

ROOM NAME	FLOORS:		WALLS:								CEILINGS:		
	FLR.	BASE	SOUTH		WEST		NORTH		EAST		MAT'L.	FIN.	Notes
			MAT'L	FIN	MAT'L	FIN	MAT'L	FIN	MAT'L	FIN			
MAIN FLOOR													
100 Vestibule	EM/T1	T1	CB/GL	P/	CB	P	CW		CW		WD	CC	2
101 Entry Lobby	T1	T1	CB/GL	P/	GWB/GL	P/	CB/GL	P/	CB	P	WD	CC	2
102 Viewing Lobby	T1	T1	CB/GWB	P	CB/GWB	P	GWB/GL	P/	CB/GWB	P	WD/EX	CC/	2
103 Reception	SV	R	CB	P	CB/	P/	CB/GL	P/	CB/GL	P/	WD	CC	
104 Office	SV	R	CB	P	CB/GL	P/	CB/GL	P/	CB/GL	P/	GWB	P	
105 Small MPR	SV	R					CB	P			ACT		
106 Swim Office	SV	R	CB	P	CB	P	CB	P	CB	P	ACT/GWB	/P	
107 Office	SV	R		P		P		P	CB	P	ACT		
108 First Aid	SV	R		P	CB	P		P		P	ACT		
109 Corridor	T1	T1	CB/GL	P	CB	P	CB	P			WD	CC	
110 Univ.Change	T3	T3	CB	EP	CB	EP	CB	EP	CB	EP	GWB	EP	
111 Shower	T3	T3	T4/T5		T4/T5		T4/T5		T4/T5		EXP/GWB	EP	
112A Universal Change	T3	T3	CB	EP	CB	EP	CB	EP	CB	EP	GWB	EP	1
112B Universal Change	T3	T3	CB	EP	CB	EP	CB	EP	CB	EP	GWB	EP	1
113 Universal Change	T3A	T3A	CB	EP	CB	EP	CB	EP	CB	EP		EP	3
114 Female W/C	T3A	T3A	CB	EP	CB	EP	CB	EP	CB	EP		EP	3
115 Female Change	T3A	T3A	CB	EP	CB	EP	CB	EP	CB	EP		EP	3
116 Universal Change	T3A	T3A	CB	EP	CB	EP	CB	EP	CB	EP		EP	3
117 Male W/C	T3A	T3A	CB	EP	CB	EP	CB	EP	CB	EP		EP	3
118 Male Change	T3A	T3A	CB	EP	CB	EP	CB	EP	CB	EP		EP	3
119 Corridor	T3A	T3A		P		P	CB	P		P		EP	3
120 Lobby/MPR	T1	T1	CB/GL	P/	CB/GL	P/	CB/GL	P/	CB/GL	P/	ACT		
121 Storage	SV	R	CB	P	CB	P	CB	P	CB	P	EXP	EP	
122 W/C	T3	T3	CB	EP	CB	EP	CB	EP	CB	EP	GWB	EP	
123 Splashpad	T3/RSS	T3	CB/T4	EP/	CB/GL/T4	EP/	SD/T5/T4	EP/	CB/GL/T4	EP/	EXP/SD	EP	
124 Storage	T3	T3	CB	EP	CB	EP	CB	EP	CB	EP	VACT		
125 Janitor	T3	T3	CB	EP	CB	EP	CB	EP	CB	EP	VACT		
126 Storage	SV	R	CB	P	CB	P	CB	P	CB	P	GWB	P	
Exist. Pool Deck	T3	T3											
BASEMENT													
001 Crawlspace													
002 Mechanical	SC	R	CB		CB				CB		EXP		
003 Vestibule	SC	R	GWB	P	CO	P	GWB	P	GWB	P	EXP	P	
004 Service													
MEZZANINE													
200 Electrical	SC		CB	P		P		P	CB	P	EX		
201 Balcony	EX						CB	P			EX		

ABBREVIATIONS:

- | | |
|-------------------------------------|--|
| EM - ENTRY MAT | CB - CONCRETE BLOCK |
| EXP - EXPOSED STRUCTURE | WD - WD STRIPS AS PER DWGS & AS SPEC'D |
| SV - SHEET VINYL | CC - STAIN AND CLEAR COAT |
| SC - SEALED CONCRETE | P - PAINT |
| SSV - SAFETY SHEET VINYL | EP - EPOXY PAINT |
| SVS - SHEET VINYL SPORTS FLOORING | T1 to T6 - CERAMIC TILE TYPE |
| CVB - COVERED VINYL BASE (MATCHING) | SD - STEEL DECK |
| GWB - GYPSUM BOARD | ACT - ACOUSTIC CEILING TILE |
| R - RUBBER | VACT - VINYL FACED ACOUSTIC CEILING TILE |
| RT - RUBBER TILE | GL - GLAZING |
| VCT - VINYL COMPOSITE TILE | CW - CURTAIN WALL |
| LVT - LUXURY VINYL TILE | EX - EXISTING FINISH TO REMAIN |
| RSS - RUBBER SAFETY SURFACE | |

NOTES:

1. SEE FLOOR FINISH PLAN FOR LAYOUT TYPICAL
2. SEE RCP FOR LAYOUT
3. MAKE GOOD EXISTING FINISH AS REQUIRED

Part 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 09 29 00 - Gypsum Board.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM), latest edition.
 - .1 ASTM C 645, Standard Specification for Non-structural Steel Framing Members.
 - .2 ASTM C 754, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .2 Canadian General Standards Board (CGSB), latest edition.
 - .1 CAN/CGSB-1.40, Primer, Structural Steel, Oil Alkyd Type.
 - .2 CAN/CGSB-19.21-M, Sealing and Bedding Compound Acoustical.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Divert steel scraps from landfill by disposal into the on-site metal recycling bin or at nearest metal recycling facility.
- .2 Divert reusable materials for reuse at nearest used building materials facility.
- .3 Divert unused primer materials from landfill through disposal at a special wastes depot.

Part 2 PRODUCTS

2.1 MATERIALS

- .1 Non-load bearing channel stud framing: to ASTM C 645, stud sizes as indicated on drawings, roll formed sheet steel, for screw attachment of gypsum board, with knock-out service holes. Use 25 ga. typical thickness for standard interior non-load bearing wall assemblies and 20 ga. thickness for all ceiling and bulkhead assemblies, unless otherwise noted on Architectural or Structural drawings.
- .2 Floor and ceiling tracks: in widths to suit stud sizes with 32 mm flange height, to ASTM C 645, and slotted deep top tracks.
- .3 Ceiling track at exterior walls: in widths to suit stud sizes with a slotted, deeper flange height for deflection movement, to ASTM C 645.
- .4 Metal channel stiffener: size as indicated on drawings, thickness as indicated on drawings cold rolled steel, coated with rust inhibitive coating.
- .5 Due to high humidity conditions, all steel members shall have a **hot-dipped galvanized finish typically**; quality to ASTM A653/A653M, with [Z180] [Z275] designation coating.
- .6 Acoustical sealant: to CAN/CGSB-19.21.

