

Part 1 General

1.1 Related Sections

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 05 50 00 – Metal Fabrications.
- .4 Section 06 10 00 – Rough Carpentry.
- .5 Section 07 24 00 – Exterior Insulation and Finish Systems.
- .6 Section 07 92 10 – Joint Sealing.
- .7 Section 09 22 16 – Non-structural Metal Framing.
- .8 Section 09 91 23 – Painting.

1.2 References

- .1 Aluminum Association
 - .1 Designation for Aluminum Finishes-1997.
- .2 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C36/C36M-01, Specification for Gypsum Wallboard.
 - .2 ASTM C475-01, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .3 ASTM C514-01, Specification for Nails for the Application of Gypsum Board.
 - .4 ASTM C630/C630M-01, Specification for Water-Resistant Gypsum Backing Board.
 - .5 ASTM C840-01, Specification for Application and Finishing of Gypsum Board.
 - .6 ASTM C954-00, 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.
 - .7 ASTM C1047-99, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - .8 ASTM C1280-99, Specification for Application of Gypsum Sheathing Board.
 - .9 ASTM C1177-01, Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - .10 ASTM C1178/C1178M-01, Specification for Glass Mat Water-Resistant Gypsum Backing Board.
- .3 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .2 CAN/CGSB-71.25-M88, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.
- .4 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-1988(R2000), Surface Burning Characteristics of Building Materials and Assemblies.

1.3 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.

1.4 Site Environmental Requirements

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

1.5 Waste Management and Disposal

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .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 for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Divert unused gypsum from landfill to gypsum recycling facility for disposal approved by Contract Administrator.
- .5 Divert unused metal materials from landfill to metal recycling facility approved by Contract Administrator.
- .6 Divert unused wood materials from landfill to recycling facility approved by Contract Administrator.

- .7 Divert unused paint and caulking material from landfill to official hazardous material collections site approved by Contract Administrator.
- .8 Do not dispose of unused paint and caulking materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

1.6 Quality Assurance:

- .1 Fire resistance ratings: Where applicable, provide materials and construction that are identical to those of assemblies whose fire-resistance ratings are indicated.
- .2 For all installations, design details such as fasteners, sealants and control joints per system specifications must be properly installed. Openings and penetrations must be properly flashed and sealed.

Part 2 Products

2.1 Materials

- .1 Standard board: to ASTM C36/C36M regular, 13 mm thick 1200 mm wide x maximum practical length, ends square cut, edges squared.
- .2 Standard board: to ASTM C36/C36M regular, 16 mm thick and Type X, 16 mm thick, 1200 mm wide x maximum practical length, ends square cut, edges squared.
- .3 Glass mat water-resistant gypsum backing board: to ASTM C1178/C1178M, 16 mm thick, 1200 mm wide x maximum practical length.
- .4 Glass mat gypsum substrate sheathing: to ASTM C1177/C1177M and to ASTM C 1396, Type "X", 16 mm thick, to sizes required.
 - .1 Gypsum sheathing manufactured in accordance with ASTM C 1177 with glass mats both sides and long edges, water resistant treated core.
 - .2 Non-cementitious air and moisture barrier –Liquid applied barrier as manufactured by Dryvits Backstop or approved equal. Refer to Section 07 27 10 – Air Barrier – Descriptive or Proprietary.
 - .3 Flashing Materials – Refer to Section 07 24 00 – Exterior Insulation and Finish Systems.
 - .4 Joint tape: as recommended by manufacturer.
 - .5 Joint compound: setting-type joint compound as recommended by manufacturer.
 - .1 Acceptable Product: ToughRock® by G-P Gypsum.
 - .6 Screws, metal framing:
 - .1 Bugle or wafer head, self-tapping, rust-resistant, fine thread for heavy-steel gauge
 - .2 Bugle or wafer head, rust-resistant sharp point, fine thread for light-gauge metal framing or furring.

- .7 Acceptable Product: 16mm DensGlass Gold Fireguard® Exterior Sheathing or approved equal.
- .5 Metal furring runners, hangers, tie wires, inserts, anchors: as required.
- .6 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
- .7 Resilient clips drywall furring 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.
- .8 J-Mould.
- .9 Nails: to ASTM C514.
- .10 Steel drill screws: to ASTM C1002.
- .11 Stud adhesive: to CAN/CGSB-71.25 ASTM C557.
- .12 Laminating compound: as recommended by manufacturer, asbestos-free.
- .13 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, ABS, PVC, Zinc metal, zinc-coated by hot-dip process zinc-coated by electrolytic process aluminum coated phosphatized, 0.5 mm base thickness, perforated flanges, one piece length per location.
- .14 Sealants: in accordance with Section 07 92 10 - Joint Sealing.
- .15 Acoustic sealant: 07 92 10 - Joint Sealing.
- .16 Firestop sealant: 07 84 00 - Firestopping.
- .17 Polyethylene: to CAN/CGSB-51.34, Type 2.
- .18 Insulating strip: rubberized, moisture resistant, 3 mm thick cork strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.
- .19 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.
- .2 Glass mat gypsum substrate sheathing finish: Refer to Section 07 24 00 – Exterior Insulation and Finish Systems.

Part 3 Execution

3.1 Erection

- .1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.
- .2 For Glass mat gypsum substrate sheathing refer to Section 07 24 00 – Exterior Insulation and Finish Systems.
- .3 Do application of gypsum sheathing in accordance with ASTM C1280.
- .4 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.
- .5 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .6 Install work level to tolerance of 1:1200.
- .7 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.
- .8 Install 19 x 64 mm furring channels underneath stairs.
- .9 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings as indicated.
- .10 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .11 Locate sheathing fasteners minimum of 9.5mm from edges of panels, tight against and flush with surface of sheathing.
- .12 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.
- .13 Furr openings and around built-in equipment, cabinets, access panels, window recesses, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- .14 Furr duct shafts, beams, columns, pipes and exposed services where indicated.
- .15 Erect drywall resilient furring transversely across studs joists between the layers of gypsum board, spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 38 mm common nail 25 mm drywall screw.
- .16 Install 150 mm continuous strip of 13 mm gypsum board along base of partitions where resilient furring installed.
- .17 Exterior wall: continuous 16 Type 'X' gypsum past perpendicular partitions.

3.2 Application

- .1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical works are approved.
- .2 Apply single layer gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.
 - .1 Single-Layer Application:
 - .1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.
 - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
 - .2 Double-Layer Application:
 - .1 Install gypsum board for base layer and exposed gypsum board for face layer.
 - .2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.
 - .3 Apply base layers at right angles to supports unless otherwise indicated.
 - .4 Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.
- .3 Apply water-resistant gypsum board adjacent to 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 For Glass mat gypsum substrate sheathing refer to Section 07 24 00 – Exterior Insulation and Finish Systems.
 - .1 Examine subframing: verify that surface to receive sheathing does not vary more than 3mm from the placement of adjacent members.
 - .2 Provide sheathing where indicated on drawings. Install sheathing in accordance with manufacturer's instructions.
 - .3 Use maximum lengths to reduce number of joints.
 - .4 Attach Exterior Sheathing to metal framing with screws spaced at 203mm o.c. maximum at perimeter where there are framing supports; and 203mm o.c. maximum along intermediate framing in field.
- .5 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.
- .6 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .7 Install gypsum board on walls vertically to avoid end-butt joints.

