PART 1 GENERAL

1.1 REFERENCES

.1 ASTM International (ASTM)

- .1 ASTM C475/C475M-17, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .2 ASTM C514-04(2014), Standard Specification for Nails for the Application of Gypsum Board.
- .3 ASTM C840-17a, Specification for Application and Finishing of Gypsum Board.
- .4 ASTM C954-18, 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.
- .5 ASTM C1002-18, Specification for Steel Self Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- .6 ASTM C1047-14a, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .7 ASTM C1177/C1177M-17, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
- .8 ASTM C1396/C1396M-17, Standard Specification for Gypsum Board.

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

- .1 GA-214-2015, Recommended Levels of Finish for Gypsum Board, Glass Mat and Fiber-Reinforced Gypsum Panels.

.3 Underwriters' Laboratories of Canada (ULC)

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

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Division 01: Submittal Procedures.

.2 Product Data:

- .1 Submit manufacturer's instructions, printed product literature and technical datasheets for gypsum board assemblies and accessories, and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:

- .1 Submit for review and acceptance of each unit.
- .2 Samples will be returned for inclusion into work.
- .3 Submit duplicate 300 x 300 mm size samples of corner and casing beads, mouldings, cornice cap, insulating strip.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Division 01: Common Product Requirements and with manufacturer's written instructions.

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

.3 Storage and Handling Requirements:

.1 Store gypsum board assemblies materials level 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, or other damage that may impair performance, durability, appearance or installation efficiency.

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

.4 Handle gypsum boards to prevent damage to edges, ends or surfaces.

.5 Protect prefinished aluminum surfaces with wrapping or strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

.6 Replace defective or damaged materials with new.

1.4 WARRANTY

.1 For the work of this Section, the 12-month warranty period prescribed in Subsection GC 3.13 of General Conditions "C" is extended to 24 months.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Standard Board: to ASTM C1396/C1396M, regular 16 mm thick, or Type ‘X’ ULC fire rated as required 19 mm thick, 1200 mm wide x maximum practical length, ends square cut.

.2 Mould Resistant Board: to ASTM C1396/C1396M, regular 16 mm thick, or Type ‘X’ ULC fire rated as required 19 mm thick, 1200 mm wide x maximum practical length.

.3 Non-Cementitious Backer Board: to ASTM C1178, regular 16 mm thick, or Type ‘X’ ULC fire rated as required 19 mm thick, 1200 mm wide x maximum practical length.

.4 Glass Mat Faced Exterior Wall Sheathing Board: to ASTM C1177/C1177M and as follows:

.1 Size: 1200 mm x maximum practical length.

.2 Thickness: as indicated on Drawings.

.3 Edges: square.

.5 Metal furring runners, hangers, tie wires, inserts, anchors as required.

.6 Gypsum board furring channels: 0.75 mm core thickness galvanized steel channels for screw attachment of gypsum board.

.7 Resilient clips and gypsum board furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.

.8 Nails: to ASTM C514.

.9 Screws: to ASTM C954.

.10 Steel drill screws: to ASTM C1002.

.11 Galvanized sheet steel, 16-gauge, at wall where security windows are scheduled for installation.

.1 Rivets for attaching sheet steel to studs: Ultra Grip Steel Rivets installed 200 mm on center vertically; 3/16" steel pop rivet: Speaneur part #301-440.

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

.13 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, PVC, perforated flanges, one-piece length per location.

.14 Moldings, ceiling trim, reveals: match existing.

.15 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.

.16 Strippable Edge Trim: Extruded PVC with pre-masked L-shaped tape on trim with tear away protective serrated strip for removal after compound and paint is applied, for use at areas where gypsum butts aluminum frames and where gypsum butts concrete or concrete block.

.17 Acoustic sealant: non-hardening, non-skinning, permanently flexible and having VOC content less than the VOC limits of State of California's South Coast Air Quality Management District Rule #1168.

.18 Insulating Strip / Acoustic Strip: rubberized, moisture-resistant, 3 mm thick closed cell neoprene strip, or 8 mm thick open cellular rubber reinforced with solid rubber particles bonded to cellulose, minimum 28 mm (1-1/2 inch) wide, with self-sticking permanent adhesive on one face, lengths as required.

.19 Joint compound: to ASTM C475, asbestos-free, designed for board substrate and field conditions.

.20 Foamed-in-Place Insulation: to Section 07 21 19.