- .7 Acoustic/dampproofing separator: moisture resistant, 3mm thick, sill foam to match track widths, or 2 strips of 12mm wide closed cell, self-adhesive foam tape, in lengths to suit walls.

Part 3 EXECUTION

3.1 ERECTION

- .1 Layout continuous top and bottom tracks against structure/floor/ceiling substrates to match those indicated on the drawings. At all sound rated walls AND where steel stud walls contact masonry/concrete substrates, typically provide a moisture resistant separator layer between the top and bottom track and the adjacent substrate. At sound rated walls, also continue this separator layer at the end studs that meet adjacent surfaces/walls.
- .2 Typically secure tracks at 600 mm o.c. minimum to floor and to structure.
- .3 Extend steel stud walls to meet underside of structure above and as noted/detailed on drawings. Place studs vertically into floor and ceiling tracks, spaced as indicated on drawings and not more than 50mm from adjacent walls, and at each side of openings and corners. Attach studs to bottom and ceiling tracks using screws, unless indicated otherwise.
- .4 Where non-loadbearing stud walls meet structural items, maintain a deflection gap of 25mm (1") typically to avoid transmission of loads, with a slotted, deeper top track.
- .5 Where steel stud walls meet substrates, which are not level, the bottom and top tracks shall follow the substrate as snugly as possible. Fill all gaps between tracks and substrate with low-expanding foam insulation or acoustic caulking, to suit.
- .6 Cross brace steel studs as required to achieve the rigidity required by manufacturer's instructions. Erect metal studding to tolerance of 1:1000.
- .7 At door/window rough openings and other gaps in stud walls which are wider than the stud spacing indicated, typically secure two continuous, full height, boxed steel studs together with return flanges facing each other, on each side of these openings/gaps.
- .8 At head of all openings in non-loadbearing walls, typically provide a boxed steel stud header lintel, suitable for the opening span as recommended by manufacturer. Include a bottom track and top track in the lintel and a bottom track to terminate the intermediate studs above the lintel. Reinforce jambs of openings typically with boxed double steel studs each side, in accordance with manufacturer's instructions.
- .9 Coordinate erection of studs with other related Work including: service lines, conduit, openings for door and window frames, built-in equipment, cabinets, access panels, and other cutouts and openings. Coordinate any clearances as required by other equipment suppliers.
- .10 Provide a solid 38mm x wood stud or blocking secured between steel studs or inserted within steel studs, as required for attachment of millwork, plumbing fixtures, electrical boxes, washroom accessories, miscellaneous specialties, and other items to be mounted onto steel stud walls.
- .11 Unless otherwise noted, steel studs in ceiling and bulkhead framing to be 20 ga. typical @ 400mm o.c.

END OF SECTION

PART 1 GENERAL

.1 REFERENCES

.1 Aluminum Association, latest edition.

.1 Designation for Aluminum Finishes.

.2 American Society for Testing and Materials (ASTM), latest edition.

.1 ASTM C 36, Specification for Gypsum Wallboard.

.2 ASTM C 442, Specification for Gypsum Backing Board and Coreboard.

.3 ASTM C 475, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.4 ASTM C 557, Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.

.5 ASTM C 630, Specification for Water-Resistant Gypsum Backing Board.

.6 ASTM C 840, Specification for Application and Finishing of Gypsum Board.

.7 ASTM C 954, Specification for Steel Drill Screws for the Application of Gypsum Board.

.8 ASTM C 1002, Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases.

.9 ASTM C 1047, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

.3 Canadian General Standards Board (CGSB), latest edition.

.1 CAN/CGSB-51.34-M, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

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

.4 Underwriters Laboratories of Canada (ULC), latest edition.

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

.2 SITE ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature minimum 10°C, maximum 21°C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.

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

.3 DESCRIPTION OF WORK

.1 The Work herein specified includes the following:

.1 Gypsum drywall applied to steel stud framing system.

- .2 Gypsum drywall applied to wood framing.
- .3 Gypsum drywall backing board as substrate for other finishes.
- .4 Gypsum drywall applied to solid substrates.
- .5 Gypsum drywall applied to ceilings.
- .6 Gypsum drywall finishing including joint tape and compound treatment.
- .2 The Work included under this Section shall conform to the industry standard and be accepted by the local construction and trade associations.
- .4 QUALITY ASSURANCE
 - .1 Fire-resistance ratings: Where fire-resistance ratings are indicated on drawings, provide the assembly identical to that referenced on the drawings. Recognized sources for tested assemblies are the latest editions of ULC Fire Resistance Directory, the applicable Building Code, GA Fire Resistance Design Manual, Warnock Hersey (WHI), or other agencies which are acceptable to authorities having jurisdiction.
- .5 DELIVERY, STORAGE AND HANDLING
 - .1 Deliver materials in original packages, containers or bundles bearing brand name and identification.
 - .2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.
 - .3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.
- .6 PROJECT CONDITIONS
 - .1 Environmental Requirements General: Comply with requirements of gypsum board application standards for environmental conditions before, during and after application of gypsum board.
 - .2 Cold Weather Protection: When outdoor temperature is below 10 degrees C, maintain building working temperature of not less than 10 degrees C for a period of 48 hours prior to, during and following application of gypsum board and joint treatment materials or bonding adhesives.
 - .3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.
- .7 WASTE MANAGEMENT AND DISPOSAL
 - .1 Separate and recycle waste materials in accordance with Section 01 74 21.
 - .2 Remove from the Site and dispose of packaging materials at appropriate recycling facilities.

- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.
- .4 Divert unused gypsum from landfill to gypsum recycling facility for disposal approved by Contract Administrator.
- .5 Divert unused metal materials from landfill to metal recycling facility approved by Contract Administrator.
- .6 Divert unused wood materials from landfill to recycling, composting facility approved by Contract Administrator.
- .7 Divert unused paint and caulking material from landfill to official hazardous material collections locations.
- .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

.1 MATERIALS

- .1 Standard interior gypsum board: to ASTM C 36, regular, 1220mm wide x maximum practical length, square ends with edges bevelled. Type X requirements and thicknesses as noted on drawings. Preference should be given to gypsum board manufacturers in the Province of the Work and those products, which have recycled content. Also refer to the specific gypsum manufacturer as noted in the tested fire-rated assemblies.
- .2 Shaftwall system (to fire ratings indicated on drawings): Gypsum liner panels to ASTM standards, 25 mm thick, 610 mm wide x length to suit, with integral "C-T" or "I" shaped steel studs in a ULC or cUL tested system. Acceptable products: CertainTeed GlasRoc Shaftliner Type X, or CGC Sheetrock Glass Mat Liner Gypsum Panel.
- .3 Glass mat Water-resistant board required for walls and ceilings in washrooms and shower areas to: ASTM C1178/C 1178M, 13mm thick x 1220mm wide x maximum practical length. Acceptable products: GlasRoc by CertainTeed, DensArmor Plus by Georgia Pacific, or FibeRock Aqua-Tough by CGC.
- .4 Water resistant backer board for all stud walls in wet areas behind ceramic tile: to ASTM C630/C630M regular, 13 mm thick, in maximum practical width and length. Acceptable products: Durock Next Gen Cement Board (CGC), Diamondback Tile Backer (CertainTeed); cover joints with tape type as per manufacturer's directions.
- .5 Exterior wall and soffit sheathing board: Georgia-Pacific DensGlass Gold, or CGC Securock Glass Mat sheathing panels. Thicknesses as noted on drawings.
- .6 Exterior roof parapet and roof sheathing board: DensDeck Prime Fireguard Roof Board by Georgia-Pacific, or CGC Securock Gypsum Fiber Roof Board. 13 (1/2") thickness unless otherwise noted.
- .7 Drywall furring channels and resilient channels: 0.5 mm core thickness steel for screw attachment of gypsum board.

- .8 Steel drill screws: to ASTM C 1002 or latest.
- .9 Stud adhesive: to CAN/CGSB-71.25 or latest.
- .10 Laminating compound: as recommended by manufacturer, asbestos-free.
- .11 Sealants: in accordance with Section 07 92 00.
- .12 Polyethylene: to CAN/CGSB-51.34 latest, Type 2.
- .13 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.
- .14 Joint compound: to ASTM C 475 or latest, asbestos-free.
- .15 Corner reinforcement: purpose-made to reinforce inside and outside corner joints of gypsum board assemblies, metal with paper extensions, for full continuous height of joint.
- .16 Interior casing beads and other trim: purpose-made to finish exposed edges of gypsum board, vinyl, prefinished white colour.
- .17 Interior control joints: purpose-made, metal or vinyl, to suit 13mm (1/2") gap between gypsum board sheets unless otherwise noted or detailed. Prefinished white colour.
- .18 Metal reveals and mouldings where indicated on drawings: extruded aluminium in a clear anodized finish (unless otherwise noted) in sizes to suit the intended purpose, by Fry Reglet Corporation, Flannery Inc..

PART 3 EXECUTION

.1 ERECTION

- .1 Apply and finish gypsum board in accordance with ASTM C 1280, ASTM C 840 (or latest edition), and the Gypsum Association, unless specified otherwise.
- .2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C 840 or latest 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 the Work level to tolerance of 1:1200.
- .5 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers and grilles.
- .6 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .7 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .8 Install wall furring for gypsum board wall finishes in accordance with ASTM C 840 or latest, except where specified otherwise.

- .9 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
 - .10 Furr duct shafts, beams, columns, pipes and exposed services where indicated.
 - .11 Erect drywall resilient furring transversely across studs, spaced maximum 600 mm oc and not more than 150 mm from ceiling/wall juncture. Secure to each support with 38 mm common nail or 25 mm drywall screw.
 - .12 Install a 150mm continuous strip of gypsum board along base of partitions where resilient furring is required.
- .2 APPLICATION
- .1 Do not apply gypsum board until bucks, anchors, blocking, and electrical and mechanical Work are reviewed by Contract Administrator and local authorities.
 - .2 Follow the wall assembly exactly as specified in the tested fire-rated assemblies referenced on the drawings. Where not a fire rated assembly, apply single or double layer gypsum board to wood or metal furring or framing (as noted on drawings), using separate fasteners for first layer and for the second layer, with a maximum fastener spacing of 300mm o.c.
 - .3 Apply gypsum board to concrete or concrete block surfaces where indicated, using laminating adhesive. Brace or fasten gypsum board until fastening adhesive has set. Gypsum board shall be mechanically fastened at top and bottom of each sheet.
 - .4 Unless otherwise noted, apply a water-resistant substrate on walls to receive a tile finish and at all other areas subject to moisture ingress. Apply water-resistant sealant to edges, ends, and cut-outs which expose the panel core. Do not apply joint treatment on areas to receive wall tile finish.
 - .5 Where gypsum assemblies meet building structure and other fixed building components, seal the full perimeter of cut-outs.
 - .6 Apply a base layer of gypsum board at ceilings prior to the application on walls and apply face layers in same sequence. Offset joints between layers of gypsum board at least 300mm (12") apart. Apply base layers at right angles to support unless otherwise noted.
- .3 INSTALLATION
- .1 Erect accessories straight, plumb or level, rigid and at the 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
 - .2 Install casing beads or other approved trim at all exposed gypsum edges, including the perimeter of suspended gypsum ceilings and where the gypsum board edge butts into different materials.
 - .3 Install continuous insulating strips at gypsum board edges and at casing beads where they abut to exterior window or door frames, for a thermal break.

- .4 Install control joints straight and true. Unless noted otherwise, locate control joints as recommended by the Gypsum Association and at the following locations:
 - .1 where a wall, partition, or ceiling traverse a construction joint (expansion, seismic, or otherwise).
 - .2 where wall/partition lengths exceed a length of 9100mm (30') maximum.
 - .3 where the linear dimension in an exterior or interior ceiling exceeds 9100mm (30') and the total area exceeds 84 s.m. (900 s.f.).
 - .4 where ceiling framing members change direction
 - .5 where indicated on the drawings as a design feature or accent.
- .5 Install access doors in gypsum assemblies for access to electrical and mechanical items where required and as specified in respective Sections (access doors to be fire-rated if occurring in a fire-rated assembly). Rigidly secure frames to furring or framing systems.
- .6 Install ceiling boards in the direction that will minimize the number of end-but joints. Stagger end joints at least 300mm (1'-0").
- .7 Install gypsum board with face side out. Do not install damaged or damp boards.
- .8 Install gypsum board vertically on walls 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.
- .9 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite side of wall.
- .10 Where Work of this section affects adjacent areas negatively, provide a continuous polyethylene dust barrier to enclose and contain the area of work.
- .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. All Work to be in accordance with the Gypsum Association and feather coats onto adjoining surfaces to achieve a difference of 1mm maximum.
- .12 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.
- .13 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.
- .14 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .15 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.
- .16 Remove ridges by light sanding or wiping with damp cloth.

