Part 1 General

1.1 REFERENCES

.1 National Building Code of Canada (NBC).

.2 Manitoba Building Code (MBC).

.3 ASTM International

.1 ASTM C475/C475M-2015, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.2 ASTM C514-04(2014), 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 C840-16, Standard Specification for Application and Finishing of Gypsum Board.

.5 ASTM C1047-14a, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

.6 ASTM C1280-13a, Standard Specification for Application of Gypsum Sheathing.

.7 ASTM C1396/C1396M-14a, Standard Specification for Gypsum Wallboard.

.4 Association of the Wall and Ceilings Industries International (AWCI)

.1 AWCI Levels of Gypsum Board Finish-97.

.5 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.

.6 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S102-10, Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.

1.2 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.

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

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

1.3 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.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with D14 – Environmental Protection Plan.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material for recycling.

Part 2 Products

2.1 MATERIALS

.1 Standard board: to ASTM C1396/C1396M regular, 16 mm thick and Type X, 16 mm thick, 1200 mm wide x maximum practical length, ends square cut, edges bevelled.

.2 Water-resistant board: to ASTM C1396/C1396M 16 mm thick, 1220mm wide x maximum practical length.

.3 Use fire rated board at ULC rated assemblies.

.4 Metal furring runners, hangers, tie wires, inserts and anchors.

.5 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.

.6 Resilient clips, drywall furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.

.7 Nails: to ASTM C514.

.8 Steel drill screws: to ASTM C1002.

.9 Stud adhesive: to CAN/CGSB-71.25, ASTM C557.

.10 Laminating compound: as recommended by manufacturer, asbestos-free.

.11 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, metal, zinc-coated by electrolytic process, 0.5 mm base thickness, perforated flanges, one piece length per location.

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

.13 Polyethylene: to CAN/CGSB-51.34, Type 2.

.14 Joint compound: to ASTM C475, asbestos-free.

Part 3 Execution

3.1 EXAMINATION

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

.1 Visually inspect substrate prior to installation.

.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, where required.

.7 Install 19 x 64 mm furring channels parallel to, and at exact locations of stud partition header.

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

.9 Install wall furring for gypsum board wall finishes to ASTM C840, except where specified otherwise.

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

3.3 APPLICATION

.1 Install abuse resistant gypsum board in corridors, office areas, lunch rooms and locker rooms.

.2 Install regular gypsum board within closets and at gypsum board ceilings.

.3 Install moisture resistant board on walls in humid areas such as washrooms and shower rooms.

.4 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical works have been approved.

.5 Apply single layer gypsum board to wood 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.

.6 Apply water-resistant gypsum board where wall tiles are to be applied, adjacent to slop sinks and in janitors closets. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Do not apply joint treatment on areas to receive tile finish.

.7 Apply 12 mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, in partitions where perimeter sealed with acoustic sealant.

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

.9 Install gypsum board on walls vertically to avoid end-butt joints. At high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.

.10 Install gypsum board with face side out.

.11 Do not install damaged or damp boards.

.12 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.

.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 approximately 10 m spacing on long corridor runs and 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 Splice corners and intersections together and secure to each member with 3 screws.

.13 Install access doors to electrical and mechanical fixtures specified in respective sections.

.1 Rigidly secure frames to furring or framing systems.

.14 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.

.15 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 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.

.16 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.

.17 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.

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

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

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

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

.22 Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.

.23 Allow skim coat to dry completely.

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

3.5 CLEANING

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

3.6 PROTECTION

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

.2 Repair damage to adjacent materials caused by gypsum board installation.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 07 92 00 – Joint Sealing.

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 Canadian Standards Association (CSA International)

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

.2 CAN/CSA-A3000-03(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

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

.1 Tile Specification Guide 09 30 00 2006/2007, Tile Installation Manual.

.2 Tile Maintenance Guide 2000.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with E5 – Additional Submittals.

.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 Dry-set 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 Slip resistant tile.

.13 Waterproofing isolation membrane.

.14 Fasteners.

.2 Provide samples of following:

.1 Base tile: submit duplicate sample panels of each colour, texture, size, and pattern of tile.

.2 Floor tile: submit duplicate sample panels of each colour, texture, size, and pattern of tile.