- .8 Install gypsum board with face side out.
- .9 Do not install damaged or damp boards.
- .10 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.3 Installation

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre using contact adhesive for full length.
- .2 Install casing beads around perimeter of suspended ceilings.
- .3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
- .4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- .5 Construct control joints of preformed units two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.
- .6 Provide continuous polyethylene dust barrier behind and across control joints.
- .7 Locate control joints where indicated at changes in substrate construction at approximate 10 m spacing on long corridor runs at approximate 15 m spacing on ceilings.
- .8 Install control joints straight and true.
- .9 Install cornice cap where gypsum board partitions do not extend to ceiling.
- .10 Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300 mm on centre.
- .11 Splice corners and intersections together and secure to each member with 3 screws.
- .12 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - .1 Rigidly secure frames to furring or framing systems.
- .13 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.
- .14 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:
 - .1 Levels of finish:

- .1 Level 0: No taping, finishing or accessories required—NOT APPLICABLE. Tape walls required to frame up to ceiling levels with one coat of tape above T-B.
- .2 Level 1: Embed tape for joints and interior angles in joint compound. Surfaces to be free of excess joint compound; tool marks and ridges are acceptable.
 - .1 Taping required to all joints and laminations according to ULC requirements.
- .3 Level 2: Embed tape for joints and interior angles in joint compound and apply one separate coat of joint compound over joints, angles, fastener heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable.
 - .1 Could apply where taped gypsum is exposed.
- .4 Level 3: Embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.
- .5 Level 4: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.
- .6 Level 5: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.
 - .1 Could apply if noticeable wavy/unevenness in finished surface when light it shining on it.
 - .2 Where gypsum wallboard thickness varies in the plane of the wall.
- .15 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.
- .16 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.
- .17 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .18 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.
- .19 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.
- .20 Mix joint compound slightly thinner than for joint taping.
- .21 Apply thin coat to entire surface using trowel or drywall broadknife to fill surface texture differences, variations or tool marks.
- .22 Allow skim coat to dry completely.

- .23 Remove ridges by light sanding or wiping with damp cloth.
- .24 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of substantial completion.

3.4 ULC Schedules

- .1 Construct fire rated assemblies where indicated.
 - .1 1 hour fire rated partition assembly, ULC Design No. W507 minimum requirement.
 - .2 1 hour for mechanical rooms with gas fired equipment.
 - .3 Read in conjunction with Wall Assembly Types – Refer to Drawing A - 1.
- .2 Apply gypsum at openings as indicated to ULC standards and requirements
- .3 Spacing between gypsum and other materials, piping, ducts, masonry, etc., shall be to ULC firestop requirements.
 - .1 Ducts passing through rated floor and roof assemblies.
 - .2 Stairwells—bottom to top of stairwells at floors, ceilings and roof.

3.5 Gypsum Finish Schedule

- .1 Type 1 finish minimum:
 - .1 All gypsum above line of finished ceiling.
- .2 Type 3 finish:
 - .1 Behind Cabinets and shelving.
- .3 Type 3 finish:
 - .1 Closet 114A, Janitor 10A, Gym Storage 111, Storage 002.
- .4 Type 4 finish:
 - .1 All other interior spaces except Lobby 102.
- .5 Type 4 and 5 where shading and sunlight/daylight shows up unevenness occurs:
 - .1 Lobby 102.
- .6 For Glass mat gypsum substrate sheathing finish refer to Section 07 24 00 – Exterior Insulation and Finish Systems.

END OF SECTION

Part 1 General

1.1 Related Sections

- .1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Section 06 10 00 – Rough Carpentry.
- .3 Section 08 11 14 – Metal Doors & Frames: Setting metal door frames.
- .4 Section 09 21 16 - Gypsum Board Assemblies.

1.2 References

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM C645-00, Specification for Non-structural Steel Framing Members.
 - .2 ASTM C754-00, 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-047a -98, Paints - Surface Coatings.
 - .2 CCD-048-98, Surface Coatings - Recycled Water-borne.
- .4 MPI Standards.

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.

1.4 Waste Management and Disposal

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .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 for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

- .4 Divert unused metal materials from landfill to metal recycling facility approved by Contract Administrator.
- .5 Divert unused gypsum materials from landfill to recycling facility approved by Contract Administrator.

Part 2 Products

2.1 Materials

- .1 Non-load bearing channel stud framing:
 - .1 To ASTM C 645
 - .2 64mm and 92mm stud size including sizes shown.
 - .3 Roll formed from 0.53mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board lath.
 - .4 Knockout service holes at 406 mm oc.
 - .5 Acceptable product: ST-Series by Dietrich or approved equal.
- .2 Exterior stud framing: to ASTM C 645
 - .1 254 mm and 203mm stud size including sizes shown.
 - .2 Roll formed from 1.2 mm thickness, or as indicated
 - .3 Hot dipped galvanized steel sheet, for screw attachment of gypsum board lath.
 - .4 Knockout service holes at 460 mm oc.
- .3 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 32 mm flange height.
- .4 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: FC-Series by Dietrich or approved equal.
 - .2 Channel:
 - .1 Gauge: 16.
 - .2 Size: 19mm or 38mm as required.
 - .3 Acceptable product: CHN-Series by Dietrich or approved equal.
- .5 Metal channel stiffener: 38 x 13 mm size, 1.4 mm thick cold rolled steel, coated with rust inhibitive coating.
- .6 Acoustical sealant: to CAN/CGSB-19.21.
- .7 Insulating strip: rubberized, moisture resistant 3 mm thick cork 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 600 mm on centre maximum.
- .2 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- .3 Place ethafoam full width under floor plate.
- .4 Place studs vertically at 406 mm on centre and not more than 50 mm 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.
- .5 Erect metal studding to tolerance of 1:1000.
- .6 Attach studs to bottom ceiling track using screws.
- .7 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .8 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .9 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
- .10 Install heavy gauge single jamb studs at openings.
- .11 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.
- .12 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.
- .13 Provide 40 mm 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.
- .14 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .15 Extend partitions to ceiling height except where noted otherwise on drawings.
- .16 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use 50 mm leg ceiling tracks.
- .17 Install continuous insulating strips to isolate studs from uninsulated surfaces.

- .18 Install two continuous beads of acoustical sealant 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 Sections

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 07 92 10 - 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 Portland 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 (ASTM International) International
 - .1 ASTM C144-99, Specification for Aggregate for Masonry Mortar.
 - .2 ASTM C 207-91(1997), Specification for Hydrated Lime for Masonry Purposes.
 - .3 ASTM C847-95(2000), Specification for Metal Lath.
 - .4 ASTM C979-99, 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, 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 CAN/CSA-A3000-98, Cementitious Materials Compendium (Consists of A5-98, A8-98, A23.5-98, A362-98, A363-98, A456.1-98, A456.2-98, A456.3-98).
 - .2 CSA A123.3-98, Asphalt Saturated Organic Roofing Felt.
- .5 Terrazzo Tile and Marble Association of Canada (TTMAC)

- .1 Tile Specification Guide 09300 2000, Tile Installation Manual.
- .2 Tile Maintenance Guide 2000.

1.3 Product Data

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Include manufacturer's information on:
 - .1 Ceramic tile, marked to show each type, size, and shape required.
 - .2 Cementitious backer unit.
 - .3 Dry-set Portland cement mortar and grout.
 - .4 Elastomeric membrane and bond coat.
 - .5 Reinforcing tape.
 - .6 Leveling compound.
 - .7 Latex-Portland cement mortar and grout.
 - .8 Commercial Portland cement grout.
 - .9 Organic adhesive.
 - .10 Waterproofing isolation membrane.
 - .11 Fasteners.

1.4 Samples

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Base tile: submit 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
- .3 Floor tile: submit 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
- .4 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.
- .5 Adhere tile samples to 11 mm thick plywood and grout joints to represent project installation.

1.5 Extra Material

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.
- .3 Maintenance material to be of same production run as installed material.

1.6 Environmental Conditions

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

1.7 Delivery, Storage and Handling

- .1 Deliver materials in containers with labels legible and intact and grade-seals unbroken.
- .2 Store material so as to prevent damage or contamination.
- .3 Store materials in a dry area, protected from freezing, staining and damage.
- .4 Store cementitious materials on a dry surface.

1.8 Waste Management and Disposal

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material in appropriate on-site for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Unused adhesive, sealant and coating materials must be disposed of at an official hazardous material collections site as approved by the Contract Administrator.
- .5 Unused adhesive, sealant and coating materials must not be disposed of into the sewer system, into streams, lakes, onto the ground or in other location where it will pose a health or environmental hazard.
- .6 Broken ceramic materials must be diverted from landfill to a local facility as approved by Contract Administrator.

1.9 Environmental Conditions

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 °C for 48 h before, during, and 48 h after, installation.
- .2 Do not install tiles at temperatures less than 12 °C or above 38 °C.
- .3 Do not apply epoxy mortar and grouts at temperatures below 15 °C or above 25 °C.

1.10 Extra Material

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.
- .3 Maintenance material to be of same production run as installed material.

