs vertically at 400 mm (16 inches) on centre, unless otherwise noted on Drawings.

.6 Align stud web openings horizontally.

.7 Secure studs to tracks using fastener method. Do not weld.

.8 Stud Splicing: Not permissible.

.9 Fabricate corners using a minimum of three studs.

.10 Double stud at wall openings, door and window jambs, not more than 50 mm (2 inches) from each side of openings.

.11 Brace stud framing assembly rigid.

.12 Coordinate erection of studs with requirements of door frames and window frames; install supports and attachments.

.13 Coordinate installation of wood bucks, anchors, and wood blocking with electrical and mechanical work to be placed within or behind stud framing.

.14 Blocking: Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, opening frames, and all other wall mounted installations.

.1 Secure wood blocking to studs.

.15 Refer to Drawings for indication of partitions extending to finished ceiling only and for partitions extending through the ceiling to the structure above. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide extended leg ceiling runners.

.16 Coordinate placement of insulation in stud spaces after stud frame erection.

3.3 ACCESS PANELS

.1 Co-ordinate the work and prepare openings for access panels in gypsum wallboard partitions and ceilings. Access panels will be supplied by other trades for access to plumbing, mechanical, and other service points. Installation of the access panel will be by Section 09 21 16 - Gypsum Board Assemblies, unless noted otherwise. This section prepares the opening with metal stud back up.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 Submittal Procedures.

.2 Section 01 45 00 Quality Control.

.3 Section 01 61 00 Common Product Requirements.

.4 Section 01 73 00 Execution Requirements.

.5 Section 01 74 11 Cleaning.

.6 Section 01 78 00 Closeout Submittals.

.7 Section 07 92 00 Joint Sealing.

.8 Section 09 21 16 Gypsum Board Assemblies.

.9 Section 09 99 10. Room Finish Schedule.

.10 Section 10 21 13 Plastic Toilet Compartments.

.11 Section 10 28 14 Toilet and Bath Accessories.

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 A108.1AC, 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/CGSB51.34[M86(R1988)], Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.2 CGSB 71GP22M[78(AMEND.)], Adhesive, Organic, for Installation of Ceramic Wall Tile.

.3 CAN/CGSB75.1[M88], Tile, Ceramic.

.4 CAN/CGSB25.20[95], Surface Sealer for Floors.

.4 Canadian Standards Association (CSA International)

.1 CSA A123.3[05], Asphalt Saturated Organic Roofing Felt.

.2 CAN/CSAA3000[03(R2006)], Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

.5 Terrazzo Tile and Marble Association of Canada (TTMAC)

.1 Tile Specification Guide 09 30 00 2012/2014, Tile Installation Manual.

.2 Tile Maintenance Guide 2000.

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.

.1 Include manufacturer's information on:

.1 Ceramic tile, marked to show each type, size, and shape required.

.2 Chemical resistant mortar and grout (Epoxy and Furan).

.3 Cementitious backer unit.

.4 Dryset cement mortar and grout.

.5 Divider strip.

.6 Elastomeric membrane and bond coat.

.7 Reinforcing tape.

.8 Levelling compound.

.9 Latex cement mortar and grout.

.10 Commercial cement grout.

.11 Organic adhesive.

.12 Waterproofing isolation membrane.

.13 Fasteners.

.3 Provide samples in accordance with Section 01 33 00 Submittal Procedures.

.1 Wall tile: submit 300 x 450 mm sample panel of each colour, texture, size, and pattern of tile.

.2 Adhere tile samples to 13 mm thick plywood and grout joints to represent project installation.

1.4 QUALITY ASSURANCE

.1 Quality Assurance Submittals:

.1 Manufacturer's Instructions: manufacturer's installation instructions.

.2 Manufacturer's Field Reports: manufacturer's field reports specified.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

1.6 AMBIENT CONDITIONS

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

.2 Do not install tiles at temperatures less than 12 degrees C. or above 38 degrees C.

.3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C. or above 25 degrees C.

1.7 MAINTENANCE

.1 Extra Materials:

.1 Provide maintenance materials in accordance with Section 01 78 00 Closeout Submittals.

.2 Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.

.3 Maintenance material same production run as installed material.

Part 2 Products

2.1 WALL TILE

.1 Interior Ceramic Tile: to CAN/CGSB75.1, Type 5, Class MR 4, 4" x 16" x 1/4" size, smooth surface, as indicated on drawings.