1.4 QUALITY ASSURANCE

.1 Quality Assurance Submittals:

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

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

1.5 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle materials in accordance with manufacturer’s written instructions.

.2 Waste Management and Disposal:

.1 Separate waste materials for reuse, recycling in accordance with D14 – Environmental Protection Plan.

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.

.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 FLOOR TILE

.1 CT – 1:

.1 Ceramic tile: to CAN/CGSB-75.1-M88, Type 4, Class MR 1, 300 x 300 x 9 mm size, square edges, slip resistant surface.

.2 Matching coved base, 100 mm high, square top with anodized aluminum top edge trim.

.3 Product: Vitra Colour Dot series, matte finish, colour: from standard product range, distributed by Centura.

.2 CT – 2:

.1 Ceramic tile: to CAN/CGSB-75.1-M88, Type 4, Class MR 1, 50 x 50 x 6 mm size, square edges, matte, slip resistant surface.

.2 Product: Vitra Colour Dot series, matte finish, colour: from standard product range, distributed by Centura.

2.2 WALL TILE

.1 CT – 3:

.1 Ceramic tile: to CAN/CGSB-75.1, Type 3, Class MR 2, 150 x 150 x 4 mm size, square edges, glazed surface, white colour as selected by Contract Administrator.

.2 Matching bullnose edge trim to suit application.

.3 Product: GW100, Intersource Plain Series, distributed by Centura

2.3 TRIM SHAPES

.1 Conform to applicable requirements of adjoining floor and wall tile.

.2 Use slip resistant trim shapes for horizontal surfaces of showers, overflow ledges, recessed steps, shower curbs, drying area curbs, and stools.

.3 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.

.4 Internal and External Corners: provide trim shapes as follows where indicated.

.1 Bullnose shapes for external corners including edges.

.2 Coved shapes for internal corners.

.3 Special shapes for:

.1 Base to floor internal corners to provide integral coved vertical and horizontal joint.

.2 Base to floor external corners to provide bullnose vertical edge with integral coved horizontal joint. Use as stop at bottom of openings having bullnose return to wall.

.3 Wall top edge internal corners to provide integral coved vertical joint with bullnose top edge.

.4 Wall top edge external corners to provide bullnose vertical and horizontal joint edge.

2.4 MORTAR AND ADHESIVE MATERIALS

.1 Cement: to CSA-A5, type 10.

.2 Sand: to ASTM C144, passing 16 mesh.

.3 Hydrated lime: to ASTM C207.

.4 Latex additive: formulated for use in cement mortar and thin set bond coat.

.5 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

2.5 BOND COAT

.1 Latex Cement mortar: to ANSI A108.1, two-component universal dry-set mortar.

2.6 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.

.2 Latex Cement Grout: to ANSI A108.1, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, unsanded mix for walls and floors with polished tiles commercial tile grout.

2.7 ACCESSORIES

.1 Transition Strips: purpose made metal extrusion; stainless steel type.

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

.3 Floor sealer and protective coating: to tile and grout manufacturer’s recommendations.

.4 Top cap/trim: Schluter Jolly anodized aluminum trim in satin nickel finish.

2.8 MIXES

.1 Mortars and adhesives:

.2 Contractor to review suitability of products and installation methods prior to ordering of any materials and comment on suitability for long tern durability of the finished installation, considering the condition of substrate, intended use, and products to be installed.

.3 Mortar bed at showers: latex modified Portland cement based mortar to build up uniform slope at shower floors.

.4 Thin set mortar: latex modified ANSI 118.1, or ANSI 118.4 (CGSP 71-GP-30M), for glazed and unglazed floor tile, water absorption class MR 2

.1 Kerabond or Ultraflex II by Mapei,

.2 Multicure modified system by C-Cure, or

.3 Versatile by Flextile

.5 Organic adhesive: pre-mixed, for wall tiles.

.6 Mix bond and levelling coats, and grout to manufacturer’s instructions.

.7 Adjust water volumes to suit water content of sand.

2.9 PATCHING AND LEVELLING COMPOUND

.1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.

.2 Have not less than the following physical properties:

.1 Compressive strength - 25 MPa.

.2 Tensile strength - 7 MPa.

.3 Flexural strength - 7 MPa.

.4 Density - 1.9.

.3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.

.4 Ready for use in 48 hours after application.