Part 2 Products

2.1 Wall Tile

- .1 Porcelain tile: to CAN/CGSB-75.1 and ANSI A118.4, Class MR (02 -3.0%), 305 x 305mm size, square edges, smooth surface, plain pattern, colour as selected by Contract Administrator.
 - .1 5 courses to be installed to 1525mm – 6th course to be installed at 1677mm to a total height of 1982mm.
 - .2 Acceptable Product: Olympia Tile; Yura Series; NY. YS.FGY.1212; Colour Foggy Y03 or approved equal in accordance with B6 .
 - .3 Equals to be submitted with full specification and sample to Contract Administrator.
- .2 Porcelain mosaic tile: to CAN/CGSB-75.1 and ANSI A118.4, Class MR (02 -3.0%), 305 x 305mm size, square edges, smooth surface, plain pattern, colour as selected by Contract Administrator.
 - .1 Cut to 152mm x 305mm strips.
 - .2 To be installed tight to 5th row of 305 x 305mm tile @ 1525mm.
 - .3 Acceptable Product: Olympia Tile; Yura Series; NY. YS.LGY.0202; Colour Lead Grey Y06 or approved equal in accordance with B6.
 - .4 Equals to be submitted with full specification and sample to Contract Administrator.
- .3 Refer to Interior Elevation Drawings.

2.2 Water Proofing

- .1 Water proof membrane to surface of floor and wall.
- .2 Reinforce fabric water proofing crack and isolation membrane.
 - .1 Flextile WP-980 or equal in accordance with B6 .

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.

2.4 Mortar and Adhesive Materials

- .1 Portland cement: to CSA-A5, type 10.
- .2 Sand: to ASTM C144, passing 16 mesh.
- .3 Hydrated lime: to ASTM C207, Type S.
- .4 Latex additive: formulated for use in portland cement mortar and thin set bond coat.
- .5 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.
- .6 Dry set Mortar: to ANSI 118.1.

2.5 Bond Coat

- .1 Organic adhesive: to CGSB 71-GP-22M, Type 1 ANSI A136.1.
- .2 Epoxy bond coat: non-toxic, non-flammable, non-hazardous during storage, mixing, application, and when cured. To produce shock and chemical resistant mortars having the following physical characteristics:
 - .1 Compressive Strength: 246 kg/cm².
 - .2 Bond Strength: 53 kg/cm².
 - .3 Water Absorption: 4.0% Max.
 - .4 Ozone Resistance, 200 hours @ 200 ppm: No loss of strength.
 - .5 Smoke Contribution Factor: 0.
 - .6 Flame Contribution Factor: 0.
 - .7 Finished mortar and grout to be resistant to urine, dilute acid, dilute alkali, sugar, brine and food waste products, petroleum distillates, oil and aromatic solvents.
- .3 Chemical-Resistant Bond Coat:
 - .1 Epoxy Resin Type: CTI A118.3.
 - .2 Furan Resin Type: CTI A118.5.
- .4 Acceptable Product by Mapei or approved equal by Project Administrator.

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 Dry-Set Grout: to CTI A118.6.

- .3 Latex-Portland 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.
 - .1 Acceptable Product by Mapei or approved equal by Project Administrator.
- .4 Grout Spacing: 5 mm width or as suitable for size of tile indicated.
- .5 Grout preparation: to manufacturer's instructions.

2.7 Accessories

- .1 Cleavage plane: polyethylene film to CGSB 51-34 No. 15 asphalt saturated felt to CSA A123.3.
- .2 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.
- .3 Sealant: in accordance with Section 07 92 00 - Joint Sealing.
- .4 Floor sealer and protective coating: to CAN/CGSB-25.20, to tile and grout manufacturers recommendations.

2.8 Mixes

- .1 Portland Cement:
- .2 Organic adhesive: pre-mixed.
- .3 Mix bond and levelling coats, and grout to manufacturer's instructions.
- .4 Adjust water volumes to suit water content of sand.

2.9 Patching and Levelling Compound

- .1 Portland 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 leveling compounds and elastomeric waterproofing membrane and coat.
- .2 Materials containing acid or caustic material are not acceptable.

Part 3 Execution

3.1 Workmanship

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2000 , "Ceramic Tile", except where specified otherwise.
- .2 Apply tile or backing coats to clean and sound surfaces.
- .3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
- .4 Maximum surface tolerance 1:800.
- .5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .6 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .8 Make internal angles square, external angles bullnosed.
- .9 Use square edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.
- .10 Clean installed tile surfaces after installation and grouting cured.
- .11 Make control joints where indicated. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07 92 10 - Joint Sealing. Keep building expansion joints free of mortar and grout.

3.2 Wall Tile

- .1 Install in accordance with TTMAC detail drawing no. 304W-2002, Terrazzo, Tile and Marble Association of Canada-09300/2002.
 - .1 Porcelain tile:
 - .1 5 courses to be installed to 1525mm.
 - .2 6th course to be installed tight to mosaic tile @ 1677mm to a total height of 1982mm.

- .2 Porcelain mosaic tile: to be installed tight to 5th row of 305 x 305mm tile @ 1525mm.

3.3 Sealer and Protective Coating

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

3.4 Schedule

- .1 Ceramic Tile
 - .1 See architectural drawings and room finish schedule.

END OF SECTION

Part 1 General

1.1 Related Sections

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 09 65 19 – Resilient Tile Flooring.

1.2 References

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM F1303-99, Specification for Sheet Vinyl Floor Covering with Backing.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-ISO 14040-97, Environmental Management - Life Cycle Assessment - Principles and Framework (Adopted ISO 14040:1997, first edition).

1.3 Samples

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate 300 x 300 mm sample pieces of sheet material, 300 mm long base, edge strips.

1.4 Closeout Submittals

- .1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 Extra Materials

- .1 Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide 2 m² of each colour, pattern and type flooring material required for project for maintenance use.
- .3 Extra materials to be in one piece and from same production run as installed materials.
- .4 Clearly identify each roll of sheet flooring and each container of adhesive.
- .5 Deliver to Owner, upon completion of the work of this section.
- .6 Store where directed by Owner.

1.6 Environmental Requirements

- .1 Maintain air temperature and structural base temperature at flooring installation area above 20o for 48 hours before, during and 48 hours after installation.
- .2 Installation over concrete surfaces to be performed no sooner than specified curing time of concrete sub-floor (30 days for development of design strength).

1.7 Waste Management and Disposal

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Do not dispose of unused sealant and adhesive materials into landfill. Divert materials to municipal hazardous materials depot approved by Contract Administrator.
- .3 Divert unused metal and wiring materials from landfill to appropriate recycling facilities approved by Contract Administrator.
- .4 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .5 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.

Part 2 Products

2.1 Materials

- .1 Sheet vinyl with backing: to ASTM F1303, commercial.
 - .1 Type I - PVC binder content 90% II - PVC binder content 34%.
 - .2 Grade: 1.
 - .3 Backing: A-fibrous (Non-asbestos formulated) B -non-foam plastic D-foamed plastic E-fibrous composition (non-asbestos).
 - .4 Pattern: smooth embossed.
 - .5 Texture: smooth.
 - .6 Colour: selected by Contract Administrator.
 - .7 Thickness: 2 mm.
 - .8 Acceptable materials: Granit by Tarkett or alternate approved by Contract Administrator
- .2 Resilient base: continuous, top set, complete with premoulded end stops and external corners:
 - .1 Type: rubber.
 - .2 Style: cove.
 - .3 Thickness: 3.17 mm.

- .4 Height: 101.6 mm.
- .5 Lengths: cut lengths minimum 2400 mm.
- .6 Acceptable material:
- .7 Colour: to be selected.
- .3 Seamless base:
 - .1 Material: to match chosen vinyl floor material.
 - .2 Height: 100mm.
- .4 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.
- .5 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.
- .6 Stair Tread and Risers:
- .7 Rubber Nosing:
- .8 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.
- .9 External corner protectors: stainless steel, type recommended by flooring manufacturer.
- .10 Edging to floor penetrations: stainless steel aluminum, type recommended by flooring manufacturer.
- .11 Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.

Part 3 Execution

3.1 Site Verification of Conditions

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

3.2 Preparation

- .1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .2 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
- .3 Old vinyl flooring to be removed by trained personnel (may contain asbestos).

- .4 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.
- .5 Prime Seal concrete slab plywood sub-floor to resilient flooring manufacturer's printed instructions.