.1 **Standard of Acceptance: Ames Tile Soho Series, # SOHWG416, Gloss White.**

.1 Pattern: Stacked bond (staggered tiles) as indicated on Drawings.

2.2 FLOOR TILE

.1 Interior Porcelain Tile: to ANSI A137.1, 2" x 2 Mosaic pattern, non-slip abrasive surface, as indicated on drawings.

.1 **Standard of Acceptance: Daltile Keystone. Colour selected from manufacturer's standard range (colour groups 1 & 2).**

.2 Provide 4" coved base as noted on Drawings.

2.3 MORTAR AND ADHESIVE MATERIALS

.1 Fiber reinforced, polymer modified thin set mortar.

.1 Standard of Acceptance:

.1 X77 Microtec by Ardex

2.4 GROUT

.1 Epoxy grout and adhesive:

.1 100% solids epoxy grout.

.2 Solvent free, low VOC, two component system.

.3 Job coloured grout are not acceptable.

.1 Standard of Acceptance: Ardex WA

.2 Color: To be Selected from manufacturer's standard range.

2.5 MIXES

.1 Smoothing / Ramping Mortar:

.1 Rapid set, pre-tiling smoothing and ramping mortar

.1 Standard of Acceptance: Ardex AM 100

2.6 ACCESSORIES

.1 Metal Trims:

.1 Interior Trims:

.1 Standard of Acceptance:

.1 Wall-to-wall, outside corners: Schluter Schiene, Satin anodized aluminum.

.2 Wall-to-floor transition: Schluter Schiene, Satin anodized aluminum.

.2 Reinforcing mesh: 50 x 50 x 1.6 x 1.6 mm galvanized steel wire mesh, welded fabric design, in flat sheets.

.3 Cleavage plane: polyethylene film to CGSB 5134.

.4 Metal lath: to ASTM C847 galvanized finish, 10 mm rib at 2.17 kg/m^2.

.5 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.

.6 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

.1 Sealants: maximum VOC limit 250 g/L to SCAQMD Rule 1168.

.7 Floor sealer and protective coating: to CAN/CGSB25.20, Type 1 or 2 to tile and grout manufacturers recommendations.

.8 Ceramic Accessories: soap holder; semi-recessed, 150 x 150 mm face dimension combination soap holder and grab bar, colour shall match surrounding wall tile.

2.7 CLEANING COMPOUNDS

.1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.

.2 Materials containing acid or caustic material are not acceptable.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 WORKMANSHIP

.1 Do tile work in accordance with TTMAC Tile Installation Manual 2012/2014, "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 Use metal trims at all inside and outside corners and at floor-to-wall transitions.

.9 Use metal trims at termination of wall tile panels.

.10 Allow minimum 24 hours after installation of tiles, before grouting.

.11 Clean installed tile surfaces after installation and grouting cured.

.12 Make expansion joints at 20’-0” max, both directions and where indicated on drawings.

3.3 WALL & FLOOR TILE

.1 Install in accordance with TTMAC details.

.2 Level substrate with smoothing / ramping mortar specified if required prior to tile installation.

.3 Prime face of exterior cement board with one coat of waterproofing compound specified. Ensure cement board is securely fastened so that no deflection is present.

.4 All exterior wall tiles to be back buttered. Spot mounted not acceptable.

.5 All mortars to be applied in a unidirectional manner.

3.4 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.

3.5 CLEANING

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 09 21 16 - Gypsum Board Assemblies.

1.2 REFERENCES

.1 ASTM International

.1 ASTM C635/C635M-07, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.

.2 ASTM C636/C636M-08, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

.3 ASTM E1477-98a(2008), Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.4 Underwriter's Laboratories of Canada (ULC)

.1 CAN/ULC-S102-2007, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for ceiling panels and ceiling suspension system and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit 2 copies of WHMIS MSDS.

.3 Shop Drawings:

.1 Submit reflected ceiling plans for special grid patterns as indicated.

.2 Indicate lay-out, insert and hanger spacing and fastening details, splicing method for main and cross runners, change in level details, and acoustical unit support at ceiling fixture, lateral bracing and accessories.

.4 Samples:

.1 Submit for review and acceptance of each unit.

.2 Samples will be returned for inclusion into work.