END OF SECTION

Part 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 03 30 00 – Cast-in-place Concrete
- .2 Section 07 92 00 - Joint Sealants
- .3 Section 09 29 00 – Gypsum Board
- .4 Section 09 65 00 - Resilient Flooring
- .5 Section 32 79 00 – Rubber Safety Surfacing

1.2 REFERENCES

- .1 American National Standards Institute [ANSI/Ceramic Tile Institute (CTI)], latest edition
 - .1 ANSI A108.1, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1)
 - .2 ANSI A137.1, Specifications for Ceramic Tile
 - .3 CTI A118.3, Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (ANSI A108.1)
 - .4 CTI A118.4, Specification for Latex Portland Cement Mortar (ANSI A108.1)
 - .5 CTI A118.5, Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (ANSI A108.1)
 - .6 CTI A118.6, Specification for Ceramic Tile Grouts (ANSI A108.1)
- .2 American Society for Testing and Materials (ASTM International), latest edition
 - .1 ASTM C144, Specification for Aggregate for Masonry Mortar
 - .2 ASTM C207, Specification for Hydrated Lime for Masonry Purposes
 - .3 ASTM C847, Specification for Metal Lath
 - .4 ASTM C979, Specification for Pigments for Integrally Coloured Concrete
 - .5 ASTM F1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
 - .6 ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
- .3 Canadian General Standards Board (CGSB), latest edition
 - .1 CAN/CGSB-51.34-M, Vapour Barrier, Polyethylene Sheet for Use in Building Construction
 - .2 CGSB 71-GP-22M, Adhesive, Organic, for Installation of Ceramic Wall Tile
 - .3 CAN/CGSB-75.1-M, Tile, Ceramic
 - .4 CAN/CGSB-25.20, Surface Sealer for Floors
- .4 Canadian Standards Association (CSA International), latest edition
 - .1 CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A5, A8, A23.5, A362, A363, A456.1, A456.2, and A456.3)
 - .2 CSA A123.3-98, Asphalt Saturated Organic Roofing Felt
- .5 Terrazzo Tile and Marble Association of Canada (TTMAC) and others, latest edition
 - .1 TTMAC Tile Specification Guide 09 30 00, Tile Installation Manual
 - .2 ICRI Technical Guideline No. 310.2, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays
 - .3 TCNA (HB), Handbook for Ceramic, Glass and Stone Tile Installation

1.3 PRODUCT DATA

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures. Include manufacturer's information for:
 - .1 Each tile type, size, and shape required, including slip resistance and frost resistance where applicable.
 - .2 Tile chemical resistance to mortar and grout.
 - .3 Bonding agent characteristics
 - .4 Repair mortar and mortar bed
 - .5 Accessories specified including waterproofing membrane and reinforcing fabric.
 - .6 High performance, marine-grade sealants
 - .7 Tile setting mortar characteristics
 - .8 Each grout type, colour, and characteristics
 - .9 Grout sealer
 - .10 Cleaning compounds
 - .11 Regional materials, recycled content, and other data for LEED requirements, where applicable.

1.4 SUBMITTALS

- .1 All submittals to comply with Section 01 33 00.
- .2 Submit manufacturer's technical information and colour charts for each product specified.
- .3 Upon request, submit samples of each product in accordance with Section 01 33 00, including 300 x 300mm (12" x12") sample panels of each tile colour, texture, size, and pattern, including related trims and profiles at edges, corners, and transitions. Adhere tile samples to 11mm thick plywood and grout joints to represent project installation.

1.5 QUALITY ASSURANCE

- .1 For warranty requirements and compatibility, all tile grout, setting materials, additives, accessories, and factory-prepared dry-set mortars shall be from one manufacturer.
- .2 Installer qualifications: Installers shall be trained and experienced in tile work with a minimum of two (2) years proven experience in pool projects of a similar size and scope. Upon request, provide a list of previously completed projects and dates to prove this.
- .3 Pre-installation meeting: At least 1 week prior to start of Work of this Section, the Contractor shall arrange for a meeting including tile manufacturer's representative/tile supplier, tile installer, related Subcontractors, Contract Administrator and The City. This meeting shall discuss tile and installation compatibility, surface preparation, grouting procedures, and maintenance & cleaning procedures.

1.6 DELIVERY, STORAGE AND HANDLING

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

1.7 ENVIRONMENTAL CONDITIONS

- .1 Ensure that building is completely enclosed and maintain humidity levels (consistent with occupied standards) and maintain air/substrate temperatures at +12 °C for 48 h before, during, and 48 h after installation. Ventilate spaces in accordance with manufacturer's written instructions.
- .2 Do not install tiles at temperatures less than +12 °C or higher than +38 °C.
- .3 Do not apply epoxy mortar and grouts at temperatures less than +15 °C or higher than +25 °C.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21.
- .2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material for recycling in accordance with local regulations.
- .3 Unused adhesive, sealant and coating materials must be disposed of at official hazardous material collections locations. Do not dispose of these into the sewer, streams, lakes, onto the ground, or other locations where it will pose a health or environmental hazard.
- .4 Broken ceramic materials must be diverted from landfill to a local facility as approved by Contract Administrator.

1.9 EXTRA MATERIAL

- .1 Provide maintenance materials, in accordance with Section 01 78 00, and to a minimum 2% of the total area of each tile type, size, and colour specified, for The City. Maintenance material to be from same production run as installed material.

1.10 WARRANTY

- .1 Provide a written warranty from each tile manufacturer and from the tile installer, to cover any defects in manufacture, workmanship, and installation of Work of this Section for one (1) year from the Date of Substantial Performance.

Part 2 PRODUCTS

2.1 INTERIOR FLOOR AND CEILING TILES

- .1 **T1:** Porcelain tile to CAN/CGSB-75.1, Class MR (02 -3.0%), frost resistant with a slip resistant surface. Acceptable products: 300 x 600mm size, Olympia Tile Regal Collection. Colours: allow for 70% field colour and 30% accent colour, to be selected by Contract Administrator from standard range. Base tile: to match floor tile for each room scheduled and cut to 150mm high. Locations: floors and walls, as scheduled and as indicated on drawings.
- .2 **T3:** Porcelain mosaic tile to CAN/CGSB-75.1 or latest, Type, Class MR (02 -3.0%), dot-mounted, unglazed, slip resistant, and **rated for pools** and heavy commercial traffic. Acceptable products: 'Keystones' series by Daltile. Contract Administrator to confirm colour selections and locations.
 - .1 25 x 25mm (1" x 1") Hexagon shape mosaic at Pool/splash pad deck and at Pool floor typically. Include Universal nosing trim C-701 around Pool edge gutter. Assume approx. 70% light field colour from Group 1, 15% dark accent colours from Group 2, and 15% dark accent colours from Group 3 (for depth markers/identification at Pool floor and at Pool deck); refer to drawings.
 - .2 At the top, mid-landing, and bottom landing of ramp into Pool, provide same Hexagon floor tile in contrasting texture & darker colour. Unless indicated