2.10 CLEANING COMPOUNDS

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

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

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 WORKMANSHIP

.1 Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007, "Ceramic Tile", except where specified otherwise.

.2 Install seamless EPDM membrane in one piece to allow perimeter to extend 150 mm up walls above base of shower floors, adhering to sub base, clamped to floor drain.

.3 Install mortar bed in shower areas to ensure positive 2% slope toward floor drains from all locations. Minimum bed depth 50 mm at drains.

.4 Apply tile or backing coats to clean and sound surfaces.

.5 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.

.6 Maximum surface tolerance 1:800.

.7 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.

.8 Lay out tiles so perimeter tiles are minimum 1/2 size.

.9 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

.10 Make internal angles square, external angles rounded bull nosed.

.11 Use round bullnose edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.

.12 Provide PVC cap along top of ceramic tile base and at exposed edges of wall tile at exterior corners to terminate edges.

.13 Install divider strips at junction of tile flooring and dissimilar materials.

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

.15 Install marble sills at entrances to shower areas.

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

.17 Make control joints where indicated. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07 92 00 - Joint Sealants. Keep building expansion joints free of mortar and grout.

3.3 FLOOR SEALER AND PROTECTIVE COATING

.1 Apply in accordance with manufacturer's instructions.

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 Progress Cleaning: Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 09 21 16 – Gypsum Board.

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM C423-17, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

.2 ASTM E1264-14, Standard Classification for Acoustical Ceiling Products.

.3 ASTM E1477-98a(2013), Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction and Amendment No. 1 1988.

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

.3 Canadian Standards Association (CSA International)

.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.4 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.

.2 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

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

.1 Material Safety Data Sheets (MSDS).

.6 Underwriter's Laboratories of Canada (ULC)

.1 CAN/ULC-S102-2010, Surface Burning Characteristics of Building Materials and Assemblies.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with E5 – Additional Submittals.

.2 Product Data: submit WHMIS MSDS.

1.4 QUALITY ASSURANCE

.1 Regulatory Requirements:

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

.2 Mock-up:

.1 Construct mock-up 10 m^2 minimum of each type of acoustical panel ceiling including one inside corner.

.2 Construct mock-up where directed.

.3 Allow 24 hours for inspection of mock-up by Contract Administrator before proceeding with ceiling work.

.4 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of the finished work.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Protect on site stored or installed absorptive material from moisture damage.

.2 Store extra materials required for maintenance, where directed by Contract Administrator.

.3 Waste Management and Disposal:

.1 Separate waste materials for reuse, recycling in accordance with D14 – Environmental Protection Plan.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Fold up metal, plastic banding, flatten and place in designated area for recycling.

1.6 ENVIRONMENTAL REQUIREMENTS

.1 Permit wet work to dry before beginning to install.

.2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20% before and during installation.

.3 Store materials in work area 48 hours prior to installation.

.4 Store and manage hazardous materials in accordance with D14 – Environmental Protection Plan.

1.7 EXTRA MATERIALS

.1 Provide extra materials of acoustical units amounting to 2% of gross ceiling area for each pattern and type required for project.

.2 Ensure extra materials are from same production run as installed materials.

.3 Clearly identify each type of acoustic unit, including colour and texture.

.4 Deliver to site, upon completion of the work of this section.

Part 2 Products

2.1 SUSPENSION MATERIALS

.1 Intermediate duty system to ASTM C635.

.2 Basic materials for suspension system: commercial quality cold rolled steel, zinc coated.

.3 Suspension system: non fire rated, acceptable products:

.1 Armstrong World Industries: Prelude.

.2 CGC: Series Donn DX Quick Release

.3 Bailey: Standard B.E. Safe-T-Lock

.4 Exposed tee bar grid components: shop painted satin white enamel. Components die cut. Main tee with double web, rectangular bulb and 25 mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.

.5 Hanger wire: galvanized soft annealed steel wire.

.1 12 ga. overall thickness for access tile ceilings.

.6 Hanger inserts: purpose made.

.7 Carrying channels where required: 38 mm x 38 mm channel, of 25 ga. thick galvanized steel.

.8 Accessories: splices, clips, wire ties, retainers and wall moulding flush, to complement suspension system components, as recommended by system manufacturer.

