PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Section 06 10 00: Rough Carpentry.

.2 Section 07 21 00: Building Insulation.

.3 Section 07 92 00: Joint Sealing.

.4 Section 09 22 16: Non-Structural Metal Framing.

.5 Section 09 91 00: Interior Painting.

.6 Mechanical and Electrical Divisions: Supply of access doors.

1.3 DEFINITION

.1 Drywall = gypsum board.

1.4 REFERENCES

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

- .1 ASTM C1396/C1396M-13, Standard Specification for Gypsum Wallboard.
- .2 ASTM C1629/C1629M-06(2011), Standard Classification for Abuse Resistant Nondecorated Interior Gypsum Panel Products and Fibre Reinforced Cement Panels.
- .3 ASTM C475/C475M-12, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .4 ASTM C840-11, Standard Specification for Application and Finishing of Gypsum Board.
- .5 ASTM C954-11, 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.
- .9 ASTM C1002-07(2013), Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- .10 ASTM C1047-10a, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

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

.3 Canadian General Standards Board (CGSB).

- .1 CAN/CGSB-71.25 M-88, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

.4 Underwriters' Laboratories of Canada (ULC).

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

1.5 DELIVERY, STORAGE AND HANDLING

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

.2 Storage and Handling Requirements:

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

.2 Store and protect gypsum board assemblies from nicks, scratches, and blemishes.

.3 Protect from weather, elements and damage from construction operations.

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

.3 Damaged and broken panels are not to be incorporated into the work. Replace defective or damaged materials with new.

1.6 AMBIENT CONDITIONS

.1 Apply gypsum board after building has been completely enclosed. Ensure that work to be concealed by gypsum board has been installed, tested reviewed and approved before starting work.

.2 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.

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

.4 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 22 - 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 Waste Management Plan.

.4 Divert unused gypsum from landfill to recycling facility for disposal approved by Departmental Representative.

.5 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

.6 Divert unused wood materials from landfill to recycling and/or composting facility approved by Departmental Representative.

.7 Divert unused paint and caulking material from landfill to official hazardous material collections site approved by Departmental Representative.

.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.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Gypsum Board - Standard (Type 1): to ASTM C1396/C1396M, regular, 16 mm thick where indicated, 1220 mm wide x maximum practical length, ends square cut, edges tapered.

.2 Gypsum Board - Fire Rated (Type 2): to ASTM C1396/C1396M, Type “X”, 16 mm thick, 1220 mm x maximum practical length, ends square cut, edges tapered.

.3 High Impact Resistant Gypsum Board (Type 3): to ASTM C1629/C1629M, abuse and high impact resistant board, fibre-reinforced gypsum with fiberglass mesh reinforcement layer on backside of wallboard panels, 16mm thick, 1220 mm wide x maximum practical length, ends square cut, edges tapered.

.4 Water-resistant Board (Type 4): to ASTM C1396/C1396M, regular, 16mm thick, and Type X, 16 mm thick, 1220 mm x maximum practical length, ends square cut, edges tapered.

.5 Plywood: as specified in Section 06 10 00 – Rough Carpentry.

.6 Acoustic Insulation: as specified in Section 07 21 00 – Building Insulation.

.7 Acoustic Sealant: as specified in Section 07 92 00 – Joint Sealing.

.8 Metal furring runners, hangers, tie wires, inserts, anchors: to CSA A82.30, hot dipped galvanized (wipe coat) to ASTM A525.

.9 Furring channels: 0.5 mm. core thickness galvanized steel channels for screw attachment of gypsum board.

.10 Resilient furring: 0.5 mm base steel thickness galvanized steel channels for screw attachment of gypsum board.

.11 Corner beads: to ASTM C1047, metal, zinc-coated by hot-dip process, 0.5 mm base thickness, beaded angle with perforated flanges, # D-100-90° drywall type corner bead by Bailey Metal Products or approved equal.

.12 Casing beads: to ASTM C1047, metal, zinc-coated by hot-dip process, 0.5 mm base thickness, channel shaped; beaded corners, # 4411 channel trim by Bailey Metal Products or approved equal.

.13 Cornice cap: 12.7 mm deep x partition width, of 1.6 mm base thickness galvanized sheet steel, prime painted. Include splice plates for joints.

.14 Hangers: minimum 3 mm. galvanized steel wire.

.15 Screws: to ASTM C1002, self-drilling, self-tapping, case hardened.

.16 Joint compound: to ASTM C475, asbestos-free, as recommended by board manufacturer.

.17 Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm. wide, with self sticking permanent adhesive on one face, lengths as required.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verify conditions of substrates previously installed under other Sections are acceptable for gypsum board assemblies installation in accordance with manufacturer's written instructions.

.2 Visually inspect substrate in presence of Departmental Representative. Inform Departmental Representative in writing of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and receipt of written approval to proceed from Departmental Representative.

3.2 ERECTION

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

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

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

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

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

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

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

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

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

.10 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Check clearances with equipment suppliers.

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

3.3 **APPLICATION**

.1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work is approved by Departmental Representative.

.2 Apply single or double layer gypsum board to metal furring or framing using screw fasteners for first layer, laminating adhesive or screw fasteners for second layer. 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.

.3 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, etc, in partitions where perimeter sealed with acoustic sealant.

.4 Ceilings: install gypsum board perpendicular to supports, stagger end joints at least 250 mm. over supports.

.5 Water-resistant gypsum board: apply water-resistant sealant to edges, ends, and cut-outs which expose the gypsum core and to fastener heads.

.6 Acoustic partitions: apply 12 mm diameter bead of acoustic sealant continuously around periphery of each face of partition to seal gypsum board / structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, and other penetrations in partitions where perimeter sealed with acoustic sealant.

.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.

3.4 **INSTALLATION**

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre using contact adhesive or screw fasteners for full length.

.2 Install casing beads around perimeter of suspended ceilings.

.3 Cut and fit gypsum board as required to accommodate other work.

.4 Unless otherwise shown or specified, extend gypsum board on both sides of partitions to underside of structure above.
- .1 Fasten gypsum board to studs, not to top channel.
- .2 Allow for 25 mm deflection.
- .3 Fasten gypsum board to supports with screws spaced at maximum 305 mm o.c.

.5 Fasten gypsum board to supports with screws spaced at maximum 305 mm. o.c.

.6 Provide casing beads at top of all exposed partitions, around openings, where gypsum board abuts dissimilar material and construction, where gypsum board butts against surfaces having no trim concealing junction and where indicated. Provide corner beads at external corners. Seal joints with sealant.

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

.8 Construct control joints of preformed units set in gypsum board facing and supported independently on both sides of joint.

