

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 02 41 99 - Demolition for Minor Works.
- .5 Section 05 50 00 – Metal Fabrications
- .6 Section 06 20 00 - Finish Carpentry.
- .7 Section 07 21 16 - Blanket Insulation.
- .8 Section 07 92 00 - Joint Sealing.
- .9 Section 08 11 00 - Metal Doors and Frames.
- .10 Section 08 14 16 - Flush Wood Doors.
- .11 Section 09 21 16 - Gypsum Board Assemblies.
- .12 Section 09 51 99 - Acoustic Ceilings for Minor Works.
- .13 Section 09 91 99 - Painting for Minor Works.

1.2 REFERENCES

- .1 Aluminum Association (AA)
 - .1 AA DAF 45-03(R2009), Designation System for Aluminum Finishes.
- .2 ASTM International
 - .1 ASTM C475-12e1, 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 C840-13, Standard Specification for Application and Finishing of Gypsum Board.
 - .5 ASTM C954-11, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.

- .6 ASTM C1002-14, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- .7 ASTM C1047-14a, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .8 ASTM C1280-13a, Standard Specification for Application of Gypsum Sheathing.
- .9 ASTM C1177/C1177M-13, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
- .10 ASTM C1178/C1178M-13, Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
- .11 ASTM C1396/C1396M-14a, Standard Specification for Gypsum Wallboard.
- .3 Association of the Wall and Ceilings Industries International (AWCI)
 - .1 AWCI Levels of Gypsum Board Finish.
- .4 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-07, Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.

1.3 DELIVERY, STORAGE AND HANDLING

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

1.4 AMBIENT CONDITIONS

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

Part 2 Products

2.1 MATERIALS

- .1 Standard board: to ASTM C1396/C1396M 16mm thick Type X, 1200 mm wide x maximum practical length, ends square cut.
- .2 Metal furring runners, hangers, tie wires, inserts, anchors to ASTM C754.
- .3 Nails: to ASTM C514.
- .4 Steel drill screws: to ASTM C1002.
- .5 Stud adhesive: to CAN/CGSB-71.25 and ASTM C557.
- .6 Laminating compound: as recommended by manufacturer, asbestos-free.
- .7 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, metal, zinc-coated by hot-dip process, 0.5 mm base thickness, perforated flanges, one piece length per location.
- .8 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
 - .1 Acoustic sealant: in accordance with Section 07 92 00 - Joint Sealants.
- .9 Joint compound: to ASTM C475, asbestos-free.

2.2 FINISHES

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

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for gypsum board assemblies installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 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 Install work level to tolerance of 1:1200.

- .4 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .5 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .6 Install wall furring for gypsum board wall finishes to ASTM C840, except where specified otherwise.
- .7 Furr openings and around built-in equipment, cabinets, access panels on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- .8 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

3.3 APPLICATION

- .1 Do not apply gypsum board until after bucks, anchors, blocking, sound attenuation, electrical and mechanical work have been approved.
- .2 Apply single and/or double layer gypsum board as indicated to wood and/or metal framing using screw fasteners for first layer, laminating adhesive for second layer. Second layer joints to be offset from first layer. Maximum spacing of screws 300 mm on centre. Ensure no metal-to-metal contact of fasteners, conduits, etc.
 - .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.
- .3 Apply water-resistant gypsum board adjacent to showers, slop sinks, urinals, and washroom vanities. 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.
- .4 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. Install sealant according to Manufacturer's instructions.
- .5 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .6 Apply board using laminating adhesive on base layer of gypsum board.
- .7 Install gypsum board with face side out.
- .8 Do not install damaged or damp boards.
- .9 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.4 INSTALLATION

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre using contact adhesive for full length.
- .2 Splice corners and intersections together and secure to each member with 3 screws.
- .3 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - .1 Rigidly secure frames to furring or framing systems.
- .4 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.
- .5 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWC Levels of Gypsum Board Finish:
 - .1 Levels of finish:
 - .1 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.
- .6 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.
- .7 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.
- .8 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .9 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.6 PROTECTION

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

3.7 SCHEDULES

- .1 Construct fire rated assemblies where indicated.

- .2 Construct acoustically rated assemblies where indicated.

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 78 00 - Closeout Submittals.
- .4 Section 02 41 99 - Demolition for Minor Works.
- .5 Section 05 50 00 – Metal Fabrications
- .6 Section 06 20 00 - Finish Carpentry.
- .7 Section 07 21 16 - Blanket Insulation.
- .8 Section 07 92 00 - Joint Sealing.
- .9 Section 08 11 00 - Metal Doors and Frames.
- .10 Section 08 14 16 - Flush Wood Doors.
- .11 Section 09 21 16 - Gypsum Board Assemblies.
- .12 Section 09 51 99 - Acoustic Ceilings for Minor Works.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM C645-14, Specification for Nonstructural Steel Framing Members.
 - .2 ASTM C754-11, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-1.40-97, Primer, Structural Steel, Oil Alkyd Type.
- .3 Environmental Choice Program (ECP).
 - .1 CCD-047, Paints - Surface Coatings.
 - .2 CCD-048, Surface Coatings - Recycled Water-borne.

1.3 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

- .3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

Part 2 Products

2.1 MATERIALS

- .1 Non-load bearing channel stud framing: to ASTM C645, 92 mm stud size or as required, roll formed from 0.53mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460mm centres.
- .2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 32mm flange height.
- .3 Rigid structural support for gypsum wallboard assemblies to ASTM C 754:
 - .1 Furring Channel:
 - .1 Gauge: 18
 - .2 Size: 22mm or 38mm as required.
 - .3 Acceptable product:
 - .1 FC-Series by Dietrich or approved equal.
 - .2 Channel:
 - .3 Gauge: 16.
 - .4 Size: 19mm or 38mm as required.
 - .5 Acceptable product:
 - .1 CHN-Series by Dietrich or approved equal.
- .4 Metal channel stiffener: 38mm x 13mm mm size, 1.4mm thick cold rolled steel, coated with rust inhibitive coating.
- .5 Wall Protection Material:
- .6 Acoustical sealant: to CAN/CGSB-19.21.
- .7 Insulating strip: rubberized, moisture resistant 3 mm thick cork or foam strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.

Part 3 Execution

3.1 ERECTION

- .1 Align partition tracks at floor and ceiling and secure at 400mm on centre maximum.
- .2 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- .3 Place studs vertically at 406mm on centre and not more than 50mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.