.3 Submit duplicate full size samples of each type acoustical units.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

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

.3 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store materials inside, level, under cover. Protect from weather, damage from construction operations and other causes, in accordance with manufacturer's printed instructions.

.3 Handle materials to prevent damage to edges or surfaces. Protect metal accessories and trim from being bent or damaged.

.4 Store and protect acoustic ceiling materials from nicks, scratches, and blemishes.

.5 Replace defective or damaged materials with new.

Part 2 Products

2.1 COMPONENTS

.1 Acoustic units for suspended ceiling system: to CAN/CGSB-92.1.

.1 ACT:

.1 Type 3, Form 2.

.2 Pattern CE. Class A.

.3 Flame spread rating of 25 or less in accordance with CAN/ULC-S102.

.4 Smoke developed 50 or less in accordance with CAN/ULC-S102.

.5 Noise Reduction Coefficient (NRC) designation of 0.50.

.6 Light Reflectance (LR) of 0.87 to ASTM E1477.

.7 Edge type: reveal edge, bevelled.

.8 Colour bright white.

.9 Size 610mm (2’-0”) x 1220mm (4’-0”) x 19mm (3/4”) thick.

.10 Shape flat.

.11 Acceptable Product: CertainTeed Sand Micro Customline 610mm (2’-0”) x 1220mm (4’-0”) with scored profile.

.2 Acoustical Suspension:

.1 Intermediate duty system to ASTM C635.

.2 All main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) as per ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel (aluminum or stainless steel) in baked polyester paint. Main beams and cross tees shall have rotary stitching (exception: extruded aluminum or stainless steel).

.1 **Acceptable Product:** Certainteed 15/16” Classic Stab System, Trim Edge, complete with perimeter shadow mold SM1020.

.3 Hanger wire: galvanized soft annealed steel wire, 3.6 mm diameter for access tile ceilings.

.4 Hanger inserts: purpose made.

.5 Accessories: splices, clips, wire ties, retainers and wall shadow molding reveal, to complement suspension system components, as recommended by system manufacturer.

.3 Performance/Design Criteria:

.1 Maximum deflection: 1/360th of span to ASTM C635 deflection test.

2.2 ACCESSORIES

.1 Touch-up paint: in accordance with manufacturer's recommendations for surface conditions:

.1 Paint: VOC limit 250 g/L maximum to GS-11.

.2 Ceiling Bulkhead Trim: provide purpose made aluminum ceiling trim to form bulkhead as detailed on drawings. Depth to suit installation.

.1 Cloud perimeter trim by CertainTeed. Colour: white

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions prior to acoustical ceiling installation.

.1 Visually inspect substrate in presence of Contract Administrator.

.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 INSTALLATION

.1 Installation: in accordance with ASTM C636 except where specified otherwise.

.2 Suspension System:

.1 Erect ceiling suspension system after work above ceiling has been inspected by Contract Administrator.

.2 Secure hangers to overhead structure using attachment methods as indicated.

.3 Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.

.4 Lay out system as indicated on Reflected Ceiling Plan.

.5 Install wall moulding to provide correct ceiling height.

.6 Completed suspension system to support super-imposed loads, such as lighting fixtures, diffusers, grilles, microphones and speakers.

.7 Support at light fixtures and diffusers with additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

.8 Interlock cross member to main runner to provide rigid assembly.

.9 Ensure finished ceiling system is square with adjoining walls and level within 1:1000.

.3 Acoustic Panels:

.1 Install acoustical panels and tiles in ceiling suspension system.

.2 Co-ordinate ceiling work with work of other sections such as interior lighting, fire protection communication, and intrusion and detection systems.

3.3 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.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by acoustical ceiling installation.

END OF SECTION

1. General

1.1 RELATED SECTIONS

1. Section 01 33 00 - Submittal Procedures.
2. Section 01 45 00 - Quality Control.
3. Section 01 61 00 - Common Product Requirements.
4. Section 01 73 00 - Execution Requirements.
5. Section 01 74 11 - Cleaning.
6. Section 01 78 00 - Closeout Submittals.
7. Section 04 22 00 – Concrete Unit Masonry
8. Section 05 12 23 – Structural Steel for Buildings
9. Section 05 21 00 – Steel Joist Framing
10. Section 05 50 00 – Metal Fabrications
11. Section 06 41 11 - Architectural Woodwork.
12. Section 07 44 56 – Mineral Fibre Reinforced Cementitious Panels
13. Section 07 92 00 - Joint Sealants.
14. Section 08 11 00 - Metal Doors and Frames.
15. Section 09 21 16 – Gypsum Board Assemblies
16. Section 09 99 10 - Room Finish Schedule.