.9 Locate control joints where indicated and at changes in substrate construction.

.10 Install control joints straight and true.

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

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

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

.14 Install access doors supplied by mechanical and electrical divisions to electrical and mechanical fixtures specified in respective sections. Rigidly secure frames to furring or framing systems, build doors into gypsum board elements flush and parallel to walls.

.15 Tape and fill exposed joints, fastener heads, edges, corners, to produce an acceptable surface ready for finishing.

.16 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces minimum 200 mm.

.17 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.

.18 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.

.19 Sand lightly to remove burred edges and other imperfections. Sand each coat of topping compound with fine sandpaper as required to produce smooth surface. Do not sand paper face of gypsum board.

.20 Finish concealed joints at fire rated and at acoustically insulated gypsum board elements to underside of structure. Provide tape and one coat of cement.

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

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

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

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

.25 Allow skim coat to dry completely.

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

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

.28 Provide control joints where shown on Drawings and where gypsum board assemblies abutt dissimilar construction. Stop gypsum board 6 mm from abutting construction at dissimilar building elements.

3.5 **SOUND CONTROL**

.1 Partitions:

.1 Provide acoustical insulation in gypsum board partitions as indicated on Drawings. Unless otherwise noted, fill stud space with acoustic insulation.

.1 (continued)

.2 Provide 2 bead caulking system around horizontal and vertical perimeters of partitions. Apply continuous sealant beads at each side of horizontal runner tracks and vertical end studs, between gypsum board and adjacent construction.

.3 Caulk around objects such as electrical outlets, light switches, electrical and mechanical panels and boxes, grilles and other objecting penetrating the partition. Caulk behind metal control joint sections.

.2 Provide compressible closed cell neoprene closures to fill metal deck flutes where sound rated non-fire rated partitions abut metal deck.

3.6 **CLEANING**

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

.2 Leave work clean at end of each day.

.3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

3.7 **PROTECTION**

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

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

3.8 **GYPSUM BOARD SCHEDULE**

.1 Use 16 mm thick Type 'X' gypsum board (Type 2) at fire rated assemblies and elements.

.2 Acoustic partitions: where indicated on drawings.

.3 Partitions: Refer to Interior Partition Types Schedule on Architectural Drawing A2.0 for gypsum board types. Use 16 mm thick High Impact Resistant gypsum board (Type 3) from finished floor to 100 minimum above ceiling assembly with 16 mm thick Standard gypsum board (Type 1) above ceiling to underside of deck unless noted otherwise on drawings. Use 16 mm thick Water-Resistant gypsum board (Type 4) where indicated on drawings.

.4 Ceilings:

.1 Use 13 mm thick Standard gypsum board (Type 1) at suspended ceiling assemblies in office environments, storage rooms and where indicated on drawings.

.2 Use 13 mm thick Water-Resistant gypsum board (Type 4) at suspended ceiling assemblies and bulkheads in all food preparation areas, ware wash, washrooms and shower room ceilings.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED SECTIONS

.1 Section 07 21 00: Building Insulation.

.2 Section 07 92 00: Joint Sealing.

.3 Section 09 21 16: Gypsum Board Assemblies.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
- .1 ASTM C645-13, Specification for Nonstructural Steel Framing Members.
- .2 ASTM C754-11, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-1.40, Primer, Structural Steel, Oil Alkyd Type.

1.4 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 Fire rated assemblies: where indicated, provide materials and construction which are identical to those indicated in the fire-rated test design designation.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 22 - 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 and packaging material in appropriate on site bins for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.

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

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Non-load bearing channel stud framing: to ASTM C645, stud size as indicated on drawings, roll formed from 0.53 mm (25 Ga.) and 0.91 mm (20 Ga.) thickness as indicated on drawings, hot dipped galvanized steel sheet, for screw attachment of gypsum board.

.1 Knock-out service holes at 460 mm centres.

.2 Top track: two piece nesting tracks to ASTM C645, 0.91 mm (20 Ga) thick, in widths to suit stud sizes. Top track: 65 mm flange height. Nesting track: 75 mm flange height.

.3 Floor tracks: to ASTM C645, in widths to suit stud sizes, 32 mm flange height.

.4 Metal rough furring members: 38 x 19 x 1.4 mm size and 19 x 12 x 1.4 mm thick cold rolled steel, galvanized steel wire.

.5 Metal channel stiffener: J-profile, 1.4 mm thick cold rolled steel, coated with rust inhibitive coating, sized to suit channel stud size.

.6 Resilient furring channels: semi-hat shape with only one flange for anchorage, depth as indicated.

.7 Rigid furring channels: hat shape to ASTM C645.

.8 Hangers: minimum 3 mm galvanized steel wire.

.9 Screws: to CAN/CSA-A82.31, self-drilling, self tapping, case hardened.

.10 Acoustical sealant: as specified in Section 07 92 00 – Joint Sealing.

.11 Insulating strip: rubberized, moisture resistant 3 mm thick foam strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.

.12 Dampproof course: closed cell, polyethylene foam, 6.3 mm thick, 89 mm wide.

PART 3 - EXECUTION

3.1 FRAMING – GENERAL

.1 Framing and furring indicated on drawings are schematic and shall not be considered exact or complete. Location and spacing of members, bracing, supports and securement shall be in accord with referenced standards as required to provide complete and finished work.

.2 Execute work neatly and accurately to provide plumb, true and square lines to fit the perimeter edges of adjacent work.

.2 Coordinate work with installation of door frames, metal screens / windows, special supports or anchorage and wood blocking for Work installed under other sections. Reinforce wall studs at jambs as required. Ensure wood blocking and plywood sheathing is installed before applying gypsum board.

.3 Make provisions for supporting recessed and surface mounted fixtures and equipment. Provide additional framing, supports and stiffeners as required. Neatly frame around recessed fixtures and openings.

.4 Examine Mechanical, Electrical and Food Service drawings and co-ordinate Work of this section with Food Service Sections in Division 11, Mechanical Divisions 21, 22, 23 and 25 and Electrical Divisions 26, 27 and 28 to determine openings required.

3.2 **ERECTION - PARTITIONS**

.1 Install wall furring for gypsum board wall finishes in accordance with CAN/CSA-A82.31, except where specified otherwise.

.2 Provide maximum deflection of L/240, L being the space between supports.

.3 Align partition tracks at floor and ceiling and secure at 600 mm o.c. maximum.

.4 Install damp proof course under stud shoe tracks of partitions on slabs on grade.

.5 Place metal studs vertically at 400 mm on centre maximum, unless indicated otherwise.

.6 Extend studs to underside of structural deck above, unless indicated otherwise.