- .4 Erect metal studding to tolerance of 1:1000.
- .5 Attach studs to bottom and ceiling track using screws.
- .6 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .7 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .8 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
- .9 Install heavy gauge single jamb studs at openings.
- .10 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
- .11 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.
- .12 Provide 40mm stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.
- .13 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .14 Extend partitions to ceiling height except where noted otherwise on drawings.
- .15 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use 50mm leg ceiling tracks.
- .16 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .17 Install two continuous beads of acoustical sealant or insulating strip under studs and tracks around perimeter of sound control partitions.

3.2 CLEANING

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 02 41 99 - Demolition for Minor Works.
- .5 Section 09 21 16 - Gypsum Board Assemblies.
- .6 Appendix - Existing Projectors and Related Equipment Information

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM C635/C635M-13a, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
 - .2 ASTM C636/C636M-13, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
 - .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-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-S102-10, 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 in accordance with Section 01 35 43 - Environmental Procedures.
- .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 MATERIALS

- .1 To ASTM E1264, Type III and ASTM E84, Class A.
- .2 Noise Reduction Coefficient (NRC): ASTM C 423
- .3 Ceiling Attenuation Class (CAC): ASTM C 1414
- .4 Articulation Class (AC): ASTM E 1111
- .5 Light Reflectance (LR): ASTM E 1477
- .6 Mold/Mildew Inhibitor: ASTM D 3273.
- .7 Acceptable Products:
 - .1 Acoustical Tile System A (ACT-1): To match existing.
 - .1 Fire resistance: Class A.
 - .2 Acoustics: NRC .55
 - .3 Light reflectance: 0.86
 - .4 Textures: medium.
 - .5 Colour: white.
 - .6 Size: 610 x 1220 x 16 mm thick.
 - .7 Standard of Acceptance: Armstrong #763 Georgian or approved equal.
- .8 Adhesive: low VOC type recommended by acoustic unit manufacturer.

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

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 SCAQMD Rule 1113.

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 Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 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 Departmental Representative.
 - .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 drawing 301, 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

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 02 41 99 - Demolition for Minor Works.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM F1066-04 (2014), Standard Specification for Vinyl Composition Floor Tile.
 - .2 ASTM F1344-12e1, Standard Specification for Rubber Floor Tile.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-25.20-95, Surface Sealer for Floors.
 - .2 CAN/CGSB-25.21-95, Detergent-Resistant Floor Polish.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTALS

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

1.4 DELIVERY, STORAGE AND HANDLING

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

1.5 ENVIRONMENTAL REQUIREMENTS

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

1.6 MAINTENANCE

- .1 Extra Materials:
 - .1 Provide maintenance materials of resilient tile flooring, base and adhesive in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Extra materials from same production run as installed materials.
 - .3 Identify each container of floor tile and each container of adhesive.

- .4 Deliver to Departmental Representative upon completion of the work of this section.
- .5 Store where directed by Departmental Representative.

Part 2 Products

2.1 LINOLEUM FLOORING

- .1 Description
 - .1 Linoleum flooring: composed of natural ingredients which are mixed and calendered onto a jute backing:
- .2 Manufacturers:
 - .1 Ensure manufacturer has minimum 5 years experience in manufacturing components similar to or exceeding requirements of project.
- .3 Linoleum **M1**
 - .1 Size: 508mm x 508mm tile or rolled good as indicated on drawings
 - .2 Thickness: 2.5mm.
 - .3 Recycled content: 50-59%
 - .4 Finish Sheen: Matte
 - .5 Surface Texture: Smooth
 - .6 Colour and pattern as selected from manufacturer's full range
- .4 Linoleum **M2**
 - .1 Size: 508mm x 508mm tile
 - .2 Thickness: 2.5mm.
 - .3 Recycled content: 50-59%
 - .4 Finish Sheen: Matte
 - .5 Surface Texture: Smooth
 - .6 Colour and pattern as selected from manufacturer's full range
- .5 Linoleum **M3**
 - .1 Size: 508mm x 508mm tile
 - .2 Thickness: 2.5mm.
 - .3 Recycled content: 50-59%
 - .4 Finish Sheen: Matte
 - .5 Surface Texture: Smooth
 - .6 Colour and pattern as selected from manufacturer's full range
- .6 Linoleum **M4**
 - .1 Size: 508mm x 508mm tile

- .2 Thickness: 2.5mm.
- .3 Recycled content: 50-59%
- .4 Finish Sheen: Matte
- .5 Surface Texture: Smooth
- .6 Colour and pattern as selected from manufacturer's full range

2.2 MATERIALS – RUBBER BASE

- .1 **RB1 – Rubber Wall Base**
 - .1 Height: 100 mm (4 inch).
 - .2 Thickness: 3 mm (1/8 inch) thick.
 - .3 Length: Installers choice.
 - .4 Colour: as selected from manufacturer's full range
- .2 Base Accessories: Premoulded end stops and internal / external corners, of same material, size, and colour as base.

2.3 ACCESSORIES

- .1 Subfloor Filler: Type recommended by adhesive material manufacturer.
- .2 Primers and Adhesives: Types recommended by flooring manufacturer.
- .3 Sealer and Wax: Types recommended by flooring manufacturer.

2.4 FLOOR TRANSITIONS

- .1 Metal edge strips: aluminum extruded, smooth with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.
 - .1 Profile: as selected from manufacturer's full range
 - .2 Colour: as selected from manufacturer's full range
 - .3 Locations: Floor transitions and at High Density Mobile Shelving as indicated on drawings.

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 INSPECTION

- .1 Ensure concrete floors are dry, by using test methods recommended by tile manufacturer.

3.3 SUB-FLOOR TREATMENT

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

3.4 TILE APPLICATION

- .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 one month following building occupation.
- .2 Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .3 Install flooring to pattern as indicated on drawings.
- .4 Cut tile and fit neatly around fixed objects.
- .5 Install feature strips and floor markings where indicated. Fit joints tightly.
- .6 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .7 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
- .8 Install metal edge strips at unprotected or exposed edges where flooring terminates.
- .9 Install transitional strips between flooring finishes of different material thickness/height to comply with CAN/CSA B651-12.

3.5 BASE APPLICATION

- .1 Lay out base to keep number of joints at minimum. Base joints at maximum length available or at internal or premoulded corners.
- .2 Clean substrate and prime with one coat of adhesive.
- .3 Apply adhesive to back of base.
- .4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.

- .5 Install straight and level to variation of 1:1000.
- .6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.
- .7 Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles, minimum 300mm each leg. Wrap around toeless base at external corners.
- .8 Install toeless type base before installation of carpet on floors.

3.6 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.

3.7 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning
- .2 Remove excess adhesive from floor, base and wall surfaces without damage.
- .3 Clean, seal and wax floor and base surface to flooring manufacturer's instructions. In carpeted areas clean, seal and wax base surface before carpet installation.