2.2 ACOUSTIC MATERIALS

.1 Acoustic units for suspended ceiling system: to CAN/CGSB-92.1, ASTM E1264.

.1 Type 3.

.2 Class A.

.3 Wet formed mineral fibre containing 58% recycled content.

.4 Textures: fine.

.5 Noise Reduction Coefficient (NRC) designation of 0.60.

.6 Ceiling Attenuation Class (CAC) rating 30, in accordance with ASTM E1264

.7 Light Reflectance (LR) range of 0.85.

.8 Edge type: square.

.9 Colour: white.

.10 Size 610 x 1219 x 16 mm thick.

.11 Shape: flat.

.2 Adhesive: low VOC type recommended by acoustic unit manufacturer.

.3 Staples, nails and screws: to CSA B111 non-corrosive finish as recommended by acoustic unit manufacturer.

.4 Fibrous acoustical media: to CAN/CGSB-92.1.

.5 Polyethylene: to CAN/CGSB-51.34, 6 mil thick.

.6 Hold down clips: purpose made clips to secure tile to suspension system, approved for use in fire-rated systems.

.7 Acceptable suppliers:

.1 Armstrong World Industries: Mesa

.2 CGC: Majestic Clima Plus

Part 3 Execution

3.1 EXAMINATION

.1 Do not install acoustical panels and tiles until work above ceiling has been inspected by Contract Administrator.

3.2 INSTALLATION

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

.2 Install suspension system to manufacturer's instructions.

.3 Secure hangers to overhead structure using attachment methods to manufacturer's instructions.

.4 Install hangers spaced at maximum 1220 mm centres and within 150 mm from ends of main tees.

.5 Install wall moulding to provide correct ceiling height.

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

.7 Supports at light fixtures, diffusers with additional ceiling suspension hangers within 150 mm of each corner and at a maximum 610 mm around perimeter of fixture.

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

.9 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.

.10 Install access splines to provide 50 percent ceiling access.

.11 Finished ceiling system to be square with adjoining walls and level within 1:1000.

.12 Install fibrous acoustical media and spacers over suspended metal panels in washrooms and office areas.

.13 In fire rated ceiling systems, secure lay-in panels with hold-down clips and protect over light fixtures, diffusers, air return grilles and other appurtenances according to Certification Organizations design requirements.

3.3 APPLICATION

.1 Install acoustic units to clean, dry and firm substrate.

.2 Install acoustical units parallel to building lines with edge unit not less than 50% of unit width with directional pattern running in same direction.

.3 Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.

3.4 INTERFACE WITH OTHER WORK

.1 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

3.5 CLEANING

.1 Progress Cleaning: Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 ASTM International

.1 ASTM F1303-04(2014), Standard Specification for Sheet Vinyl Floor Covering with Backing.

.2 South Coast Air Quality Management District (SCAQMD)

.1 SCAQMD Rule 1113-13, Architectural Coatings.

.2 SCAQMD Rule 1168-A2011, Adhesive and Sealant Applications.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for resilient sheet flooring and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Samples:

.1 Submit duplicate 300 x 300 mm sample pieces of sheet material, base, edge strips and feature strips.

1.3 MAINTENANCE MATERIAL SUBMITTALS

.1 Extra Materials:

.1 Provide extra materials of resilient sheet flooring and adhesives.

.2 Provide 10 m^2 of each colour, pattern and type flooring material required for project for maintenance use.

.3 Extra materials one piece and from same production run as installed materials.

.4 Identify each roll of sheet flooring and each container of adhesive.

.5 Deliver to site, upon completion of the work of this section.

.6 Store where directed by Contract Administrator.

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

.2 Store and protect specified materials from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

1.5 SITE CONDITIONS

.1 Ambient Conditions:

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

Part 2 Products

2.1 MATERIALS

.1 Sheet vinyl with backing:

.1 Backing: fibreglass composition.

.2 Pattern: smooth.

.3 Colour: selected by Contract Administrator from full product range.

.4 Thickness: 2.0 mm.

.5 Acceptable material: Medintech by Armstrong or approved equal in accordance with B7.

.2 Resilient base: continuous, top set, complete with premoulded end stops and external corners:

.1 Type: rubber.

.2 Style: cove.

.3 Thickness: 2.03 mm.

.4 Height: 101.6 mm.

.5 Lengths: cut lengths minimum 2400 mm.