.7 At partition corners, extend one runner channel to end of corner and butt other runner channel; allow clearance for gypsum board thickness – do not mitre channel runner.

.8 Place studs vertically at centres noted and not more than 50 mm from abutting walls. Position studs in tracks at floor and ceiling.

.9 Securely attach studs to bottom runner track by screwing on both sides of stud.

.10 Erect metal studding to tolerance of 1:1000.

.11 Do not fasten studs to top track. Position stud screw fasteners at nesting track to allow up to 25 mm movement. Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.

.12 Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.

.13 Stiffen partitions over 2400 mm in height at mid-point with at least one 19 mm horizontal bracing channel extending full height of partition.

.14 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, using column clips or other approved means of fastening placed alongside frame anchor clips.

.15 Install additional studs as required at partition intersections, openings and terminations.

.16 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.

.17 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.

.18 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.

.19 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.

.20 Provide 40 mm stud, metal backing plate or special metal shapes secured between studs as required for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, grab bars and towel rails, toilet partitions, wall-hung casework, handrail brackets, and other items attached to metal stud partitions.

.21 Install steel studs or furring channel between studs for attaching electrical and other boxes.

.22 Furr duct shafts, beams, columns, pipes and exposed services and other conditions where indicated on drawings.

.23 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use double track slip joint.

.24 Install two continuous beads of acoustical sealant under studs and tracks around perimeter of sound control partitions.

.25 At sound control partitions, install resilient furring channels transverse to framing members where indicated. Start rows of channels 50 mm up from floor and space rows at maximum 610 mm o.c. Locate splices over framing and secure channel ends to framing.

3.3 **ERECTION – CEILINGS**

.1 Erect suspension and furring system level with a maximum tolerance of (+/-) 3 mm over a 3000 mm length.

.2 Suspension system shall support ceiling assemblies, with maximum deflection of L/240, L being the span between supports.

.3 Hangers for suspended ceilings shall support grillage independent of walls, columns, pipes and ducts. Space hangers at maximum 1200 mm o.c. along rough furring members and not more than 150 mm from ends.

.4 Space furring channels transverse to runner channels at maximum 400 mm o.c. and secure to each support with clip or saddle tie with 2 loops of wire. Install furring channels so as not to contact perimeter walls.

.5 Where ductwork, piping and other elements within ceiling spaces interfere with direct suspension of ceiling from structure, install additional framing securely fastened to main structure to accommodate proper hanging of ceiling.

3.4 ERECTION – BULKHEADS, COVES

.1 Frame to profiles shown, rigid, square, true to line and securely fastened to supporting building elements.

.2 Space furring members to receive gypsum board at maximum 400 mm o.c.

.3 Provide rough framing and bracing members as required to ensure stability and accuracy of work.

3.5 CLEANING

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

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Section 03 30 00: Cast-in-Place Concrete.

.2 Section 04 22 00: Concrete Unit Masonry.

.3 Section 07 92 00: Joint Sealing.

.4 Section 09 91 00: Painting.

1.3 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
- .1 ASTM C307, Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacings.
- .2 ASTM C413, Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacings.
- .3 ASTM C579, Standard Test Method for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings and Polymer Concretes.
- .4 ASTM C580, Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
- .5 ASTM C882, Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear.
- .6 ASTM D638, Standard Test Method for Tensile Properties of Plastics.
- .7 ASTM D1044, Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion.
- .8 ASTM D1308, Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
- .9 ASTM D2047, Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.

.2 Health Canada / Workplace Hazardous Materials Information System (WHMIS).
- .1 Material Safety Data Sheets (MSDS).

1.4 SUBMITTALS

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

.2 Manufacturer's Instructions: provide information to indicate special handling criteria, installation sequence, cleaning procedures and other information pertinent to installation and maintenance of material.

.3 Provide product data in accordance with Section 01 33 00 – Submittal Procedures.

.1 Submit WHMIS MSDS - Material Safety Data Sheets acceptable to Labour Canada and Health and Welfare Canada for Epoxy Flooring. Indicate VOC content and VOC's during application and curing.

.4 Samples: Submit 100 X 100 mm samples of each type of epoxy flooring for colour selection by Departmental Representative from manufacturer's standard colours. One colour will be used for each type of seamless flooring.

.5 Quality Assurance Submittals: submit in accordance with Section 01 33 00 - Submittal Procedures.

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

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

.3 Instructions: submit manufacturer's installation instructions.

.4 Manufacturers Field Services: submit copies of manufacturers field reports.

.6 Provide maintenance data for epoxy flooring for incorporation into manual specified in Section 01 78 00 – Closeout Submittals.

1.5 **QUALITY ASSURANCE**

.1 Single Source Responsibility: Obtain primary epoxy flooring and materials including primers, resins, hardening agents, finishes or sealing coats from a single manufacturer with not less than ten years of successful experience in manufacturing and installing principal materials described in this Section.

.2 Applicator Qualifications: Applicator shall be a company licensed, franchised, or otherwise approved in writing by the epoxy flooring material manufacturer to install their product. Installer shall be experienced in performing Work of this Section with minimum five years documented experience.

1.6 **PRE-APPLICATION SITE MEETING**

.1 Prior to start of epoxy flooring application, epoxy flooring manufacturer's technical representative shall review installation procedures with applicator on site.

.2 Manufacturer's representative shall examine all conditions affecting the installation, including maximum moisture content of substrate(s), and maximum and minimum temperature and humidity levels permitted, with installer and to certify in writing, acceptance of conditions prior to commencement of installation.

.3 Strictly comply with epoxy flooring manufacturer's latest printed installation instructions. Keep a copy of installation instructions on site during installation.

1.7 **MOCK-UP**

.1 Construct mock-up in accordance with Section 01 45 00 – Testing and Quality Control.

.2 Applicator to provide mock-up of minimum 10 m^2 of each type of epoxy flooring application in areas as directed by Departmental Representative.

.3 Allow 48 hours for review of mock-up by Departmental Representative before proceeding with epoxy flooring Work. Manufacturer's technical representative shall attend review of mock-up.

.4 Upon review and acceptance by Departmental Representative, mock-up will demonstrate minimum standard of acceptance for this work. Accepted mock-up will be considered part of the finished work.

1.8 **DELIVERY, HANDLING AND STORAGE**

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

.2 Deliver materials in manufacturer's original, unopened, undamaged wrapping and containers with manufacturer's labels and seals intact until used.

.3 Prevent damage or contamination of materials during handling and storage.

.4 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

.5 Identify "best before date" for all packaged epoxy materials and notify Departmental Representative of delivered materials are approaching stipulated expiry date.

.6 Protect work of others from damage resulting from Work of this Section.