3.8 PROTECTION

- .1 Protect new floors from time of final set of adhesive until final inspection.
- .2 Prohibit traffic on floor for 48 hours after installation.
- .3 Use only water-based coating for linoleum.

3.9 SCHEDULE

- .1 Refer to drawings.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 02 41 99 - Demolition for Minor Works.

1.2 REFERENCES

- .1 American Association of Textile Chemists and Colorists (AATCC)
 - .1 AATCC Test Method 16, Colorfastness to Light.
 - .2 AATCC Test Method 23, Colorfastness to Burn Gas Fumes.
 - .3 AATCC Test Method 129, Colourfastness to Ozone in the Atmosphere Under High Humidities.
 - .4 AATCC Test Method 134, Electrostatic Propensity of Carpets.
 - .5 AATCC Test Method 171, Carpets: Cleaning of; Hot Water Extraction Method.
 - .6 AATCC Test Method 175-, Stain Resistance: Pile Floor Coverings.
 - .7 AATCC Test Method 189, Fluorine Content of Carpet Fibers.
- .2 ASTM International
 - .1 ASTM D297-13, Standard Test Methods for Rubber Products-Chemical Analysis.
 - .2 ASTM D1335-12, Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings.
 - .3 ASTM D2661-11, Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings.
 - .4 ASTM D1667-05 (2011), Standard Specification for Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
 - .5 ASTM D3574-11, Standard Test Methods for Flexible Cellular Materials -Slab, Bonded, and Molded Urethane Foams.
 - .6 ASTM D3936-12, Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2 No. 22-2004, Textile Test Methods -Colourfastness to Rubbing (Crocking).
 - .2 CAN/CGSB-4.2 No.27.6M-2004, Textile Test Methods -Flame Resistance - Methemine Tablet Test for Textile Floor Coverings.
 - .3 CAN/CGSB-4.2 No. 76-94 /ISO 2551: 1981, Textile Test Methods - Machine-Made Textile Floor Coverings - Determination of Dimensional Changes Due to the Effects of Varied Water and Heat Conditions.
 - .4 CAN/CGSB-4.2 No.77.1-94 /ISO 4919: 2000, Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.

- .5 CAN/CGSB-4.129-93(R1997), Carpets for Commercial Use.
- .4 Carpet and Rug Institute (CRI)
 - .1 CRI Carpet Installation Standard 2011 .
 - .2 CRI Green Label Indoor Air Quality Testing Program.
 - .3 CRI Green Label Plus Indoor Air Quality Testing Program.
- .5 Environmental Choice Program (ECP)
 - .1 CCD-152-2009, Flooring Products, Commercial Non-modular Textile Flooring.
- .6 Health Canada
 - .1 C.R.C., c.923-10, Hazardous Products Act - Carpet Regulations, Part II of Schedule 1.
- .7 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .8 National Floor Covering Association (NFCA)
 - .1 National Floor Covering Specification Manual 2007 .
- .9 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113-A2013, Architectural Coatings.
 - .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .10 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-07, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
 - .2 CAN/ULC-S102.2-07, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meetings:
 - .1 Convene pre-installation meeting one week prior to beginning on-site installation, with Departmental Representative in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other construction subtrades.
 - .4 Review manufacturer's written installation instructions and warranty requirements.
- .2 Comply with manufacturer's written recommendations for sequencing and scheduling construction operations.

1.4 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 each carpet tile, adhesive, carpet protection, subfloor patching compound and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29 – 06 Health and Safety Requirements.
- .3 Shop Drawings:
 - .1 Information on shop drawings to indicate:
 - .1 Nap: direction, open edges, special patterns.
 - .2 Cutouts: show locations where cutouts are required.
 - .3 Edgings: show location of edge moldings and edge bindings.
- .4 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Samples will be returned for inclusion into work.
 - .3 Submit duplicate samples of each type of carpet tile specified and duplicate tiles for each colour selected, and floor base.
- .5 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .6 Test and Evaluation Reports:
 - .1 Certified test reports showing compliance with specified performance characteristics and physical properties.
- .7 Manufacturer's Instructions: submit manufacturer's installation and storage instructions.
- .8 Manufacturers Reports:
 - .1 Manufacturer's Field Reports: submit manufacturer's written reports within [3] days of review, verifying compliance with specifications.
- .9 Qualification Statements:
 - .1 Compliance: to CAN/ULC-S102 and CAN/ULC-S102.2.
 - .2 Testing: passes testing requirements of:
 - .1 Green Label Plus Indoor Air Quality Testing Program.
 - .3 Tuft bind: meets requirements of CAN/CGSB-4.129 when tested to CAN/CGSB-4.2 No.77.1.

1.5 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for [installed products] for incorporation into manual.
- .3 Warranty Documentation: submit warranty documents specified.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- .1 Extra stock materials: deliver to Departmental Representative extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals.

- .1 Quantity: provide minimum 10% of:
 - .1 Carpet tile.
 - .2 Adhesives.
- .2 Delivery, storage and protection : comply with Departmental Representative's requirements for delivery and storage of extra materials.

1.7 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Prequalification: compliance with Health Canada regulations under "Hazardous Products Act", Part II of Schedule 1, to CAN/CGSB-4.2 No. 27.6.
- .2 Qualifications:
 - .1 Manufacturer: capable of providing field service representation during construction and approving application method.
 - .2 Flooring Installer/Applicator/Contractor:
 - .1 Experienced in performing work of this Section who has specialized in installation of work similar to that required for this project.
 - .2 Certified by carpet manufacturer prior to bid submission.
 - .3 Must not sub-contract labour without written approval of Departmental Representative.
 - .4 Responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturer's written instructions.

1.8 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 protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - .3 Store and protect carpet tile and adhesive in original containers or wrapping with manufacturer's seals and labels intact.
 - .4 Store and protect carpet tile and accessories in location as directed by Departmental Representative.
 - .5 Store carpet and adhesive at minimum temperature of 18 degrees C and relative humidity of maximum 65% for minimum of 48 hours before installation.
 - .6 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
 - .7 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.

- .8 Replace defective or damaged materials with new.

1.9 SITE CONDITIONS

- .1 Ambient Conditions:
 - .1 Moisture: ensure substrate is within moisture limits and alkalinity limits recommended by manufacturer.
 - .2 Temperature: maintain ambient temperature of not less than 18 degrees C from 48 hours before installation to at least 48 hours after completion of work.
 - .3 Relative humidity: maintain between 10% and 65% for 48 hours before, during and 48 hours after installation.
 - .4 Ventilation:
 - .1 Departmental Representative will co-ordinate operation of ventilation system during installation of carpet. Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.
 - .2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities. Provide fans equipped with HEPA filters.
 - .3 Provide continuous ventilation during and after carpet application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of carpet installation.
 - .5 Install carpet after space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete.