3.3 Application: Flooring

- .1 Provide a high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to the outside. Do not let contaminated air recirculate through a district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
- .2 To minimize emissions from adhesives, use water-based, solvent-free styrene-butadiene-rubber adhesive for linoleum. Butadiene exposure may cause eye and nose irritation, headaches, dizziness, and vomiting.
- .3 Apply low VOC water based adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .4 Lay flooring with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material.
- .5 Run sheets in direction of traffic. Double cut sheet joints and continuously seal heat weld according to manufacturer's printed instructions.
- .6 Heat weld seams of linoleum sheet flooring in accordance with manufacturer's printed instructions.
- .7 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.
- .8 Cut flooring neatly around fixed objects.
- .9 Install feature strips and floor markings where indicated. Fit joints tightly.
- .10 Install flooring in pan type floor access covers. Maintain floor pattern.
- .11 Continue flooring over areas which will be under built-in furniture.
- .12 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .13 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.
- .14 Install metal edge strips at unprotected or exposed edges where flooring terminates.

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

3.5 Seamless Welded Floor Cove/base

- .1 Provide a seamless welded base. Follow manufacturer instructions and standards in providing the seamless cove.

3.6 Cleaning

- .1 Remove excess adhesive from floor, base and wall surfaces without damage.
- .2 Clean, seal and wax floor and base surface to flooring manufacturer's printed instructions.

3.7 Protection

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

3.8 Schedules

- .1 Kitchen 109, Food Storage 110.
- .2 Resilient Base: See Room Finish Schedule.

END OF SECTION

Part 1 General

1.1 Related Sections

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 09 65 66 – Resilient Athletic Flooring.

1.2 References

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM F1066-99, Specification for Vinyl Composition Floor Tile.
 - .2 ASTM F1344-00, Specification for Rubber 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.

1.3 Samples

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate tile in size specified, 300 mm long base, edge strips.

1.4 Closeout Submittals

- .1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 Waste Management and Disposal

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .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 for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Dispose of unused finish and adhesive materials at official hazardous material collections site approved by Contract Administrator.
- .5 Do not dispose of unused finish and adhesive materials into sewer system, into streams, lakes, onto ground or in other locations where it will pose health or environmental hazard.

1.6 Environmental Requirements

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

1.7 Extra Materials

- .1 Provide maintenance materials of resilient tile flooring, base and adhesive in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide 2 m² of each colour, pattern and type flooring material required for this project for maintenance use.
- .3 Extra materials to be from same production run as installed materials.
- .4 Clearly identify each container of floor tile and each container of adhesive.
- .5 Deliver to Contract Administrator, upon completion of the work of this section.
- .6 Store where directed by Contract Administrator.

Part 2 Products

2.1 Materials

- .1 Vinyl composition tile: to ASTM F1066, Composition 1 - non asbestos formulated Class 2 - solid colour through pattern, 3.17 mm, 305 x 305 mm size, in standard colour as selected.
 - .1 Acceptable materials:
 - .1 Essentials and Designer Essentials by Mannington Commercial or approved equal.
 - .2 Equal approved by Contract Administrator
 - .2 Consider a range of 4 colours/patterns for floor pattern to follow after tender.
- .2 Round Profile Stair Tread – Refer to Section 09 65 66 – Resilient Athletic Flooring.
- .3 Feature strips: of same material and thickness as adjacent work, in colour indicated selected by Contract Administrator.
- .4 Resilient base: to rubber, coved, minimum 1200 mm length and 100 mm high x 3.17 mm thick, including premoulded end stops and external corners for coved base only, colour as selected.
- .5 Primers and adhesives: waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.
- .6 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.

- .7 Metal edge strips: aluminum extruded, smooth, mill finish with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.
- .8 Sealer: to CAN/CGSB 25.20, Type 2-water based type recommended by flooring manufacturer.
- .9 Wax: to CAN/CGSB-25.21 type recommended by flooring manufacturer.

Part 3 Execution

3.1 Inspection

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

3.2 Sub-Floor Treatment

- .1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .2 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler is cured and dry.
- .3 Old vinyl flooring to be removed by trained personnel (may contain asbestos).
- .4 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.
- .5 Prime Seal concrete plywood sub-floor to flooring manufacturer's printed instructions.

3.3 Tile Application

- .1 Provide a high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to the outside. Do not let contaminated air recirculate through a district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
- .2 To minimize emissions from adhesives, use water-based, solvent-free styrene-butadiene-rubber adhesive for linoleum. Butadiene exposure may cause eye and nose irritations, headaches, dizziness, and vomiting.
- .3 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.
- .4 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.
- .5 Install flooring to square grid pattern with all joints aligned to ashlar/staggered pattern with continuous joints flowing with direction of mottle with pattern grain alternating to

produce basket weave pattern with pattern grain parallel for all units and parallel to length width of room.

- .6 As installation progresses, and after installation, roll flooring in 2 directions except including resilient tile with 45 kg minimum roller to ensure full adhesion.
- .7 Cut tile and fit neatly 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 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
- .11 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.4 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 300 mm each leg. Wrap around toeless base at external corners.
- .8 Install toeless type base before installation of carpet on floors.

3.5 Initial Cleaning and Waxing

- .1 Remove excess adhesive from floor, base and wall surfaces without damage.
- .2 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.

3.6 Protection of Finished Work

- .1 Protect new floors from time of final set of adhesive after initial waxing until final waxing final inspection.
- .2 Prohibit traffic on floor for 48 hours after installation.

3.7 Schedule

- .1 Resilient Tile: Corridor 004, Multipurpose Room 006, New Exit Stairs Landing 007, Office 107 and Office 108.
- .2 Room Finish Schedule Governs.

END OF SECTION

Part 1 General

1.1 Related Sections

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 09 65 19 – Resilient Tile Flooring.
- .5 Section 09 30 13 – Ceramic Tiling.

1.2 References

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM C 920 (2005) Elastomeric Joint Sealants
 - .2 ASTM D 1054 (2002e1) Rubber Property - Resilience Using a Rebound Pendulum
 - .3 ASTM D 1242 (1995a) Resistance of Plastic Materials to Abrasion
 - .4 ASTM D 1894 (2006) Static and Kinetic Coefficients of Friction of Plastic Film and Sheeting
 - .5 ASTM D 2240 (2005) Rubber Property - Durometer Hardness
 - .6 ASTM D 2632 (2001) Rubber Property-Resilience by Vertical Rebound
 - .7 ASTM D 395 (2003) Rubber Property - Compression Set
 - .8 ASTM D 412 (1998a; R 2002e1) Vulcanized Rubber and Thermoplastic Elastomers - Tension
 - .9 ASTM D 624 (2000e2) Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
 - .10 ASTM F1066-99, Specification for Vinyl Composition Floor Tile.
 - .11 ASTM F 1303 (2004) Sheet Vinyl Floor Covering with Backing
 - .12 ASTM F1344-00, Specification for Rubber Tile.
 - .13 ASTM G 21 (1996; R 2002) Determining Resistance of Synthetic Polymeric Materials to Fungi
- .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.

1.3 Samples

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate tile in size specified, 300 mm long base, edge strips.

1.4 Closeout Submittals

- .1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 Waste Management and Disposal

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .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 for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Dispose of unused finish and adhesive materials at official hazardous material collections site approved by Contract Administrator.
- .5 Do not dispose of unused finish and adhesive materials into sewer system, into streams, lakes, onto ground or in other locations where it will pose health or environmental hazard.

1.6 Quality Assurance

- .1 Installer to be recognized and approved by the athletic rubber flooring manufacturer or approved by Contract Administrator.
- .2 Construct mock-up to be approved by contract administrator. Mock-up to be 3.66m x 2m (two rolls wide).

1.7 Site Conditions

- .1 Maintain air temperature and structural base temperature at flooring installation area between 18°C and 27°C for 48 hours before, during and for 48 hours after installation.
- .2 Installation to be carried out no sooner than the specified curing time of the concrete subfloor
- .3 Moisture vapour emission content of the concrete slab must not exceed 3 lbs/1000ft² per 24 hrs. When using the calcium-chloride test as per ASTM F 1869-98.
- .4 Installation of athletic flooring will not commence unless all other building finishes' installations have been completed.