1.9 **ENVIRONMENTAL REQUIREMENTS**

.1 Safety:
  .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials.

.2 Ventilation:
  .1 Provide ventilation continuously during and for 7 days after completion of installation of epoxy flooring installation.

.3 Temperature:
  .1 Maintain ambient temperature in accordance with manufacturer's written instructions.

.2 Do not apply coating systems unless uniform substrate surface temperature is between 16°C minimum and 30°C maximum at installation area for 24 hours prior to and during application and for a minimum of 48 hours after completion of installation of epoxy flooring.

.4 Moisture:

.1 Ensure substrate is within moisture limits prescribed by epoxy flooring manufacturer.

.2 Concrete substrate shall have cured a minimum of 28 days prior to application. Moisture content of substrate shall not exceed 14%.

.5 Relative Humidity:

.1 Maintain relative humidity in accordance with manufacturer's written instructions.

1.10 **WASTE MANAGEMENT AND DISPOSAL**

.1 Separate and recycle waste materials in accordance with Section 01 74 22 - Building 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, corrugated cardboard and packaging material in appropriate on site bins for recycling in accordance with Waste Management Plan.

.4 Do not dispose of unused epoxy flooring materials into sewer system, onto ground or in other location where it will pose health or environmental hazard.

.5 Dispose of unused epoxy flooring materials at official hazardous material collections site approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 **MANUFACTURER**

.1 Epoxy flooring materials from same manufacturer.

.2 Ensure compatibility for epoxy flooring materials including primers, resins, hardening agents, finish coats and sealer coats.

2.2 **MATERIALS**

.1 All epoxy materials to be from the same manufacturer.

.2 Ensure compatibility for all epoxy materials including primers, resins, hardening agents, finish coats and sealer coats.

.3 Only products listed on the Canadian Food Inspection Agency Reference Listing of Accepted Construction Materials, Packaging Materials and Non-Food Chemical Products are acceptable for this project. Refer to: http://active.inspection.gc.ca/scripts/fssa/reference/reference.asp?e for floors, walls and ceilings.

.4 Block filler: for Concrete Unit Masonry as listed in Section 09 91 00 – Painting.

.5 Waterproof membrane, with EF-1 and where indicated on drawings: two component urethane liquid applied, 100% solids.
- .1 Tensile strength: to ASTM D-412, 8.27 MPa.
- .2 Elongation: to ASTM D-412, 100%.
- .3 Hardness: to ASTM D2240-05, Shore A Durometer 80.
- .4 Bond strength: to ASTM D4541, greater than 2.75 MPa.

.6 Colours: Up to a maximum of 3 colours as selected by Departmental Representation from manufacturer's standard colours.

2.3 CRACK ISOLATION MEMBRANE

.1 Crack isolation membrane: 2 part epoxy, 100% solids, 283 g/0.836 m^2 fibreglass fabric reinforcing.
- .1 Elongation at break of flexible epoxy binder: to ASTM D638-10, 90%.
- .2 Tensile strength of fibreglass fabric: 68.947 MPa.

2.4 JOINT FILLER

.1 Refer to architectural drawings for joint filler details.

.2 Joint filler: self leveling, two-component sealant based on a flexible epoxy resin and a blended polyamide curing agent.
- .1 Hardness: to ASTM D2240-05(2010), Shore A Durometer 50.
- .2 Tensile Strength: to ASTM C-307, 1.7 MPa.
- .3 Elongation: to ASTM D638-10, 450%.
- .4 Joint Movement Capability: to TT-S-00227E, +/- 25%.

2.5 EPOXY MORTAR / GROUT

.1 Mortar/Grout: 3 part epoxy grout, 100% solids, solvent free, trowelable.
- .1 Compressive strength: to ASTM C579-01(2006), 52.40 MPa after 7 days.
- .2 Tensile strength: to ASTM C307-03(2008),12.41 MPa.
- .3 Flexural strength: to ASTM C580-02(2008), 22.75 MPa.
- .4 Hardness: to ASTM D2240-05(2010), shore D durometer 86-88.
- .5 Density: 2200 kg/m^3.

2.6 INTERIOR EPOXY FLOOR SYSTEMS

.1 Floor system (EF-1): three-component, trowelled, epoxy mortar system with waterproofing membrane.
- .1 Primer: as recommended by manufacturer.
- .2 Waterproof membrane as specified in Item 2.2.5.
- .3 Body coat: 3 part epoxy, 100% solids, minimum 6 mm thick, colour and texture selected by Departmental Representative.
  - .1 Compressive strength: to ASTM C579-01(2006), 68.94 MPa after 7 days.
  - .2 Tensile strength: to ASTM C307-03(2008), 12.06 MPa.

.3 (continued)

.3 Flexural strength: to ASTM C580-02 (2008), 27.57 MPa.

.4 Hardness: to ASTM D2240-05(2010),shore D durometer 85-90.

.5 Abrasion resistance: to ASTM D4060-10, CS-17 wheel, 0.1 g maximum weight loss.

.6 Coefficient of friction: to ASTM D2047-04, 0.6.

.7 Flammability: to ASTM D635-10, self-extinguishing, extent of burning maximum 6 mm.

.8 Water absorption: to ASTM C413-01(2006), 0.2%.

.4 Top coat: 2 part epoxy, 100% solids, colour selected by Departmental Representative aggregate to match floor body coat.

.1 Coating to be formulated to provide outstanding protection from a wide range of chemicals while increasing abrasion resistance and cleanability.

.2 Flammability: to ASTM D635-10, self-extinguishing.

.5 System surface texture: textured for improved slip-resistance as chosen at later date by Departmental Representative.

.2 Floor system (EF-2): regular, three-component, trowelled, epoxy mortar system.

.1 Primer: as recommended by manufacturer.

.2 Body coat: 3 part epoxy, 100% solids, minimum 6 mm thick, colour and texture selected by Departmental Representative.

.1 Compressive strength: to ASTM C579-01(2006), 68.94 MPa after 7 days.

.2 Tensile strength: to ASTM C307-03(2008), 12.06 MPa.

.3 Flexural strength: to ASTM C580-02 (2008), 27.57 MPa.

.4 Hardness: to ASTM D2240-05(2010),shore D durometer 85-90.

.5 Abrasion resistance: to ASTM D4060-10, CS-17 wheel, 0.1 g maximum weight loss.

.6 Coefficient of friction: to ASTM D2047-04, 0.6.

.7 Flammability: to ASTM D635-10, self-extinguishing, extent of burning maximum 6 mm.

.8 Water absorption: to ASTM C413-01(2006), 0.2%.