1.10 WARRANTY

- .1 Manufacturer's warranty: submit, for Departmental Representative's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and does not limit other rights Owner may have under Contract Documents.
- .2 Warranty period: 1 year, commencing on date of substantial performance of work.
 - .1 Warranty covers labour and repair or replacement of defective components for 1 year after date of substantial performance.

Part 2 Products

2.1 MATERIALS

- .1 Manufacturers:
 - .1 Ensure manufacturer has minimum 5 years experience in manufacturing components similar to or exceeding requirements of project.
- .2 Description:
 - .1 Adhesives: VOC limit 50 g/L maximum to SCAQMD Rule 1168 GS-36.
 - .2 Primer/Sealer: in accordance with manufacturer's recommendations for surface conditions:
 - .1 VOC limit: 100 g/L maximum to SCAQMD Rule 1113.

2.2 CARPET TILE

- .1 Carpet Tile **C1**: Multi-level pattern loop manufactured in one colour dye lot, conforming to the following criteria:
 - .1 Manufacturer: Shaw Contract Group
 - .2 Pattern: City Grid Tile #59537
 - .3 Colour: Shoreline #38530
 - .4 Pile Fibre: Eco Solution Q Nylon.
 - .5 Gauge: 1/12 inch. (47.24 per 10cm)
 - .6 Finished Pile Thickness: 3.35 mm (0.132 inch).
 - .7 Tufted Weight: (26 oz/sq yd).
 - .8 Stitch Count: 10.0/ inch.
 - .9 Primary Backing Material: Synthetic.
 - .10 Secondary Backing Material: Ecoworx Tile.
 - .11 Size: 600 x 600 mm (24 x 24 inches).
 - .12 Installation Method: To match existing.
 - .13 Or approved equal
- .2 Carpet Tile **C2**:
 - .1 Manufacturer: Shaw Contract Group
 - .2 Style #: 59368
 - .3 Style name: tru colours tile
 - .4 Colour #: 68314
 - .5 Colour name: Russian Sky (blue)
 - .6 Or approved equal
- .3 Carpet Tile **C3**:
 - .1 Manufacturer: Shaw Contract Group
 - .2 Style #: 59368
 - .3 Style name: tru colours tile
 - .4 Colour #: 68320
 - .5 Colour name: Eucalyptus (Dark grey)
 - .6 Or approved equal
- .4 Carpet Tile **C4**:
 - .1 Manufacturer: Shaw Contract Group
 - .2 Style #: 59368
 - .3 Style name: tru colours tile
 - .4 Colour #: 68309
 - .5 Colour name: Timber (brown)
 - .6 Or approved equal

2.3 PERFORMANCE

- .1 Flammability: certified for flammability to Health Canada regulations under "Hazardous Products - Carpet Regulations", Part II of Schedule 1.
- .2 Flame Spread: maximum flame spread rating 300, maximum smoke developed classification 500, when tested to CAN/ULC-S102.2.
- .3 Smoke Development: 450 or less per ASTM E662.
- .4 Dry Breaking Strength: to ASTM D2661, minimum acceptable tear strength in both length and width:
 - .1 11.3 kg for carpets installed by glue down installation.
- .5 Wear: maximum 10% of pile face fiber by weight for 10 years.
- .6 Edge Ravel: none for 10 years.
- .7 Static Resistance: permanent static control to AATCC 134, 3000 V maximum at 20% RH and 22 degrees C.
- .8 Static Generation: less than 3.0kV per AATCC 134 for 10 years.
- .9 Tuft Bind: Tuft Lock: to ASTM D1335/CAN/CGSB-4.129, minimum acceptable 1.6 kilograms for cut pile product, 3.6 for loop pile product.
- .10 De-lamination of Secondary Backing: Lamination Strength of Secondary Backing: to ASTM D3936, minimum acceptable peel strength of 1.6kg/25 mm.
- .11 Stain resistance: to AATCC 175, 8.
- .12 Soil Resistance: 350 ppm fluorine minimum. Fluorine Durability Level to AATCC 189.
- .13 Colourfastness to light: to CAN/CGSB-4.2 No.18.3, AATCC 16.
- .14 Colourfastness to atmosphere: to AATCC 129 and AATCC 23.
- .15 Colourfastness to crocking: to CAN/CGSB-4.2 No. 22.
- .16 Indoor Air Quality Certification: certified to CRI Green Label Plus IAQ requirements.

2.4 ACCESSORIES

- .1 Base:
 - .1 **CB1:** Install 4" surged carpet base where carpet flooring is located. Finish to match adjacent carpet and existing conditions. Sample of surging to be provided for approval by Departmental Representative prior to commencement of work.
 - .2 Refer to Drawings for locations.
- .2 Adhesive as recommended by the Manufacturer.
- .3 Subfloor patching compound: Portland cement base filler, mix with latex and water to form cementitious paste.

Part 3 Execution

3.1 INSTALLERS

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

3.2 EXAMINATION

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

3.3 PREPARATION

- .1 Subfloor Preparation:
 - .1 Inspect concrete and determine special care required to make it a suitable for carpet.
 - .2 Fill and level cracks 3 mm wide or protrusions over 0.8 mm with appropriate and compatible polymer fortified patching compound.
 - .3 Comply with manufacturer's written recommendations for maximum patch thickness.
 - .4 Prime large patch areas with compatible primer.
 - .5 Ensure concrete substrates are cured, clean and dry.
 - .6 Ensure concrete substrates are free of paint, dirt, grease, oil, curing or parting agents, and other contaminants, including sealers, that interfere with the bonding of adhesive.
 - .7 Where powdery or porous concrete surface is encountered, apply primer compatible with adhesive to provide a suitable surface for glue-down installation.
- .2 Surface Preparation: prepare surface in accordance with manufacturer's written recommendations and co-ordinate.
 - .1 Prepare floor surfaces in accordance with CRI Carpet Installation Standard.
- .3 Tile Carpeting Preparation:
 - .1 Pre-condition carpeting following manufacturer's written instructions.
- .4 Demolition / Removal:
 - .1 Remove existing carpet tiles and turn over to Departmental Representative.
 - .2 Vacuum used carpet before removal.
 - .3 Remove used tiles and pack in container. Use effective packing techniques to maximize amount of material in container.
 - .4 Sort only clean, dry carpet tiles for reclamation. Clean is defined as carpet free from demolition debris, asbestos contamination, garbage, knife blades and tack strips.