1.8 Extra Materials

- .1 Provide maintenance materials of resilient tile flooring, base and adhesive in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide 2% of total area of each colour, pattern and type flooring material required for this project for maintenance use.
- .3 Extra materials to be from same production run as installed materials.
- .4 Clearly identify each container of floor tile and each container of adhesive.
- .5 Deliver to Contract Administrator, upon completion of the work of this section.
- .6 Store where directed by Contract Administrator.

Part 2 Products

2.1 Materials

- .1 Athletic Rubber Flooring
 - .1 Prefabricated athletic rubber flooring, calandered and vulcanized with a base of natural and synthetic rubber, stabilizing agents and pigmentation.
 - .2 Thickness: 8mm
 - .3 Smooth finish
 - .4 Colours as selected by Contract Administrator
 - .5 Manufactured in three layers which are vulcanized together, shore hardness of top layer to be greater than middle and bottom layer, hardness of layers to be recommended by the manufacturer and the limits specified.
 - .6 Size: 1.83m x 13m rolls
 - .7 Static load limit: 0.1mm, to ASTM F 970
 - .8 V.O.C. compliance, yes, to ASTM D 5116
 - .9 Fungal resistance test, no growth, to ASTM G 21-90
 - .1 Acceptable product:
 - .1 Mondo advance triple layer, alternates as accepted by Contract Administrator.
- .2 Skate Resistant Flooring
 - .1 Prefabricated athletic rubber flooring, calandered and vulcanized with a base of natural and synthetic rubber, stabilizing agents and pigmentation.
 - .2 Thickness: 9mm or higher
 - .3 To be manufactured in two or more layers which are vulcanized together
 - .4 Hardness shore A, top layer at least 78, to ASTM D 2240
 - .5 Size: 1.83mm x 10mm rolls
 - .6 Static load limit: 0.1mm, to ASTM F 970
 - .7 V.O.C. compliance, yes, to ASTM D 5116

- .8 Fungal resistance test, no growth, to ASTM G 21-90
- .9 Colors to be selected by contract administrator
 - .1 Acceptable Product:
 - .1 Mondo Ramflex, Skate/Spike resistant flooring or acceptable alternates Mondo Sport Impact and Roppe J993.
- .3 Resilient Base: continuous, top set, complete with premoulded end stops and external corners:
 - .1 Type: rubber.
 - .2 Style: cove.
 - .3 Thickness: 3.17 mm.
 - .4 Height: 101.6 mm.
 - .5 Lengths: cut lengths minimum 2400 mm.
 - .6 Acceptable material: Pinnacle rubber base by Roppe or alternate as accepted by Contract Administrator
 - .7 Colour: to be selected by contract administrator.
- .4 Round Profile Stair Tread
 - .1 One piece rubber stair tread, tread and riser
 - .1 To meet flooring as specified at landings.
 - .2 Acceptable Product: Marathon Classic or Mondo, One Piece Stair Tread, colour to be selected by Contract Administrator.
- .5 Feature strips: of same material and thickness as adjacent work, in colour indicated selected by Contract Administrator.
- .6 Primers and adhesives: waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.
- .7 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.
- .8 Metal edge strips: aluminum extruded, smooth, mill finish with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.
- .9 Sealer: to CAN/CGSB 25.20, Type 2-water based type recommended by flooring manufacturer.
- .10 Patching compound and line marking paint to be approved by rubber athletic flooring manufacturer.
- .11 Wax: to CAN/CGSB-25.21 type recommended by flooring manufacturer.

Part 3 Execution

3.1 Inspection

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

3.2 Sub-Floor Treatment

- .1 Concrete subfloor to be placed a minimum of thirty days prior to installation of rubber floor
- .2 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .3 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
- .4 Old linoleum flooring to be removed by trained personnel (may contain asbestos).
- .5 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.
- .6 Prime Seal concrete plywood sub-floor to flooring manufacturer's printed instructions.
- .7 Alkalinity test and moisture test must be performed. PH level should be in the range of 7 to 8.5.
- .8 Smooth dense finish, highly compacted with a tolerance of 3mm in a 3m radius.

3.3 Roll Application

- .1 Provide a high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to the outside. Do not let contaminated air recirculate through a district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
- .2 To minimize emissions from adhesives, use water-based, solvent-free styrene-butadiene-rubber adhesive for linoleum. Butadiene exposure may cause eye and nose irritations, headaches, dizziness, and vomiting.
- .3 Install athletic flooring in accordance with manufacturers installations instructions
- .4 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.
- .5 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.
- .6 Always install flooring in the same direction.

- .7 As installation progresses, and after installation, roll flooring in 2 directions with 45 kg minimum roller to ensure full adhesion.
- .8 Check for air bubbles and continue rolling if needed
- .9 Cut and fit neatly around fixed objects.
- .10 Install feature strips and floor markings where indicated. Fit joints tightly.
- .11 Install flooring in pan type floor access covers. Maintain floor pattern.
- .12 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .13 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
- .14 Install metal edge strips at unprotected or exposed edges where flooring terminates.
- .15 Allow adhesive to set 72 hrs. before the initial cleaning of the surface.

3.4 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 300 mm each leg. Wrap around toeless base at external corners.
- .8 Install toeless type base before installation of carpet on floors.

3.5 Initial Cleaning and Waxing

- .1 Remove excess adhesive from floor, base and wall surfaces without damage.
- .2 Clean, seal and wax floor and base surface to flooring manufacturer's instructions.

3.6 Protection of Finished Work

- .1 Protect new floors from time of final set of adhesive after initial waxing until final waxing final inspection.
- .2 Prohibit traffic on floor for 48 hours after installation.

3.7 Schedule

- .1 Skate resistant flooring:
 - .1 In all areas throughout where new flooring is specified unless otherwise indicated.
- .2 Athletic rubber flooring:
 - .1 Gymnasium Storage 111, Gymnasium 114 and Janitor Room 114A.
- .3 One piece stair tread:
 - .1 Stairs 112 & Stairs 113
- .4 Room Finish Schedule Governs.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- .3 Section 01 45 00 - Quality Control.
- .4 Section 01 78 00 - Closeout Submittals.
- .5 Section 09 91 23 - Interior Painting.
- .6 Section 06 10 00 - Rough Carpentry: Wood strapping.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM C423-01, Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - .2 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA B111-1974(R1998), Wire Nails, Spikes and Staples.
- .4 Underwriter Laboratories of Canada (ULC)
 - .1 CAN/ULC-S702-97, Thermal Insulation, Mineral Fibre, for Buildings.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate sample of acoustical unit at request of Contract Administrator.

1.4 MOCK-UPS

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct one representative mock-up of each type acoustical wall treatment system.
- .3 Construct mock-up 10 m² minimum to indicate method of assembly, installation and fixing.
- .4 Construct mock-up where directed.

- .5 Allow 24 hours for inspection of mock-up by Contract Administrator before proceeding with work.
- .6 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of the finished work.

1.5 ENVIRONMENTAL REQUIREMENTS

- .1 Commence installation after building enclosed and dust generating activities are completed.
- .2 Permit wet work to dry prior to commencement of installation.
- .3 Maintain uniform minimum temperature of 15°C and relative humidity of 20- 40% prior to, during and after installation.

1.6 WASTE MANAGEMENT

- .1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
- .2 Divert unused metal materials from landfill to metal recycling facility approved by Contract Administrator.
- .3 Dispose of unused paint and adhesive material at official hazardous material collections site approved by Contract Administrator.
- .4 Close and seal tightly partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
- .5 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .6 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.

1.7 EXTRA MATERIALS

- .1 Provide extra materials of acoustic units and adhesive in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide acoustical units for maintenance use amounting to 2% of gross wall area for each pattern and type required for project.
- .3 Provide sufficient adhesive to install extra material provided.
- .4 Extra materials to be from same production run as installed materials.
- .5 Clearly identify each package of acoustical units including colour and type, and each container of adhesive.
- .6 Deliver to Contract Administrator, upon completion of the work of this section.

- .7 Store where directed by Contract Administrator.