2.2 INTERIOR PARTITION INSULATION MATERIALS

.1 Fibrous Glass Acoustical Insulation for Fire and Smoke Rated Assemblies: Unfaced preformed formaldehyde free fibrous mineral slag / rock wool insulation meeting the requirements of ULC S702; having maximum flame spread and smoke developed of 20/20 in accordance with CAN/ULC S102 and being non-combustible in accordance with CAN/ULC S114 and as follows:

.1 Type 1 Compliant, to ULC S702.

.2 Tested to CAN/ULC S102:

.1 Flame spread index = 0; Smoke developed index = 0.

.3 Tested to CAN/ULC S114, Determination of Non-Combustibility of Building Materials: Non-Combustible.

.4 Tested to ASTM E136, behaviour of materials at 750°C: Non-Combustible.

.5 Tested to CAN/ULC S129, Smoulder Resistance: 0.09%.

.6 Fire Rated ULC Design Classification: BZJZC.

.7 Width: to friction fit in stud spaces.

.8 Thickness: to completely fill 100% cavity space between studs.

.2 Fibrous Glass Acoustical Insulation for Non-rated Assemblies: Un-faced, preformed formaldehyde free fibrous mineral slag / rock wool insulation meeting the requirements of ULC S702 and as follows:

.1 Type 1 Compliant, to ULC S702.

.2 Tested to CAN/ULC S102:

.2 Flame spread index = 0; Smoke developed index = 0.

.3 Tested to CAN/ULC S114, Determination of Non-Combustibility of Building Materials: Non-Combustible.

.4 Tested to ASTM E136, behaviour of materials at 750°C: Non-Combustible.

.5 Tested to CAN/ULC S129, Smoulder Resistance: 0.09%.

.6 Width: to friction fit in stud spaces.

.7 Thickness: to completely fill 100% cavity space between studs.

2.3 ACCESS DOORS

.1 Ceiling access panels: 2 types, refer to Section 09 05 00 – Product and Finish Key.

.2 Rated and non-rated electrical and mechanical flush access doors (walls):

.1 Door: Fabricate from 14-gauge (1.9 mm) cold rolled sheet steel, with multiple mounting configurations.

.2 Frame: Fabricate from 16-gauge (1.5 mm) cold rolled sheet steel. Provide ¼ inch (6 mm) mounting holes and easy install tabs.

.3 All surfaces: 1-inch (25 mm) flange at perimeter.

.4 Wallboard surfaces - drywall bead at perimeter.

.5 Hinge options:

.1 Concealed pin type, spring loaded to allow for door removal.

.2 Pin type, spring loaded to allow for door removal.

.6 Latching/Locking Devices: Key-operated cylinder cam lock with two keys per lock, keyed alike to Owner's directions.

.7 Opening Sizes: except as indicated otherwise, to be minimum sizes as follows:

.1 For body entry: 610 x 610 mm.

.2 For hand entry: 300 x 300 mm.

.8 Construction: Rounded safety corners, concealed hinges, screwdriver latch, and anchor straps, able to open 180°.

.9 Finishes: prime-coated galvanized steel ready for finish painting, to Section 09 91 00 – Painting, finish topcoats to match colour and gloss level of adjacent wall surfaces.

2.4 ALUMINUM TRIM, REVEALS AND MOULDING

.1 Coordinate with other trades and specification sections as required.

.2 Dimensions and shape: as required to suit conditions and application.

.3 Finish: as indicated; if not indicated, anodized to 0.7 mils minimum thickness, colour to match adjacent anodized aluminum finish; confirm selections with Departmental Representative prior to ordering materials.

2.5 ACCESSORIES AND OTHER MATERIALS

.1 Steel drill screws: to ASTM C1002.

.2 Stud adhesive: as recommended by gypsum board manufacturer.

.3 Laminating compound: as recommended by manufacturer for application and conditions, asbestos-free.

.4 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, PVC, perforated flanges, one-piece length per location. Provide transition caps at the base and head.

.5 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.

.6 Shadow mould: 35 mm high, snap-on trim, of extruded PVC plastic, colour as selected by Departmental Representative.

.7 Strippable Edge Trim: Extruded PVC with pre-masked L-shaped tape on trim with tear away protective serrated strip for removal after compound and paint is applied, for use at areas where gypsum butts aluminum frames and where gypsum butts concrete or concrete block.

.8 Joint Sealants: in accordance with Section 07 92 00 – Joint Sealants.

.9 Acoustic sealant: non-hardening, non-skinning, permanently flexible and having VOC content less than the VOC limits of State of California's South Coast Air Quality Management District Rule #1168.