1.2 REFERENCES

1. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
    1. Material Safety Data Sheets (MSDS).
2. Master Painters Institute (MPI)
    1. MPI Architectural Painting Specifications Manual, 2004.
    2. MPI - Maintenance Repainting Manual, 1998.

1.3 SUBMITTALS

1. Submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
    1. Submit product data and instructions for each paint and coating product to be used.
    2. Submit product data for the use and application of paint thinner.
    3. Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 Submittal Procedures. Indicate VOCs during application and curing.

4. Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
5. Submit manufacturer's installation and application instructions.

1.4 STORAGE AND HANDLING

1. Storage and Protection:
    1. Provide and maintain dry, temperature controlled, secure storage.
    2. Store materials and supplies away from heat generating devices.
    3. Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.
2. Fire Safety Requirements:
    1. Provide one 9 kg 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 National Fire Code of Canada requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

1. Remove from Site and dispose of packaging materials at appropriate recycling facilities.
2. Place materials defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.
3. Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.

1.6 SITE CONDITIONS

1. Heating, Ventilation and Lighting:
    1. Ensure adequate ventilation in enclosed spaces.
    2. 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 the building Lessee such that painted surfaces will have dried and cured sufficiently before occupants are affected.

2. Products

2.1 MATERIALS

1. Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
2. Provide paint materials for paint systems from single manufacturer.
3. Conform to latest MPI requirements for all painting work including preparation and priming.
4. Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual "Approved Product" listing.
5. Provide paint products meeting MPI "Environmentally Friendly" GPS-1 ratings based on VOC EPA Method 24 content levels.
6. Use MPI listed materials having minimum GPS-1 rating where indoor air quality (odour) requirements exist.

2.2 COLOURS:

Contractor to allow for up to five (5) different colours.

2.3 MIXING AND TINTING

1. Perform colour tinting operations prior to delivery of paint to Site, in accordance with manufacturer's written instructions. Obtain written approval from Contract Administrator for tinting of painting materials.
2. Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin waterbased paints.
3. Thin paint for spraying in accordance with paint manufacturer's instructions.
4. Remix paint in containers prior to and during application to ensure breakup of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

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

	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish (flat)	Max. 5	Max. 10
Gloss Level 2 - VelvetLike Finish	Max.10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 – Satin-Like Finish	20 to 35	min. 35
Gloss Level 5 - Traditional SemiGloss Finish	35 to 70	
Gloss Level 6 - Traditional Gloss	70 to 85	

	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 7 - High Gloss Finish	More than 85	

2.5 EXTERIOR PAINTING

1. Prime and paint exterior fibre cement exterior wall panels on all exposed faces and edges. Colour and sheen to match exterior metal wall panels.

.1 Primer: in accordance with manufacturer's recommendations.

.2 Finish coat:

.1 Standard of Acceptance:

.1 Duration exterior acrylic latex by Sherwin Williams or approved equal in accordance with B7.

.2 Prime and paint all exterior exposed metal components, which includes but is not limited to: metal doors, overhead doors, roof access ladder, metal plates, metal jamb plates at overhead doors, metal bollards and roof top screen posts.

1. Primer: epoxy, exterior; first coat. G4 finish, 3-4mil DFT.

.1 Standard of Acceptance**:**

.1 Macropoxy 646 Fast Cure Epoxy Part , by Sherwin Williams or approved equal in accordance with B7.

2. Finish Coat: aliphatic urethane, final coat. G4 finish. 3-4mil DFT.

.1 Standard of Acceptance:

.1 Corothane II Low VOC Polyurethane, by Sherwin Williams or approved equal in accordance with B7.

3. Sand for sandblasting: to SSPC (Steel Structures Painting Council).

2.6 EXTERIOR VARNISH

1. Exterior clear marine spar varnish for plywood soffits. Satin finish.

.1 Standard of Acceptance:

.1 Helmsman Water Based Indoor / Outdoor Spar Urethane or equal in accordance with B7.