.6 Colour: to be selected by Contract Administrator from full product range.

.3 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.

.4 Sub-floor filler and leveller: white premix latex requiring water only to produce cementitious paste 2 part latex-type filler requiring no water as recommended by flooring manufacturer for use with their product.

.5 Metal edge strips:

.1 Aluminum extruded, smooth, mill finish polished stainless steel with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

.6 Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for resilient sheet flooring installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate.

.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 SITE VERIFICATION OF CONDITIONS

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

3.3 PREPARATION

.1 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

.2 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

.3 Prepare Concrete to resilient flooring manufacturer's printed instructions.

3.4 APPLICATION: FLOORING

.1 Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system. Maintain extra ventilation for at least 1 month following building occupation.

.2 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.

.3 Lay flooring with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material.

.4 Run sheets in direction of traffic and continuously heat weld according to manufacturer's printed instructions.

.5 Heat weld seams of linoleum sheet flooring in accordance with manufacturer's printed instructions.

.6 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.

.7 Cut flooring around fixed objects.

.8 Install feature strips and floor markings where indicated. Fit joints tightly.

.9 Install flooring in pan type floor access covers. Maintain floor pattern.

.10 Continue flooring over areas which will be under built-in furniture.

.11 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.

.12 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.

.13 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.5 APPLICATION: BASE

.1 Lay out base to keep number of joints at minimum.

.2 Clean substrate and prime with one coat of adhesive.

.3 Apply adhesive to back of base.

.4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.

.5 Install straight and level to variation of 1:1000.

.6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

.7 Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles.

.8 Use toeless type base where floor finish will be carpet, coved type elsewhere.

.9 Install toeless type base before installation of carpet on floors.

.10 Heat weld base in accordance with manufacturer's printed instructions.

3.6 CLEANING

.1 Progress Cleaning: Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

.1 Clean flooring and base surfaces to flooring manufacturer's printed instructions.

3.7 PROTECTION

.1 Protect new floors from time of final set of adhesive until final inspection.

.2 Prohibit traffic on floor for 48 hours after installation.

.3 Use only water-based coating for linoleum.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 11 00 – Metal Doors and Frames.

.2 Section 09 21 16 – Gypsum Board.

1.2 REFERENCES

.1 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act (CEPA), 1999, c. 33

.2 Environmental Protection Agency (EPA)

.1 EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 - 1995, (for Surface Coatings).

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

.1 Material Safety Data Sheets (MSDS).

.4 Master Painters Institute (MPI)

.1 MPI Architectural Painting Specifications Manual, 2004.

.5 National Fire Code of Canada - 1995

.6 Society for Protective Coatings (SSPC)

.1 SSPC Painting Manual, Volume Two, 8th Edition, Systems and Specifications Manual.

.7 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34 .

1.3 QUALITY ASSURANCE

.1 Qualifications:

.1 Contractor: minimum of five years proven satisfactory experience. Provide list of last three comparable jobs including, job name and location, specifying authority, and project manager.

.2 Journeymen: qualified journeymen who have "Tradesman Qualification Certificate of Proficiency" engaged in painting work.

.3 Apprentices: working under direct supervision of qualified tradesperson in accordance with trade regulations.

.2 Mock-Ups:

.1 Construct mock-ups.

.1 Provide 3000 mm x 3000 mm mock-up. Prepare and paint designated surface, area, room or item (in each colour scheme) to specified requirements, with specified paint or coating showing selected colours, gloss/sheen and textures.

.2 Mock-up will be used:

.1 To judge workmanship, substrate preparation, operation of equipment and material application and workmanship to MPI Architectural Painting Specification Manual standards.

.3 Locate where directed.

.4 Allow 24 hours for inspection of mock-up before proceeding with work.

.5 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

.3 Pre-Installation Meeting:

.1 Convene pre-installation meeting one week prior to beginning work of this Section to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Coordination with other building subtrades.

.4 Review manufacturer's installation instructions and warranty requirements.

1.4 SCHEDULING

.1 Submit work schedule for various stages of painting to Contract Administrator for review. Submit schedule minimum of 48 hours in advance of proposed operations.

.2 Obtain written authorization from Contract Administrator for changes in work schedule.

.3 Schedule painting operations to prevent disruption of occupants.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submittals in accordance with E5 – Additional Submittals.