Part 2 Products

2.1 MATERIALS

- .1 Acoustical construction products must:
- .1 Not require being labelled as poisonous, corrosive, flammable or explosive under the Consumer Chemical and Container Regulations of the Hazardous Products Act.
 - .2 Be accompanied by detailed instructions for proper handling and installation so as to minimize health concerns.
 - .3 The manufacturing process must adhere to Lifecycle Assessment Standards as per CAN/CSA-ISO 14040.
- .2 Acoustic units: to CAN/CGSB-92.1.
- .1 Edge type: bevelled.
 - .2 Colour: paint colour as selected.
 - .3 Size 600 x 2400 x 25 mm thick.
 - .4 Shape: flat.
 - .5 Flame spread rating of: 0.
 - .6 Smoke developed: 0.
- .3 Acceptable products:
- .1 Tectum Acoustical Panels
 - .2 Alternates as approved by Contract Administrator.

Part 3 Execution

3.1 INSTALLATION

- .1 Ensure substrate surface is straight to tolerance of plus or minus 3 mm over 3000 mm.
- .2 Install acoustic units using mounting type # C20.
- .3 Install acoustic units plumb and aligned. Arrange units symmetrical on each wall as indicated in drawings.
- .4 Scribe acoustic units to fit adjacent work. Butt joints tight, trim 50mm strip and use to return bottom (visible) edge to wall.

3.2 CLEANING

- .1 Keep acoustic installation and all components clean. Remove blemishes immediately.

3.3 PROTECTION

- .1 Use cardboard to protect finished acoustical wall treatment from damage if required.
- .2 Remove prior to substantial completion.

3.4 SCHEDULES

- .1 Refer to drawing A-5 for location and extent of acoustical treatment.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Moisture testing of substrates.
- .2 Surface preparation of substrates as required for acceptance of paint, including cleaning, small crack repair, patching, caulking, and making good surfaces and areas to limits defined under MPI Repainting Maintenance Manual requirements.
- .3 Specific pre-treatments noted herein or specified in the MPI Repainting Maintenance Manual.
- .4 Sealing/touch-up, spot priming, and/or full priming surfaces for repainting in accordance with MPI Repainting Maintenance Manual requirements.
- .5 This section applies to exterior areas to be painted for the first time and to areas to be repainted. Where an MPI paint system is referenced the Contractor is to select the appropriate version for 'Exterior Painting' or 'Exterior Repainting'.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- .3 Section 01 45 00 - Quality Control.
- .4 Section 01 61 00 - Common Product Requirements.
- .5 Section 01 78 00 - Closeout Submittals.
- .6 Section 02 61 33 – Hazardous Materials.
- .7 Section 09 91 23 - Interior Painting (of new unpainted surfaces).

1.3 REFERENCES

- .1 Maintenance Repainting Manual by the Master Painters Institute (MPI), including Identifiers, Evaluation, Systems, Preparation and Approved Product List.
- .2 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA).
- .3 National Fire Code of Canada.

1.4 QUALITY ASSURANCE

- .1 Contractor shall 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 journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in painting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with applicable trade regulations.
- .3 Conform to latest MPI requirements for exterior repainting work including cleaning, preparation and priming.
- .4 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) 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.
- .5 Paint materials such as linseed oil, shellac, turpentine, etc. 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.
- .6 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Consultant Engineer.
- .7 Standard of Acceptance: When viewed using natural prevailing sunlight at peak period of the day (mid-day) on surface viewed, surfaces shall indicate the following:
 - .1 Walls: No defects visible from a distance of 1000 mm at 90° to surface.
 - .2 Soffits: No defects visible from grade at 45° to surface.
 - .3 Final coat to exhibit uniformity of colour and sheen across full surface area.

1.5 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

- .1 Provide paint products that are within MPI GPS-2 ratings based on VOC (EPA Method 24) content levels. (Maximum allowable limit for VOC is 50 g/L.)
 - .1 If no GPS-2 paints are listed for a particular class of paint in the MPI 'Approved Products List' then a MPI GPS-1 rating may be substituted subject to prior approval by the Contract Administrator.
 - .2 If neither GPS-2 or GPS-1 paints are available for a particular class of paint in the MPI 'Approved Products List' then an E-3 rated paint may be substituted subject to prior approval by the Contract Administrator.

1.6 INSPECTION REQUIREMENTS

- .1 Exterior surfaces requiring repainting shall be inspected by the painting contractor who shall notify the Contract Administrator in writing of defects or problems, prior to commencing repainting work, or after surface preparation if unseen substrate damage is discovered.
- .2 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 shall be rectified by others, as mutually agreed, before repainting is started.

- .3 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 shall provide as part of work, certification of surfaces and conditions for the 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 Contract Administrator.

1.7 SCHEDULING OF WORK

- .1 Schedule operations to approval of Contract Administrator such that painted surfaces will have dried and cured sufficiently before occupants are affected.
- .2 Obtain written authorization from Contract Administrator for changes in work schedule.
- .3 Schedule repainting operations to prevent disruption by other trades, if applicable, and by occupants in and about the building.

1.8 SUBMITTALS

- .1 Submittals shall be in accordance with the requirements of Section 01 33 00 - Submittal Procedures.
- .2 Submit full range colour sample chips for review and selection. Indicate where colour availability is restricted.
- .3 Submit product data and manufacturer's installation/application instructions for paints and coating products to be used.
- .4 Submit WHMIS Material Safety Data Sheets (MSDS) in accordance with Section 02 61 33 - Hazardous Materials for paints and coating materials to be used.
- .5 Upon completion, submit records of products used. List products in relation to finish system and include the 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.

1.9 QUALITY CONTROL

- .1 Provide a mock-up in accordance with requirements of Section 01 45 00 - Quality Control to Contract Administrator.
- .2 Prepare and repaint mock-up designated exterior 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 surface and/or item shall become acceptable standard of finish quality and workmanship for similar on-site exterior repainting work.

1.10 EXTRA MATERIALS

- .1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Submit one - four litre can of each type and colour of finish coating. Identify type and colour in relation to established colour schedule and finish system.
- .3 Deliver and store where directed by contractor.

1.11 DELIVERY, HANDLING AND STORAGE

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver and store materials in original containers, sealed, with labels intact.
- .3 Labels shall clearly 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.
- .4 Remove damaged, opened and rejected materials from site.
- .5 Observe manufacturer's recommendations for storage and handling.
- .6 Store materials and equipment in a secure, dry, well-ventilated area with temperature range between 7°C to 30°C. Store materials and supplies away from heat generating devices and sensitive products above minimum temperature as recommended by manufacturer.
- .7 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Contract Administrator. Upon completion of operations, return areas to clean condition to approval of Contract Administrator.
- .8 Remove paint materials from storage in quantities required for same day use.
- .9 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- .10 Fire Safety Requirements:
 - .1 Provide one 9 kg Type ABC fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

- .3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.12 SITE REQUIREMENTS

- .1 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Unless specifically pre-approved by specifying body and applied product manufacturer, do not perform repainting work when:
 - .1 Ambient air and substrate temperatures are below 10°C.
 - .2 Substrate temperature is over 32°C unless paint is specifically formulated for application at high temperatures.
 - .3 Substrate and ambient air temperatures are expected to fall outside paint manufacturer's prescribed limits.
 - .4 Relative humidity is above 85% or when dew point is less than 3°C variance between air/surface temperature.
 - .5 Rain or snow is forecast to occur before paint has thoroughly cured.
 - .6 It is foggy, misty, raining or snowing at site.
 - .2 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test existing painted concrete floors for moisture using a simple "cover patch test".
 - .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 stucco.
 - .4 Test painted concrete, masonry and plaster surfaces for alkalinity as required.
- .2 Application Requirements:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind conditions are such that airborne particles will 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 finishes when conditions forecast for entire period of application fall within manufacturer's recommendations.
 - .5 Do not apply paint when:
 - .1 Temperature is expected to drop below 10°C before paint has thoroughly cured.
 - .2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.
 - .3 Surface to be painted is wet, damp or frosted.
 - .6 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity

conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.

- .7 Schedule repainting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
- .8 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

1.13 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- .2 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.) 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.
- .3 Materials that cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
- .4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .5 To reduce 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.
- .6 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .7 Set aside and protect surplus and uncontaminated finish materials: _____. Deliver to or arrange collection for verifiable re-use or re-manufacturing.