2.7 INTERIOR PAINTING

1. Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.

1. INT 5.1E Alkyd - Gloss Level 5 finish. (Typical for all exposed structural steel, steel joists and steel roof deck, where noted in Room Finish Schedule)

2. Galvanized Metal: high contact/high traffic areas (doors, frames, railings and handrails, etc.).

1. INT 5.3C - Alkyd Gloss Level 5 finish (over cementitious primer).

3. Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock" type material, etc.

1. INT 9.2A - Latex Gloss Level 4 finish (over latex sealer).
2. INT 9.2C - Alkyd Gloss Level 4 finish (over latex sealer).

3. INT 9.2M - Institutional low odour/low VOC Gloss Level 4 finish.

.4 Concrete masonry units: interior surfaces of exposed, smooth block:

.1 INT 4.2A – High Build Acrylic Topcoat, Gloss Level 1 finish.

.1 Standard of Acceptance:

.1 PPG Perma-Crete High Build 100% Acrylic Topcoat 4-22C or equal in accordance with B7.

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 sheet.
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:
    1. Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable nonstaining 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 building City of Winnipeg.

3. Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual specific requirements and coating manufacturer's recommendations.

4. Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.

5. 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.

6. 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.

7. 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.

8. Touch up of shop primers with primer as specified.

9. Do not apply paint until prepared surfaces have been accepted by Contract Administrator.

3.4 APPLICATION

1. Method of application to be as approved by Contract Administrator. Conform to manufacturer's application instructions unless specified otherwise.

2. Apply coats of paint 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.

3.5 MECHANICAL/ELECTRICAL EQUIPMENT

1. Do not paint over nameplates.

2. Keep sprinkler heads free of paint.

3. Paint fire protection piping red.

4. Paint disconnect switches for fire alarm system and exit light systems in red enamel.

5. Paint natural gas piping yellow.

6. Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

END OF SECTION

1.1 RELATED SECTIONS

.1 Section 03 30 00 - Concrete
.2 Section 09 21 16 - Gypsum Board Assemblies
.3 Section 09 99 10 – Room Finish Schedule
.4 Mechanical Division (for floor drains)

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)
  .1 ASTM C-307, Test Method for Tensile Strength of Chemical- Resistant Mortars, Grouts and Monolithic Surfacing
  .2 ASTM C-413, Test Method for Absorption of Chemical- Resistant Mortars, Grouts and Monolithic Surfacing
  .3 ASTM C-579, Test Method for Compressive Strength of Chemical-Resistant Mortars, Grouts and Monolithic Surfacing
  .4 ASTM C-580, Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts and Monolithic Surfacing
  .5 ASTM D-635, Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position
  .6 ASTM D-638, Test Method for Tensile Properties of Plastics
  .7 ASTM D-790, Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
  .8 ASTM D-2047, Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
  .9 ASTM D-2240, Test Method for Rubber Property - Durometer Hardness
  .10 ASTM D-4060, Test method for Abrasion Resistance of Organic Coatings by the Taber Abrader
  .11 ASTM E-831, Test Method for Linear Thermal Expansion of Solid Materials by Thermochemical Analysis
.2 Underwriters' Laboratories of Canada (ULC)

1.3 PRODUCT DATA

.1 Submit product data and WHMIS MSDS - Material Safety Data Sheets in accordance with Sections 01 33 00 - Submittal Procedures.
.2 Submit installation instructions, and general recommendations for each epoxy flooring material required.
.3 Samples: Submit, for verification purposes, 300 mm x 300 mm square sample of each type of epoxy flooring required, applied to a rigid backing, in colour and finish indicated.

1.4 QUALITY ASSURANCE

.1 Single Source Responsibility: Obtain primary epoxy flooring materials including primers, resins, hardening agents, finish or sealing coats from a single manufacturer with not less than ten years of successful experience in manufacturing and installing principal materials described in this section. Contractor must have completed at least five projects of similar size and complexity. Provide secondary materials only of type and from source recommended by manufacturer of primary materials.
.2 Arrange a meeting not less than thirty days prior to starting work.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver material to job site. Check material for completeness and shipping damage prior to job start.
.2 All materials must be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.

.3 Store material in a dry, enclosed area protected from exposure to moisture. Temperature of storage area shall be maintained between 16º and 32ºC.