- otherwise on drawings, minimum 'detectable' surface area shall be 914 (36") deep minimum x stair/ramp width, starting 180mm back from landing edge.
- .3 25 x 25mm (1" x 1") Hexagon shape mosaic tile at **New** Shower and Change Room floors; refer to drawings. Assume approx. 70% light field colour from Group 1, 15% dark accent colours from Group 2, and 15% dark accent colours from Group 3; to be confirmed by Contract Administrator.
 - .4 **T3A:** 25 x 25mm (1" x 1") square shape mosaic tile at **Existing** Shower and Change Room floors; refer to drawings. Match to existing mosaic colours; to be confirmed by Contract Administrator.
- 2.2 INTERIOR WALL TILES (Ceramic glazed wall tile to CAN 2-75.1M or latest; refer to Room Finish Schedule and drawing for locations).
- .1 **T4:** Porcelain mosaic tile to CAN/CGSB-75.1 or latest, Type, Class MR (02 -3.0%), dot-mounted, unglazed slip-resistant, and **rated for pools**. Acceptable products: 'Keystones' series by Daltile.
 - .1 25 x 25mm (1" x 1") Hexagon shape mosaic tile in the Pool, Pool deck areas, and in **New** Shower and Change Rooms typically. Assume approx. 70% light field colour from Group 1, 15% dark accent colours from Group 2, and 15% dark accent colours from Group 3 (for depth markers/identification at Pool wall); refer to drawings.
 - .2 **T5:** Porcelain mosaic tile to CAN/CGSB-75.1 or latest, Type, Class MR (02 -3.0%), dot-mounted, unglazed slip-resistant, and rated for pools. Acceptable products: 'Keystones' series by Daltile. Colour: 25 x 25mm (1" x 1") square shape, "Mirage" blend. Locations: accent strips on walls and benches in Pool/Splash Pad area, and where indicated on drawings.
- 2.3 A: NEW WADING POOL, ALL POOL DECK AREAS, AND CORRIDORS FROM SHOWER ROOMS TO POOL DECK
- .1 Provide a waterproofing system assembly purpose-made for an indoor pool with a manufacturer's written 25-year limited Standard Warranty Program (all products from one manufacturer), as follows:
 - .1 Bonding Agent at Floors: premium grade, single-component, high-performance, polymer-modified, thin-set mortar for interior or exterior commercial use, to meet ANSI A118.4E, A118.11, and A118.15E. High content of unique dry polymer for superior adhesion. Acceptable products: Mapei 'Ultraflex 3'.
 - .2 Bonding Agent at Walls:
 - .1 One part pre-blended, cement-based, high-strength, polymer-modified thick-bed and render mortar, with select aggregates, to meet ANSI A108.1. Acceptable products: Mapei 'Modified Mortar Bed'.
 - .2 And one part single-component, concentrated liquid latex admixture to ASTM C-1059 Type I and II. Acceptable products: Mapei 'Planicrete AC'.
 - .2 Render Coat/Mortar Bed: One part pre-blended, cement-based, high-strength, polymer-modified thick-bed and render mortar, with select aggregates, to meet ANSI A108.1. Acceptable products: Mapei 'Modified Mortar Bed'.

- .3 Waterproofing/Crack Isolation Membrane with reinforcing fabric: fast-setting, flexible, thin, load-bearing, premium latex-based membrane, to ANSI A119.10 and A118.12. Acceptable products: Mapei 'Mapelastic AquaDefense'. 2 coats as recommended by manufacturer. Typically continue membrane up walls and vertical surfaces adjacent to pool deck.
 - .4 Reinforcing Fabric: ready-to-use, flexible, alkali-resistant, nonwoven polyester fabric for embedment with waterproofing and crack isolation membrane. Acceptable products: Mapei 'Reinforcing Fabric'. Same locations as waterproof membrane.
 - .5 Tile Setting Mortar: premium grade, single-component, high-performance, polymer-modified, thin-set mortar for interior or exterior commercial use, to meet ANSI A118.4E, A118.11, and A118.15E. High content of unique dry polymer for superior adhesion. Acceptable products: Mapei 'Ultraflex 3'. Typically continue this mortar on adjacent vertical walls above the pool deck.
 - .6 Epoxy Grout: premium-grade, chemical-resistant, stain-resistant, non-sagging, water-cleanable, 100% solids, high-strength epoxy mortar to ANSI A118.3. 'Sanded' for floors; 'unsanded' for walls, ceilings, and benches. Acceptable products: Mapei 'Kerapoxy CQ'. 2 colours to be selected by Contract Administrator from standard range available.
- 2.4 B: EXISTING AND NEW SHOWER AREAS, CHANGE ROOMS, AND WASHROOMS
- .1 Mortar Bed Bond Coat: high-performance, polymer-modified, lightweight, single-component thin-set mortar to ANSI A118.4, A118.1. Acceptable products: Mapei 'Ultralite Mortar'.
 - .2 Mortar Bed and Sloped Mortar Bed infill at floor drains: One part pre-blended, cement-based, high-strength, polymer-modified thick-bed and render mortar, with select aggregates, to meet ANSI A108.1. Acceptable products: Mapei 'Modified Mortar Bed'.
 - .3 Flexible sealant: 100% silicone sealant for heavy traffic and expansion/movement joints exceeding ASTM C920, Type S, Grade NS, Class 25, ASTM C794, and TCNA EJ171.
 - .4 Waterproofing/Crack Isolation Membrane with reinforcing fabric: fast-setting, flexible, thin, load-bearing, premium latex-based membrane, to ANSI A119.10 and A118.12. Acceptable products: Mapei 'Mapelastic AquaDefense'. 2 coats as recommended by manufacturer. Typically continue membrane up wall behind tile and mortar on adjacent wall surfaces.
 - .5 Reinforcing Fabric: ready-to-use, flexible, alkali-resistant, nonwoven polyester fabric for embedment with waterproofing and crack isolation membrane. Acceptable products: Mapei 'Reinforcing Fabric'. Same locations as waterproof membrane.
 - .6 Tile Setting Mortar: high-performance, polymer-modified, lightweight, single-component thin-set mortar to ANSI A118.4, A118.1. Acceptable products: Mapei 'Ultralite Mortar'. Typically continue this mortar on adjacent vertical walls.
 - .7 Epoxy Grout: chemical-resistant, stain-resistant, non-sagging, water-cleanable, two-component, 100%-solids epoxy grout and mortar with color-coated quartz to ANSI A118.3. 'Sanded' for floors; 'unsanded' for walls, ceilings, and benches. Acceptable products: Mapei 'Kerapoxy' CQ. 2 colours to be selected by Contract Administrator from standard range available.