.10 Air and Vapour Barrier: in accordance with Section 07 27 14 - Air Barriers and Vapour Retarders.

.11 Insulating Strip / Acoustic Strip: rubberized, moisture-resistant, 3 mm thick closed cell neoprene strip, or 8 mm thick open cellular rubber reinforced with solid rubber particles bonded to cellulose, minimum 28 mm (1-1/2 inch) wide, with self-sticking permanent adhesive on one face, lengths as required.

.12 Joint Treatment Materials: Provide joint compound and accessory materials in accordance with ASTM C475 and as follows:

- .1 Joint Tape:
  - .1 Interior Gypsum Board: Paper.
  - .2 Exterior Gypsum Board: Fibreglass mesh tape.
  - .3 Tile Backing Panels: As recommended by panel manufacturer.
- .2 Joint Compound for Interior Gypsum Board: Vinyl based, non-asbestos, low dusting type compatible with other compounds applied on previous or for successive coats, and as follows:
  - .1 Pre-filling: Setting type taping compound.
  - .2 Embedding and First Coat: Drying type compound.
  - .3 Fill Coat: Drying type compound.
  - .4 Finish Coat: Drying type, sandable topping compound.
  - .5 Skim Coat: Drying type, sandable topping compound.
- .3 Joint Compound for Tile Backing Panels:
  - .1 Gypsum based tile backing board: Use setting type taping and setting type, sandable topping compounds.

.4 Joint Compound for Interior Mould Resistant Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

.1 Pre-filling: Setting type joint compound.

.2 Embedding and First Coat: Setting type joint compound.

.3 Fill Coat: Setting type, sandable topping compound.

2.6 FINISHES

.1 Paint: in accordance with Section 09 91 00 – Painting.

.2 Other finishes as indicated; to match adjacent existing and blend in so new work is not distinguishable from adjacent exiting finishes.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions are acceptable for product installation in accordance with manufacturer's written instructions.

.1 Check and verify that no irregularities exist that would affect quality of execution of work specified.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

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

3.2 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's printed preparation and installation instructions, technical datasheets, and specifications.

3.3 ERECTION

.1 Metal Framing Systems: to Section 09 22 16 – Non-Structural Metal Framing.

.2 Do application and finishing of gypsum board to ASTM C840 except where specified otherwise.

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

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

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

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

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

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

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

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

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

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

.13 Erect gypsum board 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 or 25 mm gypsum board screw as required.

.14 Install 150 mm continuous strip of 13 mm gypsum board along base of partitions where resilient furring installed

3.4 APPLICATION

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

.2 Apply single or double 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.

.3 Apply gypsum board to concrete and concrete block surfaces, where indicated, using laminating adhesive. Apply double layer where indicated.

.1 Comply with gypsum board manufacturer's recommendations.

.2 Brace or fasten gypsum board until fastening adhesive has set.

.3 Mechanically fasten gypsum board at top and bottom of each sheet.

.4 Apply mould resistant gypsum board adjacent to slop sinks and janitors' closets, in kitchen areas, concessions, serveries, and washrooms (except where tile backer boards are used at tile locations). Apply mould 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.

.5 Apply 13 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.

.6 Install security mesh where indicated.

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

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

.9 Install gypsum board with face side out.

.10 Do not install damaged or damp boards.

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

3.5 INSTALLATION

.1 Gypsum wall board shall be mechanically fastened to supporting assembly independent of insulation, with joints either backed or taped and filled.

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

.3 Install casing beads around perimeter of suspended ceilings.

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

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

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

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

.8 Expansion and Control Joints:

- .1 Locate control joints where indicated or as required, and at changes in substrate construction, at approximate 10 m spacing on long corridor runs, and at approximate 15 m spacing on ceilings.
- .2 Install control joints straight and true.
- .3 Construct expansion joints at building expansion and construction joints. Provide continuous dust barrier.
- .4 Install expansion joint straight and true.

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

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

- .1 Rigidly secure frames to furring or framing systems.

.11 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.

.12 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWCI GA-214, Recommended Levels of Finish for Gypsum Board, Glass Mat and Fiber-Reinforced Gypsum Panels:

- .1 Levels of finish:
  - .1 Level 0: no tapping, finishing or accessories required.
  - .2 Level 1: embed tape for joints and interior angles in joint compound. Surfaces to be free of excess joint compound; tool marks and ridges are acceptable.
  - .3 Level 2: embed tape for joints and interior angles in joint compound and apply one separate coat of joint compound over joints, angles, fastener heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable.

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

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

.13 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.

.14 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.