1.6 MOCK-UP

.1 At site, under manufacturer's supervision, apply for approval a 1.2m x 1.2m area of complete floor finish in area designated, to match submitted samples. When approved, site applied sample to be standard for appearance, colour, texture, workmanship, etc., and all work to conform to this sample. Mock up to include coved base.

1.7 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for wall coating for incorporation into manual specified in Division 1.

1.8 ENVIRONMENTAL REQUIREMENTS

.1 Maintain ambient temperature of not less than 18ºC and a floor temperature of not less than 16ºC from 7 days before installation to at least 48 hours after completion of work. Maintain relative humidity not higher than 40% during same period.
.2 Ventilation: Ventilate enclosed spaces in accordance with manufacturer's specifications.
.3 Provide continuous ventilation during and after coating application.
.4 Job area to be free of other trades during, and for a period of 24 hours, after floor installation.
.5 Protection of finished floor from damage by subsequent trades is the responsibility of the General Contractor.
.6 Manufacturer's representative must be on job site at start of installation.
.7 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding the use, handling, storage and disposal of hazardous materials.

1.9 WARRANTY

.1 Furnish a single, written warranty covering both material and workmanship for a period of one (1) full year from date of installation.

2.1 EPOXY SEAMLESS FLOORING

.1 100% solids, 0 VOC, 3 mm (1/8") thick system double broadcast system consisting of a combination of 100% solids epoxies and multi-coloured ceramic aggregates:
  .1 Primer: low VOC two-component, conductive, water-based penetrating epoxy primer.
  .2 Binder: 94% solids, low odour urethane binder.
  .3 Bodycoats: two-component, aliphatic urethane, free-flowing epoxy formulation consisting of resin and curing agent.
  .4 Aggregate: coloured, quartz aggregate broadcast into each body coat.
  .5 Topcoat Sealer: high performance UV resistant, two-component clear epoxy sealer.
  .6 Finish: semi-gloss sheen
  .7 Acceptable product: Stonshield SLT by Stonhard or approved equal.
.2 Provide 100 mm high integral coved base.
.3 Provide elastomeric membrane where required to bridge existing subfloor cracks or rough surfaces to maintain integrity of floor coating.
.4 Colour: To be selected by Contract Administrator from manufacturer's standard colours.

3.1 PREPARATION

.1 Substrate: Remove existing floor finishes in accordance with manufacturer's instructions and limitations.

.2 Prepare concrete by mechanical means by using a shot blast machine for removal of bond inhibiting materials, in accordance with manufacturer's instructions.

3.2 APPLICATION

.1 General: Apply each component of epoxy flooring system in compliance with manufacturer's directions to produce a uniform monolithic wearing surface of thickness indicated, uninterrupted except at divider strips, sawed joints or other types of joints (if any), indicated or required.

.2 Primer: Mix and apply primer over properly prepared substrate with strict adherence to manufacturer's installation procedures and coverage rates. Coordinate timing of primer application with application of troweled mortar to ensure optimum adhesion between epoxy flooring materials and substrate.

.3 Troweled Mortar: Mix mortar material according to manufacturer's recommended procedures. Uniformly spread mortar over substrate using manufacturer's specially designed screed box adjusted to manufacturer's recommended height. Hand trowel apply mixed material over freshly primed substrate using stainless steel finishing trowels.

.4 Coating: Remove any surface imperfections by lightly abrading and vacuuming the floor surface. Mix coating according to manufacturer's recommended procedures. Squeegee apply and back roll coating with strict adherence to manufacturer's installation procedures and coverage rates.

.5 Terminate floors that do not abut against a vertical surface with a 13 - 9mm wide x 6 mm deep chase.

.6 Cove Base: Install cove integral with the floor 10 cm in height. All coves capped with manufacturer's specialty designed cove strip, as per drawings.

.7 Joint Sealant: Install manufacturer's epoxy or urethane sealant compatible with floor finish.

3.3 FIELD QUALITY CONTROL

.1 The manufacturer reserves the right to request material testing at any time, and any number of times during period of flooring application.

.2 If required, the Contract Administrator will engage service of an independent testing laboratory to sample materials being used. Samples of material will be taken, identified and sealed, and certified in presence of Contractor.

.3 Testing laboratory will perform tests for any of characteristics specified, using applicable testing procedures referenced in manufacturer's product data.