.3 Top coat: 2 part epoxy, 100% solids, colour selected by Departmental Representative aggregate to match floor body coat.

.1 Coating to be formulated to provide outstanding protection from a wide range of chemicals while increasing abrasion resistance and cleanability.

.2 Flammability: to ASTM D635-10, self-extinguishing.

.4 System surface texture: textured for improved slip-resistance as chosen at later date by Departmental Representative.

.3 Floor system, (EP-4): two-component, notch trowel applied, epoxy coating system.

.1 Primer: as recommended by manufacturer.

.2 Top coat: 2 part epoxy, 100% solids, colour selected by Departmental Representative aggregate to match floor body coat.

.1 Coating to be formulated to provide outstanding protection from a wide range of chemicals while increasing abrasion resistance and cleanability.

.2 (continued)
.2 Flammability: to ASTM D635-10, self-extinguishing.
.3 System surface texture: textured for improved slip-resistance as chosen at later date by Departmental Representative.

2.7 **EXTERIOR EPOXY FLOOR SYSTEM**

.1 Floor system, for exterior work (EF-3): three-component, trowelled epoxy system.
.1 Primer: as recommended by manufacturer.
.2 Body coat: 3 part epoxy, 100% solids, minimum 6 mm thick, colour and texture selected by Departmental Representative.
.1 Compressive strength: to ASTM C579-01(2006), 68.94 MPa after 7 days.
.2 Tensile strength: to ASTM C307-03(2008), 12.06 MPa.
.3 Flexural strength: to ASTM C580-02 (2008), 27.57 MPa.
.4 Hardness: to ASTM D2240-05(2010), shore D durometer 85-90.
.5 Abrasion resistance: to ASTM D4060-10, CS-17 wheel, 0.1 g maximum weight loss.
.6 Coefficient of friction: to ASTM D2047-04, 0.6.
.7 Flammability: to ASTM D635-10, self-extinguishing, extent of burning maximum 6 mm.
.8 Water absorption: to ASTM C413-01(2006), 0.2%.
.3 Top coat: 2 component, high performance, waterborne, polyurethane coating. Colour selected by Departmental Representative.
.1 Coating to be formulated to provide outstanding protection from a wide range of chemicals while increasing abrasion resistance and cleanability.
.2 Flammability: to ASTM D635-10, self-extinguishing.
.4 System surface texture: textured for improved slip-resistance as chosen at later date by Departmental Representative.

2.8 **EPOXY COVE BASE**

.1 Install cove base integral with the floor system to 100mm in height, 30mm height in Coolers and Freezers.

2.9 **MIXES**

.1 Mix crack isolation membrane, expansion joint filler, grout, floor base coat mortar and top coat sealer in accordance with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 **MANUFACTURER'S INSTRUCTIONS**

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

3.2 **EXAMINATION**

.1 Prior to start of Work of this Section examine all conditions affecting installation of epoxy flooring.

.2 Verify substrate conditions are acceptable for product installation in accordance with epoxy flooring manufacturer's instructions.

.3 Do not start Work of this Section until any unsatisfactory conditions have been rectified. Report any deficiencies to Departmental Representative in writing prior to proceeding. Commencement of Work will be deemed acceptance of conditions.

3.3 **PREPARATION OF SURFACES**

.1 Clean and prepare substrate surfaces in accordance with epoxy floor coating material manufacturer's instructions, as required to ensure satisfactory installation conditions.

.2 Remove by mechanical means (ie shot blasting) surface of concrete substrate as required to completely remove substances which would adversely affect installation of new work by method approved by epoxy flooring manufacturer and Departmental Representative.

.3 Complete work penetrating substrate before installing coating.

.4 Grind down uneven joints, rough areas, projections and foreign matter from surfaces to receive flooring and base.

3.4 **CRACK ISOLATION MEMBRANE APPLICATION**

.1 Apply crack isolation membrane minimum 0.762mm (30 mils) thick, lay reinforcing and saturate surface in accordance with manufacturer's written instructions.

.2 Apply crack isolation membrane where indicated.

3.5 **INSTALLATION**

.1 Comply with epoxy flooring manufacturer's instructions. Apply each component of epoxy flooring system in strict accordance with manufacturer's directions to produce a uniform, monolithic wearing surface.

.2 Prime clean concrete substrates as recommended by epoxy flooring manufacturer.

.3 Apply epoxy sub-floor filler to cracks, depressions and low spots to achieve floor level to a tolerance of 1:500; allow to cure.

.4 Prime subfloor filler substrate surfaces as recommended by manufacturer.

.5 Mask adjacent surfaces and apply seamless flooring and 100 mm high seamless coved base.

.6 Trowel apply flooring to nominal thickness indicated, tightly compacted and free from surface holes and depressions.

.7 Allow aggregate, grout and glaze coats to dry touch between coats. Do not apply more than two coats per day.

.9 Cure epoxy flooring in accordance with manufacturer's directions and prevent contamination during stages of application to completion of curing process.

3.6 **FIELD QUALITY CONTROL**

.1 Epoxy flooring manufacturer's technical representative shall provide two site visits during installation (in addition to attending Pre-Installation Meeting and Mock-up Review meeting): at 50% completion and at final completion. Purpose of field quality control is to ensure installation is properly executed.

.2 Upon completion of epoxy flooring installation manufacturer shall issue a report on satisfactory completion of installation.

.3 The Contractor shall advise Departmental Representative and the flooring will be reviewed by Departmental Representative prior to installation of Food Service Equipment.

3.7 **CLEANING**

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

.2 Clean installed epoxy floor surfaces in accordance with epoxy flooring manufacturer's printed instructions prior to Departmental Representative's acceptance. Use cleaning materials and procedures recommended by epoxy flooring manufacturer.

.3 Repair or replace damaged or unacceptable epoxy flooring installations.

.4 Upon completion of Work, remove all surplus materials, rubbish, tools and equipment from project site and legally dispose of debris.

3.8 **PROTECTION**

.1 Protect epoxy flooring from damage and wear during construction to project completion.

.2 Provide temporary covering in compliance with manufacturer's recommendations for protective materials and method of application.

.3 Remove protective coverings and clean epoxy floors in accordance with manufacturer's written instructions following correction of deficiencies as accepted by Departmental Representative.

.4 General Contractor to maintain protective coverings on epoxy floors after acceptance by Departmental Representative and replace and re-install protective coverings, as may be needed, until handling and installation of all Food Service Equipment, whether supplied by Owner or by this Contract, is completed.

.5 Following move-in, remove temporary protective coverings and clean the floors for Final Inspection in accordance with manufacturer's written instructions.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED SECTIONS

.1 Section 05 50 00: Metal Fabrication.