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

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

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

.18 Apply thin coat to entire surface using trowel or gypsum board broad knife to fill surface texture differences, variations or tool marks.

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

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

3.6 CLEANING

.1 Progress Cleaning: clean in accordance with Division 01: Cleaning. Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01: Cleaning. Perform cleaning after installation to remove construction and accumulated environmental dirt.

.3 Manage and dispose of demolition and construction waste materials in accordance with Division 01: Construction/Demolition Waste Management and Disposal.

3.7 PROTECTION

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

.2 Repair damage to adjacent materials caused by Work of this Section.

3.8 SCHEDULE

.1 Use Type ‘X’ Fire Rated board options at fire rated wall and ceiling assemblies as indicated and as required by the NBC 2015; refer to Contract Drawings for rated assembly locations and required ratings.

.2 Install board as indicated, and as follows:

.1 Standard Board (Regular and Type X): general use unless otherwise specified.

.2 Mould Resistant Board (Regular and Type X): inside face of exterior walls, adjacent to sinks and basins, and at plumbing walls.

.3 Non-Cementitious Backer Board: tile locations.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

.1 ASTM International (ASTM)

.1 ASTM C645-18, Standard Specification for Nonstructural Steel Framing Members.

.2 ASTM C754-18 Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

.2 CSA Group (CSA)

.1 CSA S136-12 Package, North American Specification for the Design of Cold Formed Steel Structural Members and S136.1-12 - Commentary on North American specification for the design of cold-formed steel structural members, Includes Update No. 1 (2014), Update No. 2. (2014), Update No. 3 (2015).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Division 01: Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications and technical datasheets for each type of product indicated.

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.

PART 2 PRODUCTS

2.1 STUD SCHEDULE

.1 Refer to Schedules and Drawings.

.2 Non-load bearing channel stud framing: to ASTM C645 and CSA S136, stud sizes as indicated, roll-formed from hot dipped galvanized steel sheet for screw attachment of gypsum board, minimum design thickness of steel stud material as follows:

.1 Design Thickness and Stud Spacing:

.1 Non-rated Partitions: fabricated from minimum 0.607 mm thick material.

.2 Fire-Rated Partitions and Washrooms: fabricated from minimum 0.912 mm thick material; space studs at 300 mm on centre.

.3 At wall-mounted equipment and services, millwork and cabinetry, handrails, crash rails, graphic panels, toilet accessories, storage shelving, furniture and equipment, etc., as required to provide adequate support to resist loads:

.1 150 mm wide steel backer plates and/or plywood backing, 2 x 19 mm thick, in wall cut to fit and fixed to studs as required.

.2 Studs: fabricated from 1.519 mm thick material.

.3 Space studs at 300 mm on centre.

.4 Single jamb studs at openings: fabricated from 1.519 mm thick material.

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

2.2 MATERIALS

.1 Runners: Width, material thickness and galvanizing to match steel studs, and as follows:

.1 Double Runner Deflection Track: Outside runner using 50 mm flanges; inner runner 33 mm; maintaining 25 mm minimum deflection space.

.2 Slotted Deflection Track for Fire Separations: slotted top runner with 63 mm down standing legs and having 6 mm wide x 38 mm high slots spaced at 25 mm on center along length of runner; tested and certified for use in fire rated wall construction:

.1 Base Runner: Bottom track with 33 mm upstanding legs.

.2 Metal channel stiffener: sizes as required, 1.4 mm thick cold rolled steel, coated with rust inhibitive coating.

.3 Acoustical sealant: to Section 07 92 00.

.4 Insulating strip: rubberized, moisture resistant 3 mm thick cork or foam strip, 13 mm wide, with self-sticking adhesive on one face, lengths as required.

.5 Fasteners for Metal Framing: Type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PART 3 EXECUTION

3.1 ERECTION

.1 Install steel studs to ASTM C754, and to NBC 2015 and amendments.

.2 Predrill holes for gypsum board installation where stud material thickness is too great to accept typical self-tapping screw installation methods.

.3 Align partition tracks at floor and ceiling and secure at 600 mm on centre maximum.

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

.5 Place studs vertically at 400 mm on centre, or as otherwise indicated, 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.

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

.7 Attach studs to bottom track using screws; allow for 25 mm deflection at top track, or as otherwise stipulated by the structural drawings.

.8 Coordinate simultaneous erection of studs with installation of service lines. When erecting studs, ensure web openings are aligned.

.9 Coordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.

.10 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.

.11 Install 1.438 mm thick (Design Thickness) single jamb studs at openings.