3.4 INSTALLATION

- .1 Install carpet tiles in accordance with manufacturer's written instructions, and CRI Carpet Installation Standard and co-ordinate with Section 01 73 00 - Execution.
- .2 Co-ordinate tile carpeting work with work of other trades, for proper time and sequence to avoid construction delays.
- .3 Snugly join carpet tiles in completed installation.
 - .1 Measure distance covered by 11 carpet tiles (10 joints) and ensure distance is in compliance with manufacturer specifications.
 - .2 Do not trap yarn between carpet tiles.
- .4 Apply thin film of pressure-sensitive adhesive according to manufacturer's recommendations.
- .5 Ensure finished installation presents smooth wearing surface free from conspicuous seams, burring and other faults.
- .6 Use material from same dye lot.
 - .1 Ensure colour, pattern and texture match within visual areas.
 - .2 Maintain constant pile direction.
- .7 Fit around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
- .8 Install carpet tiles smooth and free from bubbles, puckers, and other defects.
- .9 Protect exposed carpet tile edges at transition to other flooring materials with suitable transition strips.
- .10 Base Installation: 104mm high monolithic rubber or vinyl.

3.5 SITE QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Co-ordinate manufacturer's services with Section 01 45 00 - Quality Control. Have manufacturer review work involved in handling, installation / application, protection and cleaning of its product[s], and submit written reports, in acceptable format, to verify compliance of work with Contract.
 - .2 Manufacturer's field services: 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 Schedule site visits:
 - .1 After delivery and storage of products, and when preparatory Work, or other Work, on which the Work of this Section depends, is complete but before installation begins.
 - .2 Twice during progress of Work at 25% and 60% complete.
 - .3 Upon completion of Work, after cleaning is carried out.
 - .4 Obtain reports within 3 days of review and submit immediately to Departmental Representative.

3.6 CLEANING

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

- .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
 - .1 Vacuum carpets clean immediately after completion of installation.

3.7 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Prohibit traffic on carpet for period of 24 hours minimum after installation and until adhesive is cured.
- .3 Install carpet protection to satisfaction of Departmental Representative.
- .4 Repair damage to adjacent materials caused by tile carpeting installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.
- .2 Section 01 33 00 - Submittal Procedures.
- .3 Section 01 35 29.06 - Health and Safety Requirements.
- .4 Section 01 45 00 - Quality Control.
- .5 Section 01 61 00 - Common Product Requirements.
- .6 Section 01 78 00 - Closeout Submittals.
- .7 Section 05 50 00 – Metal Fabrications.
- .8 Section 08 11 00 – Metal Doors and Frames.
- .9 Section 09 21 16 – Gypsum Board Assemblies.

1.2 REFERENCES

- .1 The Master Painters Institute (MPI)
 - .1 Maintenance Repainting Manual, Master Painters Institute (MPI), including Identifiers, Evaluation, Systems, Preparation and Approved Product List.
- .2 Environmental Protection Agency (EPA)
 - .1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings).
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.3 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Contractor: to have a minimum of five years proven satisfactory experience. Provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.
 - .2 Qualified journeypersons as defined by local jurisdiction to be engaged in repainting work.
 - .3 Apprentices: may be employed provided they work under the direct supervision of qualified journeyperson in accordance with applicable trade regulations.
- .2 Conform to latest MPI requirements for interior repainting work including cleaning, preparation and priming.

- .3 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners and solvents) shall be in accordance with the latest edition of the MPI Approved Product List and shall be from a single manufacturer for each system used.
- .4 Paint materials such as linseed oil, shellac, reducers and turpentine shall be the highest quality product of an approved manufacturer listed in MPI Maintenance Repainting Manual and shall be compatible with other coating materials as required.
- .5 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.
- .6 Standard of Acceptance: when viewed using final lighting source surfaces shall indicate the following:
 - .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.
 - .3 Final coat to exhibit uniformity of colour and sheen across full surface area.
- .7 Mock-ups: construct mock-ups in accordance with Section 01 45 00 - Quality Control
 - .1 Provide a mock-up in accordance with requirements of Section 01 45 00 - Quality Control to Departmental Representative.
 - .2 Prepare and repaint mock-up designated interior room, surface or item to requirements specified herein, with specified paint or coating showing selected colours, gloss/sheen, textures and workmanship to MPI Maintenance Repainting Manual standards for review and approval.
 - .3 When approved, repainted room, surface and/or item shall become acceptable standard of finish quality and workmanship for similar on-site interior repainting work.

1.4 PERFORMANCE REQUIREMENTS

- .1 Environmental Performance Requirements:
 - .1 Provide paint products meeting MPI "Environmentally Friendly" E2 ratings based on VOC (EPA Method 24) content levels.
 - .2 Where indoor air quality (odour) is a problem, use only MPI listed materials having a minimum E2 rating.

1.5 SCHEDULING

- .1 Submit work schedule for various stages of painting to Departmental Representative for approval. Submit schedule a minimum of 48 hours in advance of proposed operations.
- .2 Paint occupied facilities in accordance with approved schedule. Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.
- .3 Obtain written authorization from Departmental Representative for changes in work schedule.
- .4 Schedule repainting operations to prevent disruption by other trades if applicable and by occupants in and about building.

1.6 SUBMITTALS

- .1 Provide product data and manufacturer's installation/application instructions for each paint and coating product to be used in accordance with the requirements of Section 01 33 00 - Submittal Procedures.
- .2 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit full range colour sample chips for review and selection. Indicate where colour availability is restricted.
 - .2 Submit WHMIS MSDS - Material Safety Data Sheets for paint and coating materials in accordance with Section 02 81 01 - Hazardous Materials.
- .3 Closeout Submittals:
 - .1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
 - .1 Submit records of products used. List products in relation to finish system and include following:
 - .1 Product name, type and use (i.e. materials and location).
 - .2 Manufacturer's product number.
 - .3 Colour code numbers.
 - .4 MPI Environmentally Friendly classification system rating.
 - .5 Manufacturer's Material Safety Data Sheets (MSDS).

1.7 DELIVERY, HANDLING AND STORAGE

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements, supplemented as follows:
 - .1 Deliver and store materials in original containers, sealed, with labels intact.
 - .2 Labels to indicate:
 - .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 Store and handle in accordance with manufacturer's recommendations.
 - .5 Store materials and equipment in secure, dry, well-ventilated area with temperature range between 7 degrees C to 30 degrees C. Store materials and supplies away from heat generating devices and sensitive products above minimum temperature as recommended by manufacturer.
 - .6 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Departmental Representative.
 - .7 Remove paint materials from storage in quantities required for same day use.
 - .8 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.9 Fire Safety Requirements:

- .1 Provide one 9kg 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 daily.
- .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada.