- 2.5 C: ENTRY VESTIBULE 100, LOBBY 102, CORRIDOR 109, & LOBBY 120
- .1 Mortar Bed Bond Coat: high-performance, polymer-modified, lightweight, single-component thin-set mortar to ANSI A118.4, A118.1. Acceptable products: Mapei 'Ultralite Mortar'.
 - .2 Mortar Bed: One part pre-blended, cement-based, high-strength, polymer-modified thick-bed and render mortar, with select aggregates, to meet ANSI A108.1. Acceptable products: Mapei 'Modified Mortar Bed'.
 - .3 Tile Setting Mortar: high-performance, polymer-modified, lightweight, single-component thin-set mortar to ANSI A118.4, A118.1. Acceptable products: Mapei 'Ultralite Mortar'. Typically continue this mortar up onto adjacent vertical walls.
 - .4 Epoxy Grout: chemical-resistant, stain-resistant, non-sagging, water-cleanable, two-component, 100%-solids epoxy grout and mortar with color-coated quartz to ANSI A118.3. 'Sanded' for floors; 'unsanded' for walls, ceilings, and benches. Acceptable products: Mapei 'Kerapoxy' CQ. 2 colours to be selected by Contract Administrator from standard range available.
- 2.6 D: NEW SPLASH PAD 123
- .1 Bonding Agent at Floors: premium grade, single-component, high-performance, polymer-modified, thin-set mortar for interior or exterior commercial use, to meet ANSI A118.4E, A118.11, and A118.15E. High content of unique dry polymer for superior adhesion. Acceptable products: Mapei 'Ultraflex 3'.
 - .2 Render Coat/Mortar Bed: One part pre-blended, cement-based, high-strength, polymer-modified thick-bed and render mortar, with select aggregates, to meet ANSI A108.1. Acceptable products: Mapei 'Modified Mortar Bed'.
 - .3 Waterproofing/Crack Isolation Membrane with reinforcing fabric: fast-setting, flexible, thin, load-bearing, premium latex-based membrane, to ANSI A119.10 and A118.12. Acceptable products: Mapei 'Mapelastic AquaDefense'. 2 coats as recommended by manufacturer. Typically continue membrane up walls and vertical surfaces adjacent to pool deck.
 - .4 Rubber safety floor surfacing: by Section 32 79 00.
- 2.7 ACCESSORIES
- .1 Transition Strips in all areas, except Entry Vestibule and Lobby: extruded, anodized clear aluminium, purpose made for each type of junction, confirm to suit material thicknesses. For thinner tile: Schluter-Jolly 100-AT at edge terminations, Schluter-Rondec-RO-100-AT at exposed horizontal or vertical corners and at horizontal sill edges. For thicker tile: Schluter-Jolly A 125AT at edge terminations, Schluter-Reno-V AEVT125B20 at edge transitions to other flooring of less thickness, Schluter-Rondec RO 125AT at top of horizontal sill edges with corners and connectors. At wall/floor junctions in Washrooms and Change Rooms only (with matching corners and connectors): Schluter -Dilex AHK 1S 125AT where wall tile meets floor tile, and Schluter-Dilex-AHKA-125-AT where wall tile meets flooring of a different material.
 - .2 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of 40 percent when used in accordance to TTMAC Detail 301EJ.
 - .3 Other sealants in accordance with Sections 07 92 00 and 01 47 15. Acceptable products: Mapei 'Mapisil T', Laticrete 'Latasil'. Colours to be selected by Contract Administrator from standard available range.

2.8 CLEANING COMPOUNDS

- .1 Specifically designed for cleaning masonry and concrete, which will permit good bonding of patching and leveling compounds, elastomeric waterproofing membranes, and tile setting mortars. Materials containing acid or caustic material are not acceptable.

Part 3 EXECUTION

3.1 PREPARATION

- .1 Concrete surfaces shall be fully cured and free of hydrostatic pressure. The maximum allowable moisture is 1.36 kg/92.9 s.m. (3 lb/100 s.f.) per 24 hours per ASTM F1869 or up to 85% relative humidity per ASTM F2170. The quality of concrete must permit direct tensile bond of greater than 1.21 MPa (175 lbs/s.in.).
- .2 Perform surface preparation in compliance with the most recent ICRI Technical Guideline No. 310.2. Concrete must be clean and rough. Remove all oil, dirt, debris, paint sealers and unsound concrete. Roughen surface of concrete by sand blasting, shot blasting, or other engineerin-approved methods, to produce a surface profile matching CSP 5 per ICRI 310.2. The final step in cleaning shall be the complete removal of all residues by a 35 MPa (5000 lbs/s.in.) pressure washing with a rotating tip held 300 (12") from the surface. Wall surfaces must be left in a Saturated Surface Dry (SSD) condition up to one hour prior to installation of bonding agent and repair mortar. Substrates to comply with requirements in ANSI A1-8.1 and TTMAC 09 30 00.
- .3 Commencement of Work of this Section means acceptance of substrate conditions and responsibility for any issues arising after the fact, that could have been rectified prior to commencement of Work.

3.2 INSTALLATION

- .1 All Work shall be in accordance with TTMAC Tile Installation Manual "Ceramic Tile", ANSI A108 series, manufacturer's written instructions, and be appropriate to the conditions of each tile location and substrate type.
- .2 Bonding agent: After concrete surface is prepared and cleaned, apply agent with a brush, roller, broom, or trowel, working it into the profiled surface to thickness recommended by manufacturer. Apply mortar bed onto bonding agent while it is tacky.
- .3 Repair mortar: Apply this as a scrub coat with pressure to the prepared surface. Before the scrub coat dries, quickly apply additional repair mortar by trowel or spray using a low-pressure screw/rotostator pump. Let cure for 24 hours minimum at 23 deg. C and 50% RH before application of waterproofing membrane.
- .4 Mortar bed: While bonding agent is still tacky, spread a thin layer of mortar bed onto floor surface using a straight edge. With a wood or magnesium float, work into the bonding agent. Immediately follow with more mortar bed to desired thicknesses, compacting and closing up the surface. Let cure for 24 hours minimum at 23 deg. C and 50% RH before applying waterproofing membrane.
- .5 Waterproofing membrane and reinforcing fabric:
 - .1 Confirm that substrate is sufficiently cured and that surface temperature is at least 2.8 deg. C (5 deg F) above dew point to avoid any condensation.
 - .2 Using a roller/brush, or spray method, apply a first coat of membrane generously at critical junctions including corners, coves, drains, and penetrations. Carefully lay reinforcing fabric immediately into membrane to achieve 100% coverage. Lay fabric at a 90 deg. angle in corners and to avoid air pockets, bubbles, or