.12 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.

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

.14 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.

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

.16 Extend partitions to ceiling height except where noted otherwise on drawings, or as otherwise required by NBC 2015.

.17 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use 50 mm leg ceiling tracks. Use double track slip joint as indicated.

.18 Install continuous insulating strips to isolate studs from uninsulated surfaces.

.19 Install two continuous beads of acoustical sealant or continuous insulating strip under studs and tracks around perimeter of sound control partitions.

3.2 CLEANING

.1 Progress Cleaning: clean in accordance with Division 01: Cleaning. Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01: Cleaning. Perform cleaning after installation to remove construction and accumulated environmental dirt.

.3 Manage and dispose of demolition and construction waste materials in accordance with Division 01: Construction/Demolition Waste Management and Disposal.

3.3 PROTECTION

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

.2 Repair damage to adjacent materials caused by Work of this Section.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

.1 ASTM International (ASTM)

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

.2 ASTM C635/C635M-17, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.

.3 ASTM C636/C636M-13, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

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

.5 ASTM E1477-98a(2017), Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.

.6 ASTM F1667-17, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

.2 Underwriter's Laboratories of Canada (ULC)

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

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet for each product specified.

.3 Samples:

.1 Submit duplicate full-size samples of each type of acoustical unit.

.2 Include accessories and mitered interior and exterior corners of wall mouldings.

1.3 EXTRA MATERIALS

.1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide acoustical units amounting to 5% of gross ceiling area for each pattern and type required for project.

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

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

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

1.4 QUALITY ASSURANCE

.1 Single-Source Responsibility: Provide perimeter trim components, panels and grid components by a single manufacturer.

.2 Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

.3 Regulatory Requirements:

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

1.5 MOCK-UPS

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

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

.3 Construct mock-up where directed.

.4 Allow 24-hours for inspection of mock-up by Departmental Representative before proceeding with ceiling work.

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

1.6 DELIVERY, STORAGE AND HANDLING

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

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

.2 Store extra materials required for maintenance, where directed by Departmental Representative.

1.7 ENVIRONMENTAL REQUIREMENTS

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

.2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20-40% before and during installation.

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

PART 2 PRODUCTS

2.1 PERFORMANCE/DESIGN CRITERIA

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

2.2 MATERIALS

.1 Acoustic Panels: conforming to ASTM E1264:

.1 Classification: Type III, Form 1.

.2 Surface Texture: fine.

.3 Sizes: as indicated.

.4 Edge: square.

.5 Colour: white.

.6 Noise Reduction Coefficient (NRC): ≥ 0.55.

.7 Flame Spread: Class A.

.8 Ceiling Attenuation Class (CAC): ≥ 35.

.9 Light Reflectance (LR): ≥ 0.83.

2.3 ACOUSTICAL SUSPENSION SYSTEM

.1 Heavy-duty system to ASTM C635.

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

.3 Suspension system: non-fire rated, exposed tee bar grid width as appropriate for materials specified.

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

.5 Hanger wire: galvanized soft annealed steel wire:

.1 3.6 mm diameter for access tile ceilings.

.2 2.78 mm diameter for other ceilings.

.6 Hanger inserts: purpose made.

.7 Accessories: splices, clips, wire ties, retainers and wall moulding to match existing adjacent suspended ceilings as recommended by system manufacturer.

.8 Edge Mouldings and Trim: Sheet metal edge mouldings and trim selected from manufacturer's standard mouldings for edges and penetrations that fit installed acoustic panel edge and suspension system, and as follows:

.1 Circular Penetrations: Provide edge mouldings fabricated to diameter required to fit circular penetrations exactly.

.2 Provide edge mouldings and trims that match width and configuration of exposed runners including the following configurations:

.3 Sheet Metal Fillers: Light zinc coated sheet steel finished to match T-bar

.4 Wall Mould: Channel or angle shape with a 25 mm exposed face

.5 Radiant Panel Wall Mould: Angle shape 0.759 mm metal core thickness, 38 mm vertical leg and 25 mm exposed face with pre-punched and slotted mounting holes, and 1.5 mm expansion joints to coincide with radiant panel joints, to fit manufacturer’s suspension grid.

.9 System Accessories:

.1 Hold-Down Clips for Wind Uplift: Provide hold down clips spaced 610 mm O/C on all cross tees for interior ceilings consisting of acoustic panels weighing less than 4.88 kg/m^2.

.2 Sealant: Acrylic type as specified in Section 07 92 00 for use in exposed locations, colour to match ceiling grid.