.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). Indicate VOCs during application and curing.

.3 Samples:

.1 Submit full range colour sample chips to indicate where colour availability is restricted.

.2 Submit duplicate 200 x 300 mm sample panels of each paint with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on following substrate materials:

.1 3 mm plate steel for finishes over metal surfaces.

.2 13 mm gypsum board for finishes over gypsum board and other smooth surfaces.

.3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.

.4 Test reports: submit certified test reports for paint from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.

.1 Lead, cadmium and chromium: presence of and amounts.

.2 Mercury: presence of and amounts.

.3 Organochlorines and PCBs: presence of and amounts.

.5 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.6 Manufacturer's Instructions:

.1 Submit manufacturer's installation or application instructions.

.7 Closeout Submittals: submit maintenance data for incorporation into operation manual. Include the following:

.1 Product name, type and use.

.2 Manufacturer's product number.

.3 Colour number[s].

.4 MPI Environmentally Friendly classification system rating.

1.6 MAINTENANCE

.1 Extra Materials:

.1 Deliver extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels.

.2 Quantity: Provide one - four litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

.3 Delivery, storage and protection: comply with manufacturer’s requirements for delivery and storage of extra materials.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.1 Pack, ship, handle and unload materials in accordance with manufacturer's written instructions.

.2 Acceptance at Site:

.1 Identify products and materials with labels indicating:

.1 Manufacturer's name and address.

.2 Type of paint or coating.

.3 Compliance with applicable standard.

.4 Colour number in accordance with established colour schedule.

.3 Remove damaged, opened and rejected materials from site.

.4 Storage and Protection:

.1 Provide and maintain dry, temperature controlled, secure storage.

.2 Store materials and supplies away from heat generating devices.

.3 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.

.5 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.6 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.

.7 Remove paint materials from storage only in quantities required for same day use.

.8 Fire Safety Requirements:

.1 Provide one 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.

.9 Waste Management and Disposal:

.1 Separate waste materials for reuse, recycling in accordance with D14 – Environmental Protection Plan.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site bins for recycling.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with D14 – Environmental Protection Plan.

.6 Ensure emptied containers are sealed and stored safely.

.7 Unused paint materials must be disposed of at official hazardous material collections site.

.8 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.

.9 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.10 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

.11 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:

.1 Retain cleaning water for water-based materials to allow sediments to be filtered out.

.2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.

.3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.

.4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.

.5 Empty paint cans are to be dry prior to disposal or recycling (where available).

.12 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

1.8 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces.

.2 Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.

.3 Provide continuous ventilation for seven days after completion of application of paint.

.4 Coordinate use of existing ventilation system with Contract Administrator and ensure its operation during and after application of paint as required.

.5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.

.6 Provide minimum lighting level of 323 Lux on surfaces to be painted.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless pre-approved written approval by Specifying body or Paint Inspection Agency Authority and product manufacturer, perform no painting when:

.1 Ambient air and substrate temperatures are below 10 degrees C.

.2 Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.

.3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.

.4 The relative humidity is under 85% or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.

.5 Rain or snow is forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

.6 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can withstand 'normal' adverse environmental factors.

.2 Perform painting work when maximum moisture content of the substrate is below:

.1 Allow new concrete and masonry to cure minimum of 28 days.

.2 15% for wood.

.3 12% for plaster and gypsum board.

.3 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".

.4 Test concrete, masonry and plaster surfaces for alkalinity as required.

.3 Surface and Environmental Conditions:

.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.

.2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.

.3 Apply paint when previous coat of paint is dry or adequately cured.

.4 Additional interior application requirements:

.1 Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.

.2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Contract Administrator such that painted surfaces will have dried and cured sufficiently before occupants are affected.

Part 2 Products

2.1 MATERIALS

.1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.

.2 Provide paint materials for paint systems from single manufacturer.

.3 Only qualified products with "Environmentally Friendly" rating are acceptable for use on this project.

.4 Conform to latest MPI requirements for interior painting work including preparation and priming.

.5 Linseed oil, shellac, and turpentine: highest quality product from approved manufacturer listed in MPI Architectural Painting Specification Manual, compatible with other coating materials as required.

.6 Formulate and manufacture water-borne surface coatings with no aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.