- excess material behind and overlap all fabric joint seams 50 (2") minimum. Immediately apply another coat of membrane over top to fully embed fabric.
- .3 Apply a full coat of membrane over entire area to be waterproofed including over first coat at critical junctions mentioned above. Carefully lay fabric in all corners and over cold joints and immediately apply another coat of membrane to fully embed. Let cure for 24 hours. Expansion joints have special instructions; please contact manufacturer's technical dept. Apply a second coat of membrane over entire installation for 100% coverage again and to achieve minimum final dry film thickness recommended by manufacturer. Let cure for 24 hours minimum at 23 deg. C (73 deg. F) and 50% RH.
 - .4 Inspect finished surface and repair pinholes and voids by patching with fresh waterproofing membrane.
 - .6 Apply a high performance, marine-grade silicone sealant, over the waterproofing
 - .7 After 72 hours at 23 deg. C (73 deg. F) and 50% RH, perform a flood test. Filling and emptying rates shall not exceed 750 (30") per 24 hours. Pool tanks must be filled with clean and potable city water, with a maximum temperature difference between substrate and filling water, not more than 10 deg. C (28 deg F).
 - .8 Lay out tile patterns to match those indicated on drawings and details, with perimeter tiles not less than 1/2 full size. Centre tile layouts generally.
 - .9 Tile setting mortar:
 - .1 Use a notched trowel with sufficient depth to achieve more than 95% mortar contact between tile and substrate to meet ANSI A108.5. Back butter tiles to help achieve this. With pressure, apply a coat using trowel's flat side to key mortar into substrate.
 - .2 Apply additional mortar, combing it in a single direction with the notched side, and spread only as much mortar as can be tiled before product skins over. Open time varies with jobsite conditions.
 - .3 Place tiles firmly into wet mortar and push tiles back and forth, perpendicular to trowel lines, to collapse mortar ridges and to help achieve maximum coverage. Ensure proper contact between mortar, tile, and substrate by periodically lifting a few tiles to check for acceptable coverage.
 - .4 Fit tile accurately at corners and at fixtures, drains, and penetrations. Cut tile edges accurately and smoothly.
 - .5 Remove excess mortar from joints so at least 2/3 of joint depth is left for grouting.
 - .5 Provide expansion and control joints in accordance with TTMAC 301MJ method.
 - .10 Grouting:
 - .1 Let mortar cure for minimum 24 hours at 23 deg. C (73 deg. F) and 50% RH before grouting.
 - .2 Refer to tile manufacturer regarding grout release over certain types of porcelain or textured tile surfaces, where a fine porosity may trap fine colour pigments. Site test with a small mock-up before final grouting.
 - .3 Remove all spacers, pegs, ropes, and strings. Clean joints from all standing water, dust, dirt, and foreign matter. Remove any excess mortar so 2/3 joint depth is left for grouting.
 - .4 Refer to manufacturer's written instructions and transfer grout product from container into small piles near area to be grouted.

- .5 Using a hard rubber float with a sharp edge, force grout into tile joints in a continuous manner, leaving the grout flush with tile edges. Ensure that joints are 100% filled, well-compacted, and free of voids or gaps.
- .6 Immediately drag float across tile faces to thoroughly remove any excess grout before it sets. Grout and clean in small areas only.
- .7 On horizontal surfaces: apply liberal amount of cold water to freshly grouted areas and scrub tile surfaces diagonally using a nonwoven nylon white scouring pad. Apply enough pressure to loosen any film without removing grout from joints. Rinse pads frequently and do not get any water into ungrouted joints. Clean any excess water off tile surfaces. Within 15 to 20 minutes, perform a final wash with a clean, nylon white, scouring pad to remove any remaining residue.
- .8 On vertical surfaces: In small workable areas, lightly mist tile surfaces using a spray bottle filled with clean water. Use a nonwoven nylon white scouring pad, clean off residue without removing grout from joints. Rinse pads frequently and do not get any water into ungrouted joints. After initial rinsing, dress smooth any grout imperfections by striking the grout with a sharp-edged cellulosic sponge. Use only fresh grout material to fill any voids discovered during cleaning.
- .9 Epoxy grout application: Mix parts A and B in exact quantity ratios in strict accordance with manufacturer's instructions, and in only small quantities that can be applied well within time limits determined by manufacturer. Apply mixed product immediately, in strict accordance with the manufacturer's instructions. Immediately clean any excess grout or film off tile surfaces and off tools, since this product sets up much faster.
- .11 Provide expansion/control joints at 3m in each direction and at changes in plane, as recommended by TTMAC, in the same width to match grout joints. Keep tease expansion/control joints free of mortar/grout and fill with matching sealant in accordance with Section 07 92 00.

3.3 PROTECTION

- .1 Apply a purpose-made clear grout sealer (on conventional grout only) to grout joints, in strict accordance with manufacturer's written instructions.
- .2 Protect installed Work of this Section from damage and abuse until the acceptance on the Date of Substantial Performance.

END OF SECTION

Part 1 GENERAL

1.1 SUMMARY

.1 Section Includes:

.1 Supply and installation of acoustical ceiling tile units within a suspended ceiling system, including all necessary accessories to complete the Work.

.2 Related Work:

.1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal

.2 Section 09 06 00 – Room Finish Schedule

1.2 REFERENCES (latest editions)

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

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

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

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

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-M, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction and Amendments

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

.3 Canadian Standards Association (CSA International)

.1 CSA B111, Wire Nails, Spikes and Staples.

.4 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act (CEPA)

.2 Transportation of Dangerous Goods Act (TDGA)

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

.1 Material Safety Data Sheets (MSDS)

.6 Underwriter's Laboratories of Canada (ULC)

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

1.3 SUBMITTALS

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

.2 Upon request, submit WHMIS MSDS.

.3 Submit duplicate samples of each type and colour of acoustical units.

- 1.4 QUALITY ASSURANCE
 - .1 Regulatory Requirements:
 - .1 Fire-resistance rated floor/ceiling and roof/ceiling assembly (where applicable): certified by Canadian Certification Organization accredited by Standards Council of Canada.
 - .2 Health and Safety:
 - .1 Construction occupational health and safety shall be in accordance with Section 01 35 30.
- 1.5 DELIVERY, STORAGE AND HANDLING
 - .1 Protect on-site stored or installed absorptive material from moisture damage.
 - .2 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction /Demolition Waste Management and Disposal.
 - .2 Remove from the Site and dispose of packaging materials at appropriate recycling facilities.
 - .3 Collect and separate paper, plastic, polystyrene, corrugated cardboard packaging material for recycling in accordance with local regulations.
 - .4 Place materials defined as hazardous or toxic in designated areas. Handle and dispose of hazardous materials in accordance with CEPA, TDGA, regional and municipal regulations. Ensure emptied containers are sealed and stored safely.
 - .5 Fold up metal and plastic banding, flatten and place in designated area for recycling.
- 1.6 ENVIRONMENTAL REQUIREMENTS
 - .1 Permit wet work to dry before beginning of installation.
 - .2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20- 40% before and during installation.
 - .3 Store materials in work areas, 48 hours prior to installation.
- 1.7 EXTRA MATERIALS
 - .1 Provide extra acoustic ceiling tile units in accordance with Section 01 78 00, for a quantity of 2% of the gross ceiling area for each pattern, type, and colour selected for this project. Ensure extra materials shall be from same production run as installed materials.
 - .2 Clearly identify each type of acoustic unit, including colour and texture.
 - .3 Upon completion of the Work of this section, deliver to The City and store as directed.