.3 Adhesive: structural construction adhesive recommended by ceiling panel manufacturer for direct glue-on application of ceiling tiles to gypsum board substrate.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 MANUFACTURER'S INSTRUCTIONS

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

3.3 INSTALLATION OF SUSPENSION SYSTEM

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

.2 Install suspension system to manufacturer's instructions and Certification Organizations tested design requirements.

.3 Do not erect ceiling suspension system until all mechanical and electrical work above ceiling has been inspected by Departmental Representative.

.4 Secure hangers to overhead structure using attachment methods acceptable to Departmental Representative.

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

.6 Lay out system according to reflected ceiling plan.

.7 Ensure suspension system is co-ordinated with location of related components.

.8 Install wall moulding to provide correct ceiling height.

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

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

.11 Attach]cross member to main runner to provide rigid assembly.

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

.13 Expansion joints:

.1 Supply and install "Z" shaped metal trim pieces at each side of expansion joint. Design to accommodate plus or minus 25 mm movement and maintain visual closure. Finish metal components to match adjacent exposed metal trim. Provide backing plates behind butt joints.

3.4 INSTALLATION OF ACOUSTIC PANELS

.1 Install acoustic panels and tiles in ceiling suspension system where indicated.

.2 Apply adhesive and glue tiles to gypsum board substrate where indicated.

3.5 APPLICATION

.1 Refer to reflected ceiling plan.

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

3.6 INTERFACE WITH OTHER WORK

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

3.7 CLEANING

.1 Progress Cleaning: clean in accordance with Division 01: Cleaning. Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01: Cleaning. Perform cleaning after installation to remove construction and accumulated environmental dirt.

.3 Manage and dispose of demolition and construction waste materials in accordance with Division 01: Construction/Demolition Waste Management and Disposal.

3.8 PROTECTION

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

.2 Repair damage to adjacent materials caused by Work of this Section.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

.1 ASTM International (ASTM)

.1 ASTM D16-16, Standard Terminology for Paint, Related Coatings, Materials, and Applications.

.2 ASTM E84-18, Standard Test Method for Surface Burning Characteristics of Building Materials.

.2 Department of Justice Canada (Jus)

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

.3 Environmental Protection Agency (EPA)

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

.4 International Concrete Repair Institute (ICRI)

.1 Guideline 310.2R-2013, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.

.5 Master Painters Institute (MPI)

.1 MPI Architectural Painting Specifications Manual, 2018.

.6 South Coast Air Quality Management District (SCAQMD), California State

.1 SCAQMD Rule 1113-04, Architectural Coatings.

.7 Society for Protective Coatings (SSPC)

.1 SSPC Painting Manual, Volumes 1 & 2 Binder Set, current published edition.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Division 01: Submittal Procedures.

.2 Product Data:

.1 Submit product data and instructions for each paint and coating product to be used.

.2 Submit full records of all products used. List each product in relation to finish formula and include the following:

.1 Finish designation (e.g., finish schedule on Drawings).
.2 Product type and use.
.3 Manufacturer's product number.
.4 Colour numbers.
.5 Manufacturer's Material Safety Data Sheets (MSDS).
.6 Maximum VOC classification.

.3 Submit manufacturer's installation and application instructions for each product specified.

.4 At completion of the project submit 4 copies of a Maintenance Manual. Each one is to include:

.1 Cleaning instructions.
.2 Product list.

.3 Colour schedule.
.4 Product technical data.
.5 Material Safety Data Sheets.
.6 Colour samples

.3 Samples:

.1 Confirm colours prior to ordering materials. Submit samples for initial selection before mixing colours for approval by Departmental Representative.

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

.3 Submit duplicate 200 x 300 mm sample panels of each paint, stain, clear coating, and 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 plywood for finishes over wood surfaces.

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

.4 Closeout Submittals: submit maintenance data for incorporation into Operations and Maintenance Manual, and include following:
.1 Product name, type and use.
.2 Manufacturer's product number.
.3 Colour numbers.
.4 MPI Environmentally Friendly classification system rating.

1.3 QUALITY ASSURANCE

.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.

1.4 MAINTENANCE MATERIALS

.1 Extra Materials:
.1 Deliver extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels.
.2 Quantity: provide one - four litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

.3 Delivery, storage and protection: comply with Owner's Project Manager requirements for delivery and storage of extra materials.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.1 Pack, ship, handle and unload materials in accordance with General Requirements of the Contract 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.