.7 Flash point: 61.0 degrees C or greater for water-borne surface coatings and recycled water-borne surface coatings.

.8 Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:

.1 Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.

.2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.

.9 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly".

2.2 COLOURS

.1 Provide colours in accordance with the colour schedule to be prepared by the Contract Administrator at a later date.

.2 The Contract Administrator will select such colours as may be deemed necessary by him to complete the work, whether or not part of the manufacturer's standard range of colours.

.3 Provide colours for pipe work to suit the identification standards of the client and standard industry practice.

.4 Lighten or darken initial coats in multi-coat systems to help identify the extent of successive coats.

2.3 SOURCE QUALITY CONTROL

.1 Perform following tests on each batch of consolidated post-consumer material before surface coating is reformulated and canned. Testing by laboratory or facility which has been accredited by Standards Council of Canada.

.1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.

.2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.

.3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 GENERAL

.1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 EXAMINATION

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to 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 Maximum moisture content as follows:

.1 Stucco, plaster and gypsum board: 12%.

.2 Concrete: 12%.

.3 Clay and Concrete Block/Brick: 12%.

.4 Wood: 15%.

3.4 PREPARATION

.1 Protection:

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by 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.

.3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:

.1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.

.2 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.3 Allow surfaces to drain completely and allow to dry thoroughly.

.4 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

.5 Use trigger operated spray nozzles for water hoses.

.6 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.

.4 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.

.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. Remove traces of blast products from surfaces, pockets and corners to be painted by blowing with clean dry compressed air or vacuum cleaning.

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

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

3.5 APPLICATION

.1 Method of application to be as approved by Contract Administrator. Apply paint by brush, roller or air sprayer. Conform to manufacturer's application instructions unless specified otherwise.

.2 Brush and Roller Application:

.1 Apply paint in uniform layer using brush and/or roller type suitable for application.

.2 Work paint into cracks, crevices and corners.

.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.

.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Spray application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

.3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.

.4 Brush out immediately all runs and sags.

.5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.

.4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.

.5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.7 Sand and dust between coats to remove visible defects.

.8 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.

.9 Finish inside of cupboards and cabinets as specified for outside surfaces.

.10 Finish closets and alcoves as specified for adjoining rooms.

.11 Finish top, bottom, edges and cut-outs of doors after fitting as specified for door surfaces.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

.1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.

.2 Boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.

.3 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.

.4 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

.5 Do not paint over nameplates.

.6 Keep sprinkler heads free of paint.

.7 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.

.8 Paint fire protection piping red.

.9 Paint disconnects switches for fire alarm system and exit light systems in red enamel.

.10 Paint natural gas piping yellow.

.11 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.

.12 Do not paint interior transformers and substation equipment.

3.7 SITE TOLERANCES

.1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.

.2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.8 FIELD QUALITY CONTROL

.1 Interior painting and decorating work shall be inspected by a Paint Inspection Agency (inspector) acceptable to the specifying authority and local Painting Contractor's Association. Painting Contractor shall notify Paint Inspection Agency a minimum of one week prior to commencement of work and provide a copy of project painting specification, plans and elevation drawings (including pertinent details) as well as a Finish Schedule.

.2 Interior surfaces requiring painting shall be inspected by Paint Inspection Agency who shall notify Contract Administrator and Contractor in writing of defects or problems, prior to commencing painting work, or after prime coat shows defects in substrate.

.3 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer shall provide as part of this work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost.

.4 Standard of Acceptance:

.1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.

.2 Ceilings: no defects visible from floor at 45 degrees degrees to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

.5 Field inspection of painting operations to be carried out by independent inspection firm as designated by Contract Administrator.

.6 Advise Contract Administrator when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.7 Cooperate with inspection firm and provide access to areas of work.

.8 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Contract Administrator.

3.9 RESTORATION

.1 Clean and re-install hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Contract Administrator. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Contract Administrator.