Part 2 Products

2.1 MATERIALS

- .1 Paint materials listed in the latest edition of the MPI Approved Product List (APL) are acceptable for use on this project.
- .2 Where required by authorities having jurisdiction, paints and coatings shall provide a fire resistant rating.
- .3 Paint materials for repaint systems shall be products of a single manufacturer.
- .4 Provide paint products that are within MPI GPS-2 ratings based on VOC (EPA Method 24) content levels. (Maximum allowable limit for VOC is 50 g/L.)
 - .1 If no GPS-2 paints are listed for a particular class of paint in the MPI 'Approved Products List' then a MPI GPS-1 rating may be substituted subject to prior approval by the Contract Administrator.
 - .2 If neither GPS-2 or GPS-1 paints are available for a particular class of paint in the MPI 'Approved Products List' then an E-3 rated paint may be substituted subject to prior approval by the Contract Administrator.
- .5 Paints, coatings, thinners, solvents, cleaners and other fluids used in repainting, shall:
 - .1 Not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
 - .2 Be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
 - .3 Be manufactured without compounds which contribute to smog in the lower atmosphere.
 - .4 Be manufactured in a manner where matter generating a 'Biochemical Oxygen Demand' (BOD) in undiluted production plant effluent discharged to a natural watercourse or a sewage treatment facility lacking secondary treatment does not exceed 15 mg/L.
 - .5 Be manufactured in a manner where the total suspended solids (TSS) content in undiluted production plant effluent discharged to a natural watercourse or a sewage treatment facility lacking secondary treatment does not exceed 15 mg/L.
- .6 Paints and coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).
- .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 The Contract Administrator will provide Colour Schedule after Contract award.
- .2 Colour schedule will be based upon selection of three base colours and two accent colours. No more than five colours will be selected for the entire project.

- .3 Selection of colours will be from manufacturers full range of colours.
- .4 Where specific products are available in a restricted range of colours, selection will be based on the limited range.
- .5 First coat in a 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 Contract Administrator's written permission.
- .2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.
- .3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or such organic solvents to thin water-based paints.
- .4 Thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Contract Administrator.
- .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 shall be defined as the sheen rating of applied paint, in accordance with the following MPI gloss/sheen standard values:

Gloss Level Category	Units @ 60°	Units @ 85°
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.

2.5 EXTERIOR PAINTING SYSTEMS

- .1 REX/EX 2.1 - Asphalt Surfaces: Zone/Traffic Marking for Drive and Parking Areas, etc.
 - .1 REX/EX 2.1A - Latex Zone/Traffic Marking Finish.
- .2 REX/EX 3.3 – Cementitious Composition Board.
 - .1 REX/EX 3.3C – W.B. Light Industrial Coating – G5 finish.
- .3 REX/EX 5.2 - Steel - High Heat: (Heat Exchangers, Breeching, Pipes, Flues, Stacks, etc.)

- .1 REX/EX 5.2A - Heat Resistant Enamel max. 205°C.
- .4 REX/EX 5.3 - Galvanized Metal: High Contact/High Traffic Areas (Doors, Frames, Railings, Pipes, Handrail, etc.) Low Contact/Low Traffic Areas (Overhead Decking, Eavestrough (Gutters), Downpipes, Ducts, etc.)
 - .1 REX/EX 5.3A – Latex – G5 finish. (Low Contact/Traffic.)
 - .2 REX/EX 5.3D – Polyurethane, Pigmented -G5 finish. (High Contact/Traffic.)
- .5 REX/EX 6.4 - Wood Panelling: (plywood siding, fascias, soffits, etc.)
 - .1 REX/EX 6.4B - Alkyd -G5 finish.
- .6 REX/EX 9.1 - Stucco: (walls and soffits).
 - .1 REX/EX 9.1E – Epoxy, W.B.

Part 3 Execution

3.1 GENERAL

- .1 Perform preparation and operations for exterior painting in accordance with MPI Maintenance Repainting requirements except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.2 EXISTING CONDITIONS

- .1 Prior to commencing work, thoroughly examine site conditions and existing exterior substrates to be repainted and report in writing to Contract Administrator damages, defects, unsatisfactory or unfavourable conditions of surfaces that will adversely affect this work.
- .2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Contract Administrator. Maximum moisture content shall not exceed limits specified herein.
- .3 No repainting work shall commence until such adverse conditions and defects have been corrected and surfaces and conditions are acceptable to the Painting Subcontractor and Inspection Agency. Commencement of work shall not be held to imply acceptance of surfaces except as qualified herein.
- .4 Degree of surface deterioration (DSD) shall be assessed using MPI Identifiers and Assessment criteria indicated in the 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, etc.).

Condition	Description
DSD-2	Moderately Deteriorated Surface (small areas of peeling, flaking, slight cracking, staining, etc.).
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 by others).

3.3 PROTECTION

- .1 Protect existing building surfaces and adjacent structures from paint splatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such 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.
- .4 Protect general public and building occupants in and about the building.
- .5 Removal of light fixtures, surface hardware on doors, and surface mounted equipment, fittings and fastenings shall be done prior to undertaking painting operations by General Contractor. Items shall be securely stored and re-installed after painting is completed by General Contractor.
- .6 Move and cover exterior furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
- .7 As painting operations progress, place "WET PAINT" signs in pedestrian and vehicle traffic areas to approval of Contract Administrator.

3.4 CLEANING AND PREPARATION

- .1 Clean and prepare exterior 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 brushing, wiping with dry, clean cloths or compressed air.
 - .2 Wash surfaces with a biodegradable detergent (and bleach where applicable) and clean warm water using a 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 Use trigger operated spray nozzles for water hoses.
 - .5 Allow surfaces to drain completely and to dry thoroughly.
 - .6 Use water-based cleaners in place of organic solvents where surfaces will be repainted using water based paints.
 - .7 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or such organic solvents to clean up water-based paints.

- .2 Where required, pressure wash exterior surfaces prior to repainting in accordance with MPI standards for type of surfaces and recommended pressures to ensure complete removal of loose paint, stains, dirt, and foreign matter. This work to be carried out by qualified tradesman experienced in pressure water cleaning. Use of spray equipment such as water hose cleaning will not be considered satisfactory unless specified herein. Allow sufficient drying time and test surfaces using an electronic moisture meter before commencing work.
- .3 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.
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, 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.
- .5 Do not apply paint until prepared surfaces have been accepted by Contract Administrator.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects from previously painting (e.g. runs, sags, etc.) that are visible from a distance up to 1000 mm.

3.5 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. In each case the method of application shall be as pre-approved by Contract Administrator before commencing work.
- .2 **Brush and Roller Application:**
 - .1 Apply paint in a 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 to be free of roller tracking and heavy stipple unless approved by Contract Administrator.
 - .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 either by continuous mechanical agitation or by intermittent agitation as frequently necessary.
- .3 Apply paint in a 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 that 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 Contract Administrator.
- .5 Apply paint coats in a 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 shall not be less than that recommended by the 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 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as projecting ledges.
- .8 Finish to doors shall include all edges including top and bottom edges. Surfaces concealed by door hardware shall also be repainted unless otherwise pre-approved.

3.6 MECHANICAL / ELECTRICAL EQUIPMENT

- .1 Unless otherwise noted, repainting shall also include exposed to view/previously painted exterior mechanical and electrical equipment and components (panels, conduits, piping, hangers, ductwork, etc.).
- .2 Touch up scratches and marks and repaint such mechanical and electrical equipment and components with colour and finish to match existing finish unless otherwise noted or scheduled.
- .3 Do not paint over name plates or instruction labels.

3.7 FIELD QUALITY CONTROL

- .1 Advise Contract Administrator when each surface and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .2 Co-operate with the Contract Administrator and provide access to areas of work.

3.8 CLEAN-UP

- .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 an 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 cleaning and protective materials (e.g. rags, drop cloths, masking papers, etc.), paints, thinners, paint removers / strippers in accordance with the safety requirements of authorities having jurisdiction and as noted herein.
- .5 Painting equipment shall be cleaned in leak-proof containers that will permit particulate matter to settle out and be collected. Sediment remaining from cleaning operations shall be recycled of in a manner acceptable to authorities having jurisdiction.
- .6 Paint and coatings in excess of repainting requirements shall be recycled as noted herein.

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 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 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.