1.6 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:

- .1 Ventilate enclosed spaces.
- .2 Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
- .3 Provide continuous ventilation for seven days after completion of application of paint.
- .4 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.
- .5 Provide minimum lighting level of 270 Lux on surfaces to be painted.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless pre-approved written approval by Departmental Representative 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 12% for concrete and masonry. 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.

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 Limit paint materials to products with VOC range <221 g/l (E3).

2.2 COLOURS

.1 Refer to Drawings and as determined by Departmental Representative. Confirm colours prior to ordering materials. Submit samples for initial selection for approval by Departmental Representative before mixing colours.

.2 Colour Schedule will be based upon selection of no more than 6-colours for entire project.

.3 Selection of colours from manufacturer's full range of colours.

.4 Where specific products are available in restricted range of colours, selection based on limited range

.5 Minimum number of coats shall be three: primer and two topcoats, minimum, plus additional coats as required to achieve an opaque, uniform colour.

.6 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 Unless otherwise specified or pre-approved, all paint shall be ready-mixed and pre-tinted. Re-mix all paint in contained prior to and during application to ensure break-up of lumps, completed dispersion of settled pigment, and colour and gloss uniformity.

.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.

2.4 GLOSS/SHEEN RATINGS

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

Description / Gloss Level	Gloss @ 60 degrees	Sheen @ 85 degrees
G1 - Matte Finish (flat)	Max. 5	Max. 10
G2 - Velvet-Like Finish	Max.10	10 to 35
G3 - Eggshell Finish	10 to 25	10 to 35
G4 - Satin-Like Finish	20 to 35	min. 35
G5 - Traditional Semi-Gloss Finish	35 to 70	
G6 - Traditional Gloss	70 to 85	
G7 - High Gloss Finish	More than 85	

.2 Gloss level ratings of painted surfaces as indicated or otherwise specified.

2.5 EXTERIOR PAINTING

.1 All exterior painting work to be in accordance with MPI Premium Grade finish requirements. Refer to Schedules for instructions.

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

.1 EXT 5.1D - Alkyd semi-gloss finish.

.3 Steel - High Heat: heat exchangers, breeching, pipes, flues, stacks, etc., with temperature range **as noted:**

.1 EXT 5.2A - Heat-resistant enamel finish, maximum degrees C.

.4 Galvanized Metal: non-chromate passivated; high contact/high traffic areas (doors, frames, railings and handrails, etc.):

.1 EXT 5.3D - Polyurethane, pigmented finish (over vinyl wash and epoxy primer).

2.6 INTERIOR PAINTING

.1 Refer to latest edition of MPI Guide Specification. Repainting work shall comply with MPI Maintenance Repainting Manual.

.2 Paint VOC range in all instances shall be <221 g/l (EPA Method 24).

.3 Unless otherwise specified, all interior painting work shall be in accordance with MPI Premium Grade (minimum 3 coats) finish requirements.

.4 Concrete Block:

.1 INT 4.2D - High performance architectural latex G4 finish.

.2 Repainting: RIN 4.2K - High performance architectural latex G4 finish.

.5 Structural Steel and Metal Fabrications:

.1 INT 5.1R - High performance architectural latex, G5 finish.

.2 Repainting: RIN 5.1R - High performance architectural latex, G5 finish.

.6 Galvanized metal:

.1 INT 5.3M - High performance architectural latex, G5 finish.

.2 Repainting: RIN 5.3J – High performance architectural latex, G5 finish.

.7 Plaster and gypsum board:

.1 INT 9.2B - High performance architectural latex, G4 finish.

.2 Repainting: RIN 9.2B - High performance architectural latex, G4 finish.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturers' printed recommendations and specifications, including product technical bulletins, handling, storage, preparation and application instructions, and technical datasheets.

3.2 GENERAL

.1 Perform preparation and operations for painting in accordance with MPI - Architectural Painting Specifications Manual, Premium Grade.

.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 Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

.3 Maximum moisture content as follows:
- .1 Metal: 0%.
- .2 Stucco, plaster and gypsum board: 12%.
- .3 Concrete: 12%.
- .4 Brickwork: 12%.
- .5 Wood: 15%.

.4 Prior to commencement of repainting work, thoroughly examine (and test as required) all interior conditions and surfaces scheduled to be repainted and report in writing to the Departmental Representative any conditions or surfaces that adversely affect work of this section.

.5 The degree of surface deterioration (DSD) shall be assessed as follows:

Condition	Description
DSD-0	Sound Surface (may include visual (aesthetic) defects that do not affect film's protective properties).
DSD-1	Slightly Deteriorated Surface (may show fading; gloss reduction, slight surface contamination, minor pin holes scratches, etc.) / Minor cosmetic defects (runs, sags, etc.).
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).