.2 Section 06 20 00: Finish Carpentry.

.3 Section 06 40 00: Architectural Woodwork.

.4 Section 08 11 00: Steel Doors and Frames.

.5 Mechanical and Electrical Divisions: Prime painting of mechanical and electrical equipment including grilles, panels and cabinets.

1.3 REFERENCES

.1 Architectural Painting Specifications Manual, Master Painters Institute (MPI).

.2 Systems and Specifications Manual, SSPC Painting Manual, Volume Two, Society for Protective Coatings (SSPC).

.3 EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) - Environmental Protection Agency (EPA).

.4 National Fire Code of Canada

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
- .1 Material Safety Data Sheets (MSDS).

1.4 SUBMITTALS

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

.2 Submit product data and manufacturer's installation/application instructions for each paint and coating product to be used and include product characteristics, performance criteria, finish and limitations.

.3 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 29 – Health and Safety Requirements.

.4 Submit duplicate 200 x 300 mm sample panels of each specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards.

.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.
- .2 Manufacturer's product number.

.5 (continued)

.3 Colour numbers.
.4 MPI Environmentally Friendly classification system rating.
.5 Manufacturer's Material Safety Data Sheets (MSDS).

.6 Source Quality Control Submittals:
.1 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

.7 Closeout Submittals:
.1 Provide maintenance data for paints and coatings for incorporation into manual specified in Section 01 78 00 - Closeout Submittals supplemented as follows:
.2 Upon completion, submit records of products used. List products in relation to finish system and include the following:
.1 Product name, type and use.
.2 Manufacturer's product number.
.3 Colour numbers.
.4 MPI Environmentally Friendly classification system rating.

.8 Extra Materials:
.1 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 Submit one four litre can of each type and colour of paint coating. Identify colour and paint type in relation to established colour schedule and finish system.
.3 Store where directed.
.4 Extra materials are not to be used to correct deficiencies.

1.5 PERFORMANCE REQUIREMENTS

.1 Environmental Performance Requirements:
.1 Provide paint products meeting MPI “Environmentally Friendly” E2 rating based on VOC (EPA Method 24) content levels.
.2 Green Performance in accordance with MPI Standard GPS-1.

1.6 QUALITY ASSURANCE

.1 Qualifications:
.1 Conform to latest MPI requirements for exterior painting work including preparation and priming.
.2 Materials: in accordance with MPI Painting Specification Manual “Approved Product” listing and from a single manufacturer for each system used.
.3 Paint materials such as linseed oil, shellac, and turpentine to be highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and be compatible with other coating materials as required.
.4 Retain purchase orders, invoices and documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

.5 Standard of Acceptance:
- .1 Walls: No defects visible from a distance of 1000 mm at 90 degrees to surface.
- .2 Soffits: 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.

.2 Mock-ups:
- .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
  - .1 Provide mock-up for evaluation of surface finishes and work.
  - .2 Prepare mock-up designated exterior surface or item to specified requirements, with specified paint or coating, showing selected colours, number of coats, gloss/sheen, textures and quality of work to MPI Architectural Painting Specification Manual standards.
  - .3 Co-ordinate type and location of mock-ups with project requirements. Accepted mock-up will be used as standard for acceptance of painting work. Repaint areas which are not accepted.
  - .4 Do not proceed with remaining work until work, colour, and finish are reviewed and accepted by Departmental Representative
  - .5 Refinish mock-up area as required to produce acceptable work.
  - .6 When accepted, mock-up with painted surface and/or item will demonstrate minimum standard of finish quality and quality of work required for similar on-site painting work.

1.7 **DELIVERY, STORAGE AND HANDLING**

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

.6 Observe manufacturer's recommendations for storage and handling.

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

.8 Store materials and equipment in a well ventilated area with temperature range 7° C minimum to 30° C maximum.

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

.10 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Departmental Representative.

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

.12 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

. 13 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 daily.

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

1.8 **SITE CONDITIONS**

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces in accordance Section 01 35 29 – Health and Safety Requirements.

.2 Perform painting work when adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10° C for 24 hours before, during and after paint application until paint has cured sufficiently.

.3 Where required, provide continuous ventilation for seven days after completion of application of paint.

.4 Coordinate use of ventilation system with Contractor 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 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by the specifying body, Paint Inspection Agency and the applied product manufacturer, perform no painting work when:

.1 Ambient air and substrate temperatures are below 10 ° C for both interior and exterior work.

.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 MPI or paint manufacturer's prescribed limits.

.4 The relative humidity is above 85% or when the dew point is less than 3 ° C variance between the air/surface temperature.

.1 (continued)

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

.2 Perform no painting work when the maximum moisture content of the substrate exceeds:

.1 12% for concrete block masonry.

.2 15% for wood.

.3 12% for gypsum board.

.3 Conduct moisture tests using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test".

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

.3 Surface and Environmental Conditions

.1 Apply paint finish only 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 only to adequately prepared surfaces and to surfaces within moisture limits noted herein.

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

.4 Additional Interior Application Requirements:

.1 Apply paint finishes only 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 such that painted surfaces will have dried and cured sufficiently before occupants are affected.

.5 Additional Exterior Application Requirements:

.1 Apply paint finishes only when conditions forecast for entire period of application fall within manufacturer's recommendations.

.2 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.

.3 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.

.4 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.

.5 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

1.9 **WASTE MANAGEMENT AND DISPOSAL**

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 22 - 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, corrugated cardboard and packaging material in appropriate on site bins for recycling in accordance with Waste Management Plan (WMP).

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

.5 Handle and dispose of hazardous materials in accordance with Governmental Authorities.

.6 Ensure emptied containers are sealed and stored safely.

.7 Unused paint materials must be disposed of at official hazardous material collections site as approved by Departmental Representative.

.8 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Governmental Authorities.

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

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

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

- .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
- .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
- .3 Return solvent and oil soaked rags used during painting operations for contaminated recovery, proper disposal, or appropriate cleaning and laundering.
- .4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.
- .5 Empty paint cans are to be dry prior to disposal or recycling (where available).

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

PART 2 - PRODUCTS

2.1 MATERIALS

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

.2 Paint materials for paint systems shall be products of a single manufacturer.

.3 Only qualified products with E2 "Environmentally Friendly" rating are acceptable for use on this project.

.4 Conform to latest MPI requirements for interior and exterior 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 rating based on VOC (EPA Method 24) content levels.