END OF SECTION

Part 1 General

1.1 Summary

- .1 Section Includes:
 - .1 Material and installation of site applied paint finishes to new interior surfaces, including site painting of shop primed surfaces.
- .2 Related Sections:
 - .1 Section 01 33 00 - Submittal Procedures.
 - .2 Section 01 35 30 - Health and Safety Requirements.
 - .3 Section 01 45 00 - Quality Control.
 - .4 Section 01 61 00 - Common Product Requirements.
 - .5 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .6 Section 01 78 00 - Closeout Submittals.
 - .7 Section 02 61 33 - Hazardous Materials.
 - .8 Section 05 12 23 – Structural Steel for Buildings.
 - .9 Section 05 21 00 – Steel Joist Framing.
 - .10 Section 05 31 00 – Steel Decking.
 - .11 Section 05 50 00 – Metal Fabrications.
 - .12 Section 05 51 29 – Metal Stairs and Ladders.
 - .13 Section 08 11 14 – Metal Doors and Frames.
 - .14 Section 08 33 13 – Coiling Counter Doors.

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 trades person in accordance with trade regulations.

.2 Mock-Ups:

- .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
- .1 Provide 300 mm x 300 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, 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 where indicated
- .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 and on-site installations in accordance with Section 01 32 17 - Construction Progress Schedule - Critical Path Method (CPM) and Section 01 32 18 - Construction Progress Schedules - Bar (GANNT) Chart.
- .1 Verify project requirements.
- .2 Review installation and substrate conditions.
- .3 Coordination with other building sub-trades.
- .4 Review manufacturer's installation instructions and warranty requirements.

.4 Health and Safety:

- .1 Do construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety 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 Submittals

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit product data and instructions for each paint and coating product to be used.
 - .2 Submit product data for the use and application of paint thinner.
 - .3 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOCs during application and curing.
- .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 stain clear coating special finish 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 birch plywood for finishes over wood surfaces.
 - .3 50 mm concrete block for finishes over concrete or concrete masonry surfaces.
 - .4 13 mm gypsum board for finishes over gypsum board and other smooth surfaces.
 - .5 10 mm cedar hardboard siding plywood for finishes over wood 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 and application instructions.
 - .7 Closeout Submittals: submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals include following:
 - .1 Product name, type and use.
 - .2 Manufacturer's product number.

- .3 Colour numbers.
- .4 MPI Environmentally Friendly classification system rating.

1.6 Maintenance

- .1 Extra Materials:
 - .1 Deliver to 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.
 - .2 Quantity: provide one - four litre can of each type and colour of primer stain finish coating. Identify colour and paint type in relation to established colour schedule and finish system.
 - .3 Delivery, storage and protection: comply with Contract Administrator'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 Section 01 61 00 - Common Product Requirements and 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 and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .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 in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .4 Separate for reuse and recycling and place in designated containers Steel Metal Plastic waste in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .5 Place materials defined as hazardous or toxic in designated containers.
 - .6 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal, regulations.
 - .7 Ensure emptied containers are sealed and stored safely.
 - .8 Unused paint coating materials must be disposed of at official hazardous material collections site as approved by Contract Administrator.
 - .9 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.
 - .10 Material that cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
 - .11 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
 - .12 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).
 - .13 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

- .14 Set aside and protect surplus and uncontaminated finish materials: Store as directed by Contract Administrator.

1.8 Site Conditions

- .1 Heating, Ventilation and Lighting:
- .1 Ventilate enclosed spaces in accordance with Section.
 - .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 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 are 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 itself 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 Provide paint products that are within MPI GPS-2 ratings based on VOC (EPA Method 24) content levels. (Maximum allowable limit for VOC is 50 g/L.)
 - .1 If no GPS-2 paints are listed for a particular class of paint in the MPI 'Approved Products List' then a MPI GPS-1 rating may be substituted subject to prior approval by the Contract Administrator.
 - .2 If neither GPS-2 or GPS-1 paints are available for a particular class of paint in the MPI 'Approved Products List' then an E-3 rated paint may be substituted subject to prior approval by the Contract Administrator.
- .4 Conform to latest MPI requirements for interior painting work including preparation and priming.
- .5 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI Architectural Painting Specification Manual "Approved Product" listing.
- .6 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.
- .7 Provide paint products meeting MPI "Environmentally Friendly" E2 ratings based on VOC (EPA Method 24) content levels.
- .8 Use MPI listed materials having minimum E2 rating where indoor air quality (odour) requirements exist.
- .9 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids:

- .1 Water-based, Water soluble, Water clean-up.
- .2 Non-flammable biodegradable.
- .3 Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
- .4 Manufactured without compounds that contribute to smog in the lower atmosphere.
- .5 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
- .10 Formulate and manufacture water-borne surface coatings with no aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .11 Flash point: 61.0 degrees C or greater for water-borne surface coatings and recycled water-borne surface coatings.
- .12 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.
- .13 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly" E2 rating.
- .14 Recycled water-borne surface coatings to contain 50 % post-consumer material by volume.
- .15 Recycled water-borne surface coatings must not contain:
 - .1 Lead in excess of 600.0 ppm weight/weight total solids.
 - .2 Mercury in excess of 50.0 ppm weight/weight total product.
 - .3 Cadmium in excess of 1.0 ppm weight/weight total product.
 - .4 Hexavalent chromium in excess of 3.0 ppm weight/weight total product.
 - .5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.

2.2 Colours

- .1 Contract Administrator will provide Colour Schedule after Contract award.
- .2 Colour schedule will be based upon selection of five base colours and three accent colours. No more than eight colours will be selected for entire project and no more than three colours will be selected in each area.
- .3 Selection of colours from manufacturers full range of colours.

- .4 Where specific products are available in restricted range of colours, selection based on limited range.
- .5 Second coat in three coat 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. Obtain written approval from Contract Administrator for tinting of painting materials.
- .2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
- .3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
- .4 Thin paint for spraying in accordance with paint manufacturer's instructions.
- .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 is defined as sheen rating of applied paint, in accordance with following values:

	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish (flat)	Max. 5	Max. 10
Gloss Level 2 - Velvet-Like Finish	Max.10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 - Satin-Like Finish	20 to 35	min. 35
Gloss Level 5 - Traditional Semi-Gloss Finish	35 to 70	
Gloss Level 6 - Traditional Gloss	70 to 85	
Gloss Level 7 - High Gloss Finish	More than 85	

- .2 Gloss level ratings of painted surfaces as indicated.

2.5 Interior Painting Systems

- .1 Paint interior surfaces in accordance with the following MPI Architectural Painting Specification Manual requirements:
 - .2 Interior Structural Steel and Metal Fabrications: High Contact/High Traffic Areas (Doors, Frames, Railings, Pipes, Handrail, etc.) Low Contact/Low Traffic Areas (Overhead Decking, etc.)
 - INT 5.1A Quick Dry Enamel – Semi-Gloss. (Low Contact/Traffic.)
 - INT 5.1F Polyurethane, Pigmented. (High Contact/Traffic)
- .2 Galvanized Metal: (metal doors and frames, unfinished grilles, etc.)

- INT 5.3A Quick dry enamel G5 finish. (Low Contact/Traffic.)
- INT 5.3B W.B. Light Industrial Coating – G5. Clear (4) coating for doors and frames only.

.3 Dressed Lumber: (Hardboard doors, etc.)

- INT 6.3A Alkyd G5 finish—doors and metal frames.
- INT 6.3P W.B. Light Industrial Coating – G5. Clear (4) coating for doors and frames only.
- INT 6.3K Polyurethane Varnish G5 finish—maple doors, library shelving.

.4 Gypsum Board: (gypsum wallboard, drywall)

- INT 9.2A Latex G2 finish (over latex sealer) –walls of all areas except as indicated below.
- INT 9.2A Latex G5 finish (over latex sealer) –Laboratory, Janitor.
- INT 9.2C Latex G5 finish (over latex sealer) –Washroom walls.

2.6 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 that 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 splatters, 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.
 - .4 Protect passing pedestrians, building occupants and general public in and about the building.
- .2 Surface Preparation:
 - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
 - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
 - .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Contract Administrator.
- .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 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
 - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

- .4 Allow surfaces to drain completely and allow to dry thoroughly.
- .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
- .6 Use trigger operated spray nozzles for water hoses.
- .7 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 Clean following surfaces with high-pressure water washing.
- .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. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes.
- .9 Touch up of shop primers with primer as specified.
- .10 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 air sprayer airless 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 cutouts 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 disconnect 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 General 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 to Contract Administrator.
- .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 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.

END OF SECTION