.2 Waste Management and Disposal:

- .1 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are 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.
- .2 Materials that cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
- .3 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .4 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into the ground the following procedures shall be strictly adhered to:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
 - .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
 - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
 - .6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
- .5 Where paint recycling is available, collect waste materials by type and provide for delivery to recycling or collection facility.

1.8 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:

- .1 Do not perform repainting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application and until paint has cured sufficiently.

- .2 Ventilate enclosed spaces in accordance with Section 01 35 29.06. Where required, provide continuous ventilation for seven days after completion of application of paint.
- .3 Co-ordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
- .4 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. Use of gas-fired appliances is not permitted.
- .5 Do not perform painting work unless minimum lighting level of 323 Lux is provided on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Unless specifically pre-approved by specifying body, Paint Inspection Agency and, applied product manufacturer, do not perform repainting work when:
 - .1 Ambient air and substrate temperatures are below 10 degrees C.
 - .2 Substrate temperature is over 32 degrees C unless paint is specifically formulated for application at high temperatures.
 - .3 Relative humidity within area to be repainted is above 85%.
 - .2 Conduct moisture tests using properly calibrated electronic Moisture Meter, except use simple "cover patch test" on concrete floors to be repainted.
 - .3 Do not perform repainting work when maximum moisture content of substrate exceeds:
 - .1 12% for concrete and masonry (clay and concrete brick/block).
 - .2 15% for wood.
 - .3 12% for plaster and gypsum board.
 - .4 Test painted 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 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 noted herein.
 - .3 Apply paint when previous coat of paint is dry or adequately cured, unless otherwise pre-approved by specific coating manufacturer.
 - .4 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of the Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

1.9 MAINTENANCE

- .1 Extra Materials:
- .2 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

- .3 Submit one four litre can of each type and colour of stain finish coating. Identify type and colour in relation to established colour schedule and finish system.

Part 2 Products

2.1 MATERIALS

- .1 Paint materials listed in latest edition of MPI Approved Product List (APL) are acceptable for use on this project.
- .2 Where required by authorities having jurisdiction, paints and coatings to provide a fire resistant rating.
- .3 Paint materials for repaint systems to be products of single manufacturer.
- .4 Only qualified products with MPI "Environmentally Friendly" E2 or E3 rating are acceptable for use on this project.
- .5 Use only MPI listed L rated materials.
- .6 Paints, coatings, thinners, solvents, cleaners and other fluids used in repainting, to be as follows:
 - .1 Not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
 - .2 Be manufactured without compounds which contribute to ozone depletion in upper atmosphere.
 - .3 Be manufactured without compounds which contribute to smog in lower atmosphere.
 - .4 Be manufactured where matter generating 'Biochemical Oxygen Demand' (BOD) in undiluted production plant effluent discharged to natural watercourse or a sewage treatment facility lacking secondary treatment does not exceed 15mg/L.
 - .5 Be manufactured where total suspended solids (TSS) content in undiluted production plant effluent discharged to natural watercourse or sewage treatment facility lacking secondary treatment does not exceed 15 mg/L.
- .7 Paints and coatings must not be formulated or manufactured with formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.

2.2 COLOURS

- .1 Refer to Finishes Plan and Colour Schedule.
- .2 Selection of colours will be from manufacturers full range of colours.
- .3 Where specific products are available in restricted range of colours, selection will be based on limited range.
- .4 First coat in two coat (Premium) repaint system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials is allowed with Departmental Representative's written permission.
- .2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
- .3 Where thinner is used, addition not to exceed paint manufacturer's recommendations. Do not use kerosene or such organic solvents to thin water-based paints.
- .4 Thin paint for spraying in accordance with paint manufacturer' instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Departmental Representative.
- .5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

- .1 Paint gloss defined as sheen rating of applied paint, in accordance with following MPI gloss / sheen standard values:

Gloss Level Category	Units @ 60 Degrees	Units @ 85 Degrees
G1 - matte finish	0 to 5	maximum 10
G2 - velvet finish	0 to 10	10 to 35
G3 - eggshell finish	10 to 25	10 to 35
G4 - satin finish	20 to 35	minimum 35
G5 - semi-gloss finish	35 to 70	
G6 - gloss finish	70 to 85	
G7 - high gloss finish	> 85	

- .2 Gloss level ratings of repainted surfaces [shall be as specified herein] [and] [as noted on Finish Schedule].

2.5 INTERIOR PAINTING SYSTEMS

- .1 RIN 5.3 - Galvanized Metal: (High Contact/High Traffic Areas (Doors, Frames, Railings,Pipes, Handrails, etc.). Low Contact/Low traffic areas (Overhead Decking, Pipes, Ducts,etc.)
 - .1 RIN 5.3B - High Performance Acrylic G4.
 - .2 RIN 5.3C - Alkyd G5.
 - .3 RIN 5.3D - 2 Component Epoxy G5
 - .4 RIN 5.3H - 2 Component Polyurethane.
 - .5 INT 5.3A - Quick dry enamel G5 finish. (If required only: Add Waterborne light industrial G5 clear (4) coating for doors and frames only).
- .2 RIN 6.3 - Dressed Lumber: (Including Doors, Door and Window Frames, Mouldings,etc.)
 - .1 RIN 6.3B - Alkyd (Semi-Gloss, Gloss).RIN
 - .2 6.3D - Semi-Transparent Stain/Alkyd Semi-Transparent Stain/Varnish G3,G4.
 - .3 RIN 6.3E - Semi-Transparent Stain/Polyurethane Varnish G4, G5.