.8 Paints, coatings, solvents, cleaners, and other fluids, to be as follows:
- .1 Ensure calculation of VOC’s does not include water or tinting colourant added at point of sale.
- .2 Be water based, water soluble with water clean-up.
- .3 Be non-flammable, biodegradable.
- .4 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
- .5 Primer: maximum VOC limit 250 g/L to Standard GS-11.
- .6 Enamel Finish: maximum VOC limit 150 g/L to Standard GS-11.
- .7 Paints: maximum VOC limit 150 g/L to Standard GS-11.

.9 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavelant chromium or their compounds.

.10 Water-borne surface coatings and recycled water-borne surface coatings must have a flash point of 61.0 ° C or greater.

.11 Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings must be made by a process that does not release:
- .1 Matter in undiluted production plant effluent generating a 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.
- .2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.12 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.

.13 Recycled water-borne surface coatings to contain 50% post-consumer material by volume.

.14 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 Hexavelant 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 Departmental Representative will provide colour schedule after tenders are awarded.

.2 Colour schedule will be based on no more than 10 base colours and 5 accent colours.

.3 Where specific products are available in a restricted range of colours, selection will be based on the limited range.

.4 Second coat in a 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. On-site tinting of painting materials is allowed only with Departmental Representative’s written permission.

.2 Mix paste, powder or catalyzed paint mixes in strict accordance with manufacturer's written instructions.

.3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or any 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 Departmental Representative.

.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 **GLOSS / SHEEN RATINGS**

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

Gloss Level	Gloss @ 60°	Sheen @ 85°
G1 – matte finish (flat)	0 to 5	max. 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	min. 35
G5 - semi-gloss	35 to 70	
G6 - gloss	0 to 85	
G7 - high gloss finish	> 85	

.2 Gloss level ratings of painted surfaces shall be as specified herein.

2.5 **INTERIOR PAINTING SYSTEMS**

.1 Concrete Vertical Surfaces
- .1 INT 3.1M Institutional low odour/low VOC, semi-gloss finish.

.2 Concrete Horizontal Surfaces: floors
- .1 INT 3.2G Waterborne concrete floor sealer.
- .2 INT 3.2H Late traffic marking.

.3 Concrete Masonry Units: smooth face concrete block
- .1 INT 4.2E Institutional low odour/low VOC, semi-gloss finish.

.4 Structural Steel and Metal Fabrications: columns, beams, joists, etc.
- .1 INT 5.1S Institutional low odour/low VOC, semi-gloss finish.

.5 Steel - High Heat: (boilers, furnaces, heat exchangers, breeching, pipes, flues, stacks, etc., with temperature range as noted)
- .1 INT 5.2D High heat resistant coating, maximum 593 ° C.

.6 Galvanized Metal: doors, frames, misc. steel, pipes, overhead decking, ducts, etc.
- .1 INT 5.3N Institutional low odour/low VOC, semi-gloss finish.

.7 Copper:
- .1 INT 5.5G Institutional low odour/low VOC, semi-gloss finish.

.8 Dressed Lumber: including doors, casings, mouldings, etc.
- .1 INT 6.3R Fire retardant, pigmented (plywood equipment back boards).
- .2 INT 6.3W Waterborne clear acrylic, semi-gloss finish (over stain).

.9 Wood paneling and casework: panels, shelving, millwork:
- .1 INT 6.4M - Waterborne clear acrylic, satin finish (millwork).
- .2 INT - 6.4T Institutional low odour/low VOC , semi-gloss finish (panels).

.10 Plaster and Gypsum Board: gypsum wallboard, drywall, "sheet rock type material", etc., and textured finishes
- .1 INT 9.2M Institutional low odour/low VOC, semi-gloss finish.

.11 Canvas and Cotton Coverings:
.1 INT 10.1D - Institutional low odour/low VOC, G5 finish.

.12 Bituminous Coated Surfaces: cast iron pipe, concrete, etc.
.1 INT 10.2B Alkyd G5 (semi-gloss) finish.

2.6 **EXTERIOR PAINTING SYSTEMS**

.1 Asphalt Surfaces: zone/traffic marking for drive and parking areas, etc.
.1 EXT 2.1B - Alkyd traffic marking finish.

.2 Structural Steel and Metal Fabrications:
.1 EXT 5.1D – Alkyd G5 (semi-gloss) finish.

.3 Steel - High Heat: heat exchangers, breeching, pipes, flues, stacks, etc., with temperature range as noted
.1 EXT 5.2C - Inorganic zinc rich coating, maximum 400 ° C

.4 Galvanized Metal: not chromate passivated
.1 EXT 5.3D – Pigmented polyurethane finish for use in high contact/high traffic areas.

PART 3 - EXECUTION

3.1 **MANUFACTURER'S INSTRUCTIONS**

.1 Manufacturer’s Instructions: comply with manufacturer’s written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 **GENERAL**

.1 Perform preparation and operations for exterior painting in accordance with MPI 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 substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Departmental Representative. 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 **PROTECTION**

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

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.4 Protect passing pedestrians, building occupants and general public in and about the building.

.5 Removal of electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings shall be done prior to undertaking any painting operations. Items shall be securely stored and re-installed after painting is completed.

.6 Move and cover 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 occupied areas to approval of Departmental Representative.

3.5 **CLEANING AND PREPARATION**

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

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

.3 Clean and prepare surfaces in accordance with MPI 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.
- .2 Wash surfaces with a biodegradable detergent 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. Allow sufficient drying time and test surfaces using electronic moister meter before commencing work.
- .5 Use water-based cleaners in place of organic solvents where surfaces will be painted using water based paints.
- .6 Use trigger operated spray nozzles for water hoses.
- .7 Many water-based paints cannot be removed with water once dried. Minimize the use of kerosene or any such organic solvents to clean up water-based paints.

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

.5 Where possible, prime surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
- .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
- .2 Apply wood filler to nail holes and cracks.
- .3 Tint filler to match stains for stained woodwork.

.6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

.7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove such contaminates and traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, blowing with clean dry compressed air, or vacuum cleaning as required.

.8 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

.9 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.

3.6 **APPLICATION**

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

.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 shall be free of roller tracking and heavy stipple unless approved by Departmental Representative.
- .5 Remove runs, sags and brush marks from finished work and repaint.

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

.3 (continued)

.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.

.4 Brush out immediately runs and sags.

.5 Use brushes 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 and only when specifically authorized by Departmental Representative.

.5 Apply coats of paint as a 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.

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

.10 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.7 **MECHANICAL / ELECTRICAL EQUIPMENT**

.1 Remove all adhesive labels/ stickers and adhesive residue from pipe fittings, conduits, electrical boxes etc., prior to commencing painting.

.2 Unless otherwise specified, paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as noted otherwise.

.3 In mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.

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

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

.6 Do not paint over nameplates.

.7 Keep sprinkler heads free of paint.