.6 Correct defects DSD-0 through DSD-4 as required, ready to be painted. Coordinate with other trades as needed.

3.4 PREPARATION – REPAINTING

.1 Prepare all interior surfaces for repainting in accordance with MPI Maintenance Repainting Manual requirements.

.2 Sand, clean, dry, etch, neutralize and/or test all surfaces under adequate illumination, ventilation and temperature requirements.

.3 Remove and securely store all miscellaneous hardware and surface fittings and fastenings (e.g. electrical plates, mechanical louvers, door and window hardware (e.g. hinges, knobs, locks, trim, frame stops), removable labels, washroom accessories, light fixture trim, etc. from wall and ceiling surfaces, doors and frames, prior to repainting and replace upon completion. Carefully clean and replace all such items upon completion of repainting work in each area. Do not use solvent or reactive cleaning agents on items that will mar or remove finishes (e.g. lacquer finishes). Doors shall be removed before repainting to paint bottom and top edges and then re-hung.

.4 Protect all adjacent interior surfaces and areas, including rating and instruction labels on doors, frames, equipment, piping, etc., from repainting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and make good any damage caused by failure to provide such protection.

3.5 PREPARATION – NEW WORK

.1 Protection:

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

.2 Surface Preparation:

.1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
.2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
.3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.

.3 Concrete floor preparation:

.1 Mechanically roughen surface to CSP 2-4 in accordance with Guideline 310.2R-2013, and then remove all dust and debris.
.2 Refer to Section 03 01 30.71 – Concrete Repair.

.4 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual requirements and coating manufacturer's recommendations. 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 clothes 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.

.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 pre-treatment 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 or vacuum cleaning.

.9 Prepare existing brick surfaces to be painted to firm substrate by removing dirt, dust, loose, un-adhered and flaking paint, oil, grease and other foreign substances in accordance with MPI requirements. Remove all products from surfaces, pockets, and corners to be painted by brushing with clean brushes or vacuum cleaning.

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

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

3.6 APPLICATION

.1 Repainting work shall comply with MPI Maintenance Repainting Manual.

.2 New work shall comply with MPI Architectural Painting Manual.

.3 Method of application shall 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.

.4 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, 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, brush marks from finished work, and repaint.

.5 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.

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

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

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

.9 Sand and dust between each coat to provide an anchor for next coat and to remove defects in previous coat (runs, sags, etc.) visible from a distance up to 1000 mm (39").

.10 To avoid air entrapment in applied coats, apply materials in accordance with manufacturer's spread rates and application requirements.

.11 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.

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

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

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

3.7 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.

3.8 FIELD QUALITY CONTROL

.1 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 Owner

.2 Advise Departmental Representative when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.3 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

.4 Painted interior surfaces shall be considered to lack uniformity and soundness if any of the following defects are apparent to the Departmental Representative:

- .1 brush / roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas, and foreign materials in paint coatings.
- .2 evidence of poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, corners and re-entrant angles.
- .3 damage due to touching before paint is sufficiently dry or any other contributory cause.
- .4 damage due to application on moist surfaces or caused by inadequate protection from the weather.
- .5 damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.).

.5 Painted interior surfaces shall be considered unacceptable if any of the following are evident under final lighting source conditions:

- .1 visible defects are evident on vertical surfaces when viewed at 90 degrees to the surface from a distance of 1000 mm (39”).
- .2 visible defects are evident on horizontal surfaces when viewed at 45 degrees to the surface from a distance of 1000 mm (39”).
- .3 visible defects are evident on ceiling surfaces when viewed at 45 degrees to the surface.
- .4 when the final coat on any surface exhibits a lack of uniformity of sheen across full surface area.

.6 Painted surfaces rejected by the Departmental Representative shall be made good at the expense of the Contractor. Small affected areas may be touched up; large affected areas or areas without sufficient dry film thickness of paint shall be repainted. Runs, sags of damaged paint shall be removed by scraper or by sanding prior to application of paint.

3.9 CLEANING

.1 Progress Cleaning: clean in accordance with Division 01: Cleaning. Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01: Cleaning. Perform cleaning after installation to remove construction and accumulated environmental dirt.

.3 Manage and dispose of demolition and construction waste materials in accordance with Division 01: Construction/Demolition Waste Management and Disposal.

3.10 PROTECTION

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

.2 Repair damage to adjacent materials caused by Work of this Section.

END OF SECTION