.4 If test results show materials being used do not comply with specified requirements, Contractor may be directed by Contract Administrator to stop work; remove non-complying materials; pay for testing; reapply flooring materials to newly prepared surfaces.

3.4 CURING, PROTECTION AND CLEANING

.1 Cure epoxy flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 24 hours.

.2 Protect epoxy flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. Contractor shall be responsible for damaged flooring as a result of improperly protected surfaces.

.3 Cleaning: Remove temporary covering and clean epoxy flooring just prior to final inspection. Use cleaning materials and procedures recommended by epoxy flooring manufacturer.

END OF SECTION

No.	Room Name	Floor	Base		Ceiling		Walls								Key Notes
							North		East		West		South		
		Material	Material	Finish	Material	Finish	Material	Finish	Material	Finish	Material	Finish	Material	Finish	
	MAIN LEVEL														
101	VESTIBULE	CONC-S	RB	-	GB	PT	GWB	PT	ALUM-GL	-	ALUM-GL	-	GWB	PT	
102	GENERAL OFFICE	CONC-S	RB	-	ACT	-	GWB	PT	GWB	PT	GWB	PT	GWB	PT	
103	SENIOR FOREMAN	CONC-S	RB	-	ACT	-	GWB	PT	GWB	PT	GWB	PT	GWB	PT	
104	SECURE STORAGE	CONC-S	RB	-	ACT	-	GWB	PT	GWB	PT	GWB	PT	GWB	PT	
105	UNIVERSAL TOILET RM	SEF	SEF-C	-	GB	PT	CT	-	CT	-	CT	-	CT	-	
106	STAFF MPR	CONC-S	RB	-	ES	-	GWB	PT	GWB	PT	ALUM-GL	-	GWB	PT	1
107	SERVICE ENTRY	CONC-S	RB	-	ES	-	GWB	PT	GWB	PT	GWB	PT	ALUM-GL	-	1
108	MECHANICAL ROOM	CONC-S	RB	-	ES	-	GWB	PT	GWB	PT	GWB	PT	GWB	PT	
109	MALE WASHROOM	CONC-S	RB	-	ACT	-	GWB	PT	GWB	PT	CT/GWB	PT	GWB	PT	2
109A	MALE SHOWER	CT	CT-C	-	GB	PT	CT	-	CT	-	CT	-	CT	-	
110	FEMALE WASHROOM	CONC-S	RB	-	ACT	-	GWB	PT	CT/GWB	PT	GWB	PT	GWB	PT	2
110A	FEMALE SHOWER	CT	CT-C	-	GB	PT	CT	-	CT	-	CT	-	CT	-	
111	EQUIPMENT SHOP	CONC-S	-	-	ES	-	CB	PT	CB	PT	-	-	CB	PT	
112	TOOL STORAGE	CONC-S	RB	-	ES	-	GWB	PT	CB	PT	GWB	PT	GWB	PT	
113	IRRIGATION ROOM	CONC-S	RB	-	ES	-	GWB	PT	CB	PT	GWB	PT	GWB	PT	
114	WASH BAY	CONC-S	-	-	ES	-	CB	PT	-	-	CB	PT	CB	PT	
115	UNIVERSAL TOILET	CONC-S	RB	-	ACT	-	GWB	PT	CT	-	GWB	PT	GWB	PT	

LEGEND

Floor and Floor base Finishes

CONC-S	Concrete - Sealed
CARP-T	Carpet Tile
SEF	Seamless Epoxy Flooring
SEF-C	Seamless Epoxy Flooring (Coved)
RB	Rubber Base
CT-C	Ceramic Tile (Coved)
CT	Ceramic Tile

Ceiling Finishes

GB	Gypsum Board
WCP	Wood Ceiling Panel
ES	Exposed Structure
ACT	Acoustic Ceiling Tiles
ES	Exposed Structure

Wall Finishes

ALUM-GL	Aluminum Frame and Glazing
PT	Paint
CB	Concrete Block
CT	Ceramic Tile
S	Sealer / Anti-Grafitti Coating
GWB	Gypsum Wall Board

KEYNOTES

1 Paint all exposed steel roof framing (structural steel and roof deck) - colour to be determined by Contract Administrator

2 Paint gypsum board walls only (not adjacent ceramic tile)