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

.9 Paint fire protection piping red.

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

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

.12 Do not paint transformers and substation equipment.

.13 Unless otherwise specified, paint exterior exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as noted otherwise. Remove all adhesive labels/ stickers and adhesive residue from all conduits, pipes, elbows, electrical boxes etc., prior to commencing painting.

3.8 **CLEANING**

.1 Clean in accordance with Section 01 74 11 – Cleaning.

.2 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.

.3 Clean equipment and dispose of wash water used for water borne materials, solvents used for oil based materials as well as other cleaning and protective materials (i.e. rags, drop cloths, and masking papers), paints, thinners, paint removers/strippers in accordance with safety requirements of Governmental Authorities.

.4 Clean painting equipment in leak-proof containers that will permit particulate matter to settle out and be collected. Sediment remaining from cleaning operations to be recycled or disposed of in manner acceptable to Governmental Authorities.

3.9 **RESTORATION**

.1 Clean and re-install all 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 Departmental Representative. Avoid scuffing newly applied paint.

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

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED SECTIONS

.1 Section 03 30 00 - Cast-in-Place Concrete.

.2 Section 04 22 00 - Concrete Unit Masonry.

.3 Section 07 92 00 – Joint Sealing.

.4 Section 09 21 16 - Gypsum Board Assemblies

.5 Section 09 91 00 - Painting.

1.3 REFERENCES

.1 CAN/CGSB-1.86 High Performance Glazed Coating System, Interior.

.2 Health Canada / Workplace Hazardous Materials Information System (WHMIS).
.1 Material Safety Data Sheets (MSDS)

.3 South Coast Air Quality Management District (SCAQMD), California State.
.1 SCAQMD Rule 1168, adhesives and Sealants Applications.

1.4 SUBMITTALS

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

.2 Manufacturer's Instructions: provide information to indicate special handling criteria, installation sequence, cleaning procedures and other information pertinent to installation and maintenance of material.

.3 Provide product data in accordance with Section 01 33 00 – Submittal Procedures.
.1 Submit WHMIS MSDS - Material Safety Data Sheets acceptable to Labour Canada and Health and Welfare Canada for high build glazed coatings. Indicate VOC content.

.4 Samples: Submit duplicate 400 x 200 mm samples of colour and finish coating applied to porous concrete block in accordance with Section 01 33 00 – Submittal Procedures.

.5 Provide maintenance data for coatings for incorporation into manual Submittals specified in Section 01 78 00 – Closeout Submittals.

1.5 QUALITY ASSURANCE

.1 Construct mock-up in accordance with Section 01 45 00 – Quality Control.

.2 Apply coating of each finish to minimum 10 m^2 of area of surface to be treated. Apply coating where directed by Departmental Representative.

.3 Allow 48 hours for inspection of mock-up by Departmental Representative before proceeding with coating work.

.4 Upon acceptance by Departmental Representative, mock-up will demonstrate minimum standard of acceptance for this work. Accepted mock-up will be considered part of the finished work.

1.6 DELIVERY, HANDLING AND STORAGE

.1 Deliver and store materials in accordance with Section 01 61 00 – Common Product Requirements.
- .1 Deliver and store materials in a manner to prevent damage.
- .2 Ensure materials remain in original wrapping and containers until used.

1.7 SITE CONDITIONS

.1 Safety:
- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of materials.
- .2 Ensure no open flame heating devices are used.
- .3 Discourage occupancy of treated space until volatile materials are no longer being emitted and there is no odour.
- .4 Provide adequate respiratory protection to exposed individuals.

.2 Ventilation:
- .1 Provide ventilation continuously during and after coating application. Run system continuously during application and for 7 days after completion of application.

.3 Temperature:
- .1 Do not apply coating systems unless uniform minimum 10°C air temperature at installation area for 24 hours prior to and after application.
- .2 Maintain minimum temperature of 15°C within the area of installation until final inspection of building.

1.8 APPLICATOR

.1 Applicator shall be a firm of specialists licenced, franchised or otherwise approved in writing by the coating material manufacturer to install this product.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with requirements of Section 01 74 22 – Construction / Demolition Waste Management and Disposal.

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

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

.4 Handle and dispose of hazardous materials in accordance with Governmental Authorities.

.5 Ensure emptied containers are sealed and stored safely.

.6 Dispose of unused paint materials at official hazardous material collections site as approved by Departmental Representative.

.7 Coatings 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 Governmental Authorities.

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

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Interior high build glazed coating materials: to CAN/CGSB 1.186 in colours selected by Departmental Representative.
- .1 Maximum VOC limit 100 g/L to SCAQMD Rule 1113.

.2 Filler coat: epoxy type; to the material standard of the coating concerned.

.3 Glaze coat: pigmented, semi-gloss finish.

.4 Acceptable Products:
- .1 Sikagard 75 EpoCem primer, block filler with Sikagard 62 base coat and top coat, by Sika Canada Inc.
- .2 Stoneglaze block primer / filler with Stoneglaze VSC base coat and top coat by STONEHARD Canada.
- .3 or equal product by other manufacturer accepted by Departmental Representative during tendering period.

.5 Sealants:
- .1 Polyurethane joint sealant, paintable.
  - .1 Acceptable Products:
    - .1 Sikaflex by Sika Canada Inc.
    - .2 Stoneflex MNT by STONEHARD Canada.
    - .3 or equal product by other manufacturer accepted by Departmental Representative during tendering period.

2.2 MIXES

.1 Mix coatings according to manufacturer's instructions.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Comply with manufacturer's written recommendations and specifications, including technical bulletins, handling, storage and installation instructions and datasheets.

3.2 PREPARATION OF SURFACES

.1 Prepare surfaces in accordance with CAN/CGSB 1.186 and coating material manufacturer's instructions.

.2 Mask surrounding surfaces to provide neat, clean juncture lines.

.3 Protect adjacent surfaces and equipment from damage by overspray.

.4 Work penetrating substrate to be completed before installing coating.

3.3 APPLICATION

.1 Apply coating to produce smooth surface, uniform in sheen, colour and finish, free from marks, dirt, particles, runs, crawls, curling, holes, air pockets and other defects and to achieve smoothness index in accordance with CAN/CGSB 1.186. Total dry film thickness not including required fillers for substrate.
- .1 For 1-GP-153: 0.25 mm
- .2 For CAN/CGSB 1.186: 0.40 mm

.2 Apply filler coats to porous surfaces.

.3 Apply base by brush or spray coat in two coats.

.4 Apply top glaze coat.

3.4 CLEANING

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

.2 Clean surfaces to coating manufacturer’s printed instructions.

END OF SECTION