Part 2 PRODUCTS

2.1 MATERIALS

- .1 Suspension system to meet load compliance to ASTM C635: commercial quality cold rolled steel with hot dipped galvanized coating and minimum recycled content of 25%.
- .2 Exposed tee bar grid components: shop painted satin sheen White colour. Components to be 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.
- .3 Hanger wire: galvanized soft annealed steel wire, 2.6mm diameter.
- .4 Hanger inserts: purpose made.
- .5 Carrying channels: 38 x channel, of galvanized steel.
- .6 Accessories: splices, clips, wire ties, retainers and wall moulding to complement suspension system components, as recommended by system manufacturer.
- .7 Suspension system: non-fire rated unless otherwise noted. Two-directional exposed 15/16" (24mm) tee system with 7/8" hemmed angle wall moulding. Acceptable material: Armstrong Prelude XL, CGC Donn DX, BPB Snap Grid 200, or Chicago Metallic 1200 Seismic 15/16" as supplied by Patene Building Supplies Ltd. Tel: 204-275-3000.
- .8 Standard Acoustic Ceiling Tiles: 610 x 1220 mm (2' x 4' imperial size), mineral fibre, square edge, Class A, NRC 0.70, light reflectance of 88, white colour, flame spread of 25 or less, and minimum recycled content of 75% or better. Acceptable products: CGC 'Mars Clima Plus', CertainTeed Symphony "M" 1220-OVT-1 by Patene, Tel: 204-275-3000, or Armstrong Ultima #1913HRC by Winroc, Tel. 204-488-4477.
- .9 Vinyl-faced Acoustic Ceiling Tiles to CAN2-92.1M, in high humidity areas and where scheduled: 610 x 1220 mm (2' x 4' imperial size), 15 mm thick, mineral fibre with washable vinyl film facing, white colour, square edge, 75% or better light reflectance, NRC range of .55 to .65, STC range of 35 to 39, flame spread of 25 or less, and recycled content of 75% or better. Acceptable products: CGC 'Clean Room Clima Plus 10M', or Armstrong 'VL', BPB CertainTeed 'Vinylshield A'.

Part 3 EXECUTION

3.1 EXAMINATION

- .1 Install acoustical panels and tiles after ceiling space above has been inspected by the Contract Administrator.

3.2 INSTALLATION

- .1 Install acoustical tile units to fit snugly into ceiling suspension system, in accordance with manufacturer's printed instructions.
- .2 Install acoustical units generally parallel to building lines with border units not less than 50% of a typical unit width and to patterns as shown on the drawings.

- .3 Scribe acoustic units to fit adjacent work. Butt joints tight and terminate edges with purpose-made edging.

- 3.3 INTERFACE WITH OTHER WORK
 - .1 Co-ordinate and cut ceiling units to accommodate components such as light fixtures, diffusers, speakers, sprinkler heads, and all other items that penetrate through.

END OF SECTION

Part 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 09 06 00 – Room Finish Schedule
- .2 Section 09 30 13 - Ceramic Tile

1.2 REFERENCES

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

1.3 SUBMITTALS

- .1 Provide MSDS sheets on all fillers/ levellers and adhesives, verifying their VOC levels and contents in accordance with Section 01 47 15.
- .2 Provide data for long term maintenance of all resilient flooring items into manuals as specified in Section 01 78 00.

1.4 EXTRA MATERIALS

- .1 Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01 78 00 and as specified herein.
- .2 Provide additional 10 m² of EACH colour, pattern and type flooring material required for this project, for maintenance use. These materials shall be in one piece and from the same production run as the installed materials.
- .3 Clearly identify each roll of sheet flooring and each container of adhesive.
- .4 Deliver to the Site and to The City upon completion of the Work of this Section.
- .5 Store where directed by The City.

1.5 ENVIRONMENTAL REQUIREMENTS

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

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21.
- .2 Do not dispose of unused sealant and adhesive materials into landfill. Divert materials to municipal hazardous materials depot approved by Contract Administrator.

- .3 Divert unused metal and wiring materials from landfill to metal recycling facility complying with all applicable regulations.
- .4 Remove from the Site and dispose of packaging materials at appropriate recycling facilities.
- .5 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.

1.7 WARRANTY

- .1 Provide a written manufacturer's warranty to cover any defects in materials and performance, for the maximum period offered by manufacturers for each product used.
- .2 Provide a one (1) year written installer's warranty to cover any defects in installation and workmanship, from the Date of Substantial Performance.

Part 2 PRODUCTS

2.1 MATERIALS

.1 Sheet Vinyl (SV):

- .1 Material: 2mm thick x 2000mm wide rolls of homogeneous sheet vinyl
- .2 Pattern: marbelized with heat welded seams.
- .3 Allow for four colours to be selected by Contract Administrator from full standard range.
- .4 Acceptable products (LEED contributing and better quality): Polyflor Pearlazzo PUR, Johnsonite Tarkett Aria 2.0, or Armstrong Medley.

.2 Safety Sheet Vinyl (SSV):

- .1 Material: 2mm thick x 2000 wide rolls, integral slip-resistant safety sheet vinyl, with heat welded seams (and post consumer recycled content).
- .2 Acceptable Products: Altro Suprema, or Polysafe Mosaic PUR
- .3 Colours: allow for 3 colours to be selected from full range.
- .4 Locations: Change Rooms, Offices, Reception, and areas as scheduled.

2.2 ACCESSORIES

.1 Rubber base: continuous, top set, in standard cove shape with toe base, premoulded end stops, and external corners:

- .1 3mm (1/8") thick x 100mm (4") high [150mm (6") high at where scheduled at stair risers and other locations].
- .2 Lengths: cut lengths to a minimum of 2400mm.
- .4 Allow for six colours to be selected by Contract Administrator from standard range available.
- .5 Acceptable material: Johnsonite, Roppe, Amtico, Pinnacle, or Mannington.

.2 Transition strips between resilient flooring and other flooring material of a different height or texture:

- .1 Rubber transition strips with no PVC content, to suit thickness and profile of adjacent flooring materials, in colours to match rubber base selected by Contract Administrator. Acceptable manufacturer: Johnsonite.

- .2 At fire separations, flooring shall start and stop and a non-combustible transition strip the width of the door frame is to be installed.
- .4 Exterior stair nosings and detectable warning strips