- .4 RIN 6.3H - Clear Lacquer G4, G5.
- .5 RIN 6.3J - Clear Alkyd Varnish G4, G5.
- .6 RIN 6.3K - Clear Polyurethane Varnish G4, G5.
- .7 RIN 6.3L - 2 Component Epoxy.
- .8 RIN 6.3Q - High Performance Acrylic G4, G5.
- .9 RIN 6.3R - Waterborne Acrylic, Clear G4, G5.
- .3 RIN 6.4 - Wood Panelling and Casework: (Partitions, Panels, Shelving, Millwork, etc.).
 - .1 RIN 6.4C - Alkyd Semi-Gloss, Gloss.
 - .2 RIN 6.4F - Semi-Transparent Stain/Alkyd Varnish G4, G5.
 - .3 RIN 6.4G - Semi-Transparent Stain/Polyurethane Varnish G4, G5.
 - .4 RIN 6.4H - Semi-Transparent Stain/Lacquer G4, G5 Finish (over stain).
 - .5 RIN 6.4J - Clear Alkyd Varnish G4, G5.
 - .6 RIN 6.4L - Clear Polyurethane Varnish G4, G5.
 - .7 RIN 6.4Q - Waterborne Acrylic, Clear G4, G5.
 - .8 RIN 6.4R - High Performance Acrylic G4, G5.
- .4 RIN 6.5 - Wood Floors and Stairs:
 - .1 RIN 6.5A - Alkyd Floor Enamel.
 - .2 RIN 6.5B - Semi-Transparent Stain / Polyurethane Varnish G4, G5.
- .5 RIN 9.2 - Plaster and Gypsum Board: (gypsum wallboard, drywall, "sheet rock typematerial", etc.).
 - .1 RIN 9.2A - Latex G4, G5.
 - .2 RIN 9.2B - High Performance Acrylic G4, G5
 - .3 RIN 9.2C - Alkyd G4, G5 Finish.
 - .4 RIN 9.2J - 2 Component Polyurethane G4, G5.
 - .5 INT 9.2A - Latex G5 finish (over latex sealer) – All walls.
 - .6 INT 9.2C - Latex G5 finish (over latex sealer) – Washroom walls.
- .6 RIN 9.3 - Acoustic Panels and Tiles.
 - .1 RIN 9.3A - Latex Flat.
 - .2 .3 RIN 5.3D - 2 Component Epoxy G5.SPEC NOTE: Use the following subparagraph for LEED projects, if low-emitting materials are required for LEED Credit EQc4.2.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 EXAMINATION

- .1 Interior repainting work: inspected by MPI Accredited Paint Inspection Agency (inspector) acceptable to specifying authority and local Painting Contractor's Association. Painting contractor to notify Paint Inspection Agency a minimum of one week prior to commencement of work and provide a copy of project repainting specification and Finish Schedule (as well as plans and elevation drawings).
- .2 Interior surfaces requiring repainting: inspected by both painting contractor and Paint Inspection Agency who will notify Departmental Representative in writing of defects or problems, prior to commencing repainting work, or after surface preparation if unseen substrate damage is discovered.
- .3 Where an assessed degree of surface degradation of DSD-1 to DSD-3 before preparation of surfaces for repainting is revealed to be DSD-4 after preparation, repair or replacement of such unforeseen defects discovered are to be corrected, as mutually agreed, before repainting is started.
- .4 Where "special" repainting or recoating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer to provide as part of 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 to Departmental Representative.

3.3 PREPARATION

- .1 Perform preparation and operations for interior painting in accordance with MPI Maintenance Repainting Manual requirements except where otherwise specified.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.
- .3 Clean and prepare interior surfaces to be repainted in accordance with MPI Maintenance Repainting Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
 - .1 Remove dust, dirt, and surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
 - .2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using stiff bristle brush to remove dirt, oil and surface contaminants.
 - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
 - .4 Allow surfaces to drain completely and to dry thoroughly. Allow sufficient drying time and test surfaces using an electronic moisture meter before commencing work.
 - .5 Use water-based cleaners in place of organic solvents where surfaces will be repainted using water based paints.
 - .6 Many water-based paints cannot be removed with water once dried. Minimize use of kerosene or such organic solvents to clean up water-based paints.

- .4 Clean metal surfaces to be repainted by removing rust, dirt, oil, grease and foreign substances in accordance with MPI requirements. Remove such contaminants from surfaces, pockets and corners to be repainted by brushing with clean brushes, blowing with clean dry compressed air, or brushing/vacuum cleaning as required.
- .5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before priming and between applications of remaining coats. Touch-up, spot prime, and apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.
- .6 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.
- .7 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from distance up to 1000mm.

3.4 EXISTING CONDITIONS

- .1 Prior to commencing work, examine site conditions and existing interior substrates to be repainted. Report in writing to Departmental Representative and] General Contractor] [Project Manager] damages, defects, or unsatisfactory or unfavourable conditions or surfaces that will adversely affect this 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" and report findings to Departmental Representative and General Contractor. Maximum moisture content not to exceed specified limits.
- .3 Do not commence until such adverse conditions and defects have been corrected and surfaces and conditions are acceptable to Painting Subcontractor and Inspection Agency.
- .4 Degree of surface deterioration (DSD) to be assessed using MPI Identifiers and Assessment criteria indicated in MPI Maintenance Repainting Manual. MPI DSD ratings and descriptions are as follows:

Condition	Description
DSD-0	Sound Surface (includes visual (aesthetic) defects that do not affect film's protective properties).
DSD-1	Slightly Deteriorated Surface (indicating fading; gloss reduction, slight surface contamination, minor pin holes scratches).
DSD-2	Moderately Deteriorated Surface (small areas of peeling, flaking, slight cracking, and staining).
DSD-3	Severely Deteriorated Surface (heavy peeling, flaking, cracking, checking, scratches, scuffs, abrasion, small holes and gouges).
DSD-4	Substrate Damage (repair or replacement of surface required).

3.5 PROTECTION

- .1 Protect existing surfaces and adjacent fixtures and furnishings from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Departmental Representative.
- .2 Protect items that are permanently attached such as Fire Labels on doors and frames.

- .3 Protect factory finished products and equipment.
- .4 Protect general public and building occupants in and about building.
- .5 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and surface mounted equipment, fittings and fastenings prior to undertaking re-painting operations. Store items and re-install after painting is completed.
- .6 Move and cover furniture and portable equipment as necessary to carry out repainting operations. Replace as painting operations progress.
- .7 As repainting operations progress, place "WET PAINT" signs in occupied areas to approval of Departmental Representative.

3.6 APPLICATION

- .1 Apply paint by method that is best suited for substrate being repainted using brush roller, air sprayer and/or airless sprayer. Conform to manufacturer's application instructions unless specified otherwise. Methods of application as pre-approved by Departmental Representative before commencing work.
- .2 Brush and Roller Application:
 - .1 Apply paint in uniform layer using brush and/or roller of types 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 unless approved by Departmental Representative.
 - .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 properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - .2 Keep paint ingredients properly mixed in containers during paint application by continuous mechanical agitation or intermittent agitation frequently as necessary.
 - .3 Apply paint in uniform layer, with overlapping at edges of spray pattern.
 - .4 Back roll spray applications and brush out runs and sags immediately.
 - .5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers when no other method is practical in places of difficult access and when specifically authorized by Departmental Representative.
- .5 Apply paint coats in continuous manner and allow surfaces to dry and properly cure between coats for minimum time period as recommended by manufacturer. Minimum

dry film thickness of coats not less than that recommended by manufacturer. Repaint thin spots or bare areas before next coat of paint is applied.

- .6 Sand and dust between coats to remove visible defects.
- .7 Repaint 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.
- .8 Repaint top, bottom, and vertical edges of doors to be repainted.
- .9 Repaint inside of cupboards and cabinets as specified for outside surfaces.
- .10 Repaint closets and alcoves to match existing, unless otherwise scheduled or noted.