3.10 PAINTING AND PROTECTIVE COATING SYSTEMS:

Legend:

DFT Dry Film Thickness
SP Shop Prime
FP Field Prime
FF Field Finish
TU Touch Up

Paint System Number	Supplier		Description
1	Pittsburgh Paint	FP1	6-7 Blockfiller 6-2 Primer Sealer DFT – Sufficient to fill voids
		FF1	95-245/95-249 Rapid Coat Epoxy DFT – 130-180 Micron
		FP2	95-1/95-98 Aquapon Epoxy DFT - 75-125 Micron
2	Pittsburgh Paint	FP1	6-2 Primer Sealer
		FF1	78-line Latex Eggshell
		FF2	78-line Latex Eggshell
3	Pittsburgh Paint	FP1	6-7 Blockfiller 6-2 Primer Sealer DFT - Sufficient to Fill Voids
		FF1	7-800 Industrial Enamel DFT - 50 Micron
		FF2	7-800 Industrial Enamel DFT - 50 Micron
4	Pittsburgh Paint	SP1	995-245/95-249 Rapid Coat Epoxy DFT - 130-180 Micron
		FP1	97-680 Multiprime DFT - 50 Micron

		FF1	95-245/95-249 Rapid Coat Epoxy Epoxy DFT - 130-180 Micron
		FF2	95-1/95-98 Aquapon Epoxy 75-125 Micron
5	Pittsburgh Paint	FP1	95-144/97-149 PittGuard DTR
		FP2	97-144/97-149 PittGuard DTR (Total) DFT - 250-380 Micron
6	Pittsburgh Paint	FP1	97-680 Multiprime DFT - 37-50 micron
		FF1	7-800 Industrial Enamel DFT - 50 Micron
		FF2	7-800 Industrial Enamel DFT - 50 Micron
7	Pittsburgh Paint	FP1	6-6 Enamel Undercoat DFT - 50 Micron
		FF1	29-110 Alkyd Semi DFT - 37-50 Micron
		FF2	29-110 Alkyd Semi DFT - 37-50 Micron
8	Pittsburgh Paint	FP1	95-245/95-249 Rapid Coat Epoxy DFT - 130-180 Micron
		FF1	95-1/95-98 Aquapon Epoxy
9	Pittsburgh Paint	SP1	97-680 Multiprime DFT - 50 Micron
		FP1	97-680 Multiprime DFT - 50 Micron
		FF1	7-800 Industrial Enamel DFT - 50 Micron
		FF2	7-800 Industrial Enamel DFT - 50 Micron
10	Pittsburgh Paint	SP1	97-948/97-949 All Weather Epoxy DFT - 175 Microns
		FF1	97-948/97-949 All Weather Epoxy DFT - 175 Microns
		FF2	97-948/97-949 All Weather Epoxy DFT - 175 Microns
11	Pittsburgh Paint	FP1	6-2 Primer Sealer
		FP2	6-2 Primer Sealer DFT - 37-50 Micron
		FF1	7-800 Industrial Enamel DFT - 50 Micron
		FF2	7-800 Industrial Enamel DFT - 50 Micron
12	Pittsburgh Paint	SP1	97-680 Multiprime

			DFT - 50-75 Micron
		FP1	97-680 Multiprime DFT - 50-75 Micron
		FF1	97-144/97-149 PittGuard Epoxy DFT - 150 Micron
		FF2	97-144/97-149 PittGuard Epoxy DFT-150 Micron

3.11 PAINTING AND PROTECTIVE COATING SCHEDULE:

.1 Concrete/masonry surfaces and special coatings: Refer to Room Finish Schedules.

.2 Metal surfaces: paint all surfaces unless noted otherwise, refer to Room Finish Schedule for architectural finishes.

	Location or Item	**Exposure**	**Painting and Protective Coating System**
1.	Hollow metal doors and frames	Interior and exterior	9
2.	Steel equipment and pipe supports and hangers	Interior and exterior	4
3.	Galvanized steel surfaces (including doors, frames, ducts and trays)	Interior	6
4.	Structural steel components of building and miscellaneous exposed ferrous metal structures	Interior and exterior	12
5.	Wood equipment mounting boards	Interior	7
6.	Insulation: Outside surfaces of insulated piping and ducts unless concealed	Interior	11
7.	Concrete: Interior surfaces of masonry and concrete where identified in Finish Schedules	Interior	3
8.	Interior Gypsum Board	Interior	2
9.	Steel handrail, Guards and ladders	Interior and exterior	9
10.	Steel equipment and pipe supports and hangers	Interior and exterior	4
11.	Aluminum surfaces in contact with concrete or masonry		5

END OF SECTION