3.7 MECHANICAL/ELECTRICAL EQUIPMENT

- .1 Unless otherwise noted, repainting to include exposed to view / previously painted mechanical and electrical equipment and components (panels, conduits, piping, hangers, and ductwork.).
- .2 Touch up scratches and marks and repaint such mechanical and electrical equipment and components with colour, and sheen finish to match existing unless otherwise noted or scheduled.
- .3 Do not paint over name plates or instruction labels.
- .4 Leave unfinished exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish.
- .5 Keep sprinkler heads free of paint.
- .6 Do not paint interior transformers and substation equipment.
- .7 Standard of Acceptance: when viewed using natural prevailing sunlight at peak period of day (mid-day) on surface viewed, surfaces to indicate following:
 - .1 Walls: no defects visible from distance of 1000 mm at 90 degrees to surface.
 - .2 Soffits: no defects visible from grade at 45 degrees to surface.
 - .3 Final coat to exhibit uniformity of colour and sheen across full surface area.

3.8 FIELD QUALITY CONTROL

- .1 Inspection:
- .2 Advise Departmental Representative and Paint Inspection Agency when each surface and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .3 Co-operate with Paint Inspection Agency and provide access to areas of work.

3.9 CLEANING

- .1 Proceed in accordance with Section 01 74 11 – Cleaning, supplemented as follows:.

- .1 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.
- .2 Keep work area free from unnecessary accumulation of tools, equipment, surplus materials and debris.
- .3 Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of authorities having jurisdiction.
- .4 Clean equipment and dispose of wash water used for water borne materials, solvents used for oil based materials as well as other cleaning and protective materials (e.g. rags, drop cloths, and masking papers), paints, thinners, paint removers/strippers in accordance with safety requirements of authorities having jurisdiction and as noted herein.
- .5 Clean painting equipment in leak-proof containers that will permit particulate matter to settle out and be collected. Sediment remaining from cleaning operations to be recycled or disposed of in manner acceptable to authorities having jurisdiction.
- .6 Recycle paint and coatings in excess of repainting requirements as specified.

3.10 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 affected exposed surfaces. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.
- .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.
- .2 Section 01 33 00 - Submittal Procedures.
- .3 Section 01 35 29.06 - Health and Safety Requirements.
- .4 Section 01 45 00 - Quality Control.
- .5 Section 01 61 00 - Common Product Requirements.
- .6 Section 01 78 00 - Closeout Submittals.
- .7 Section 05 50 00 – Metal Fabrications.
- .8 Section 08 11 00 – Metal Doors and Frames.
- .9 Section 09 21 16 – Gypsum Board Assemblies.

1.2 REFERENCES

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

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for paint and coating products and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements and 01 35 43 - Environmental Procedures.
- .3 Samples:
 - .1 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 Painting Specification Manual standards.
- .4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.4 DELIVERY, STORAGE AND HANDLING

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

- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store painting materials and supplies away from heat generating devices.
 - .3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.
- .4 Fire Safety Requirements:
 - .1 Supply 1, 9 kg Type ABC fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

1.5 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
 - .1 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.
 - .2 Co-ordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
 - .3 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.
 - .2 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.
- .3 Additional application requirements:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
 - .2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

Part 2 Products

2.1 MATERIALS

- .1 Supply paint materials for paint systems from single manufacturer.
- .2 Conform to latest MPI requirements for painting work including preparation and priming.

- .3 Materials in accordance with MPI - Architectural Painting Specification Manual "Approved Product" listing.
- .4 Colours:
 - .1 Submit proposed Colour Schedule to Departmental Representative.
 - .2 Base colour schedule on selection of 4 base colours.
- .5 Mixing and tinting:
 - .1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written recommendations.
 - .2 Use and add thinner in accordance with paint manufacturer's recommendations.
 - .1 Do not use kerosene or similar organic solvents to thin water-based paints.
 - .3 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.
- .6 Gloss/sheen ratings:
 - .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

Gloss Level-Category	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish	Max. 5	Max. 10
Gloss Level 2 - Velvet	Max.10	10 to 35
Gloss Level 3 - Eggshell	10 to 25	10 to 35
Gloss Level 4 - Satin	20 to 35	min. 35
Gloss Level 5 - Semi-Gloss	35 to 70	
Gloss Level 6 - Gloss	70 to 85	
Gloss Level 7 - High Gloss	More than 85	
 - .2 Gloss level ratings of painted surfaces as indicated.
- .7 Interior painting:
 - .1 Galvanized Metal: high contact/high traffic areas (doors, frames, railings and handrails, etc.).
 - .1 INT 5.3C - Alkyd Level 3 finish (over cementitious primer).
 - .2 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.
 - .1 INT 5.1E Alkyd - Level 3 finish.
 - .3 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock" type material, etc.
 - .1 INT 9.2M - Institutional low odour/low VOC Level 3 or 4 finish, as indicated, over latex sealer.

Part 3 Execution

3.1 GENERAL

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

3.2 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

3.3 PREPARATION

- .1 Protection of in-place conditions:
 - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Departmental Representative.
 - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - .3 Protect factory finished products and equipment.
- .2 Surface Preparation:
 - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
 - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
 - .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.
 - .4 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual specific requirements and coating manufacturer's recommendations.
 - .5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
 - .6 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
 - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.

- .2 Apply wood filler to nail holes and cracks.
- .3 Tint filler to match stains for stained woodwork.
- .7 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .8 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements.
- .9 Touch up of shop primers with primer as specified.

3.4 APPLICATION

- .1 Paint only after prepared surfaces have been accepted by Departmental Representative.
- .2 Use method of application approved by Departmental Representative.
 - .1 Conform to manufacturer's application recommendations.
- .3 Apply coats of paint in continuous film of uniform thickness.
 - .1 Repaint thin spots or bare areas before next coat of paint is applied.
- .4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .5 Sand and dust between coats to remove visible defects.
- .6 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
- .7 Mechanical/Electrical Equipment:
 - .1 Paint conduits, piping, hangers, ductwork and other mechanical and electrical equipment exposed in finished areas, to match adjacent surfaces, except as indicated.
 - .2 Do not paint over nameplates.
 - .3 Keep sprinkler heads free of paint.
 - .4 Paint fire protection piping red.
 - .5 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
 - .6 Paint natural gas piping yellow.
 - .7 Paint both sides and edges of backboards for telephone and electrical equipment before installation.
 - .1 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.6 SCHEDULE

- .1 Refer to Finishes Plan and Colour Schedule.

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END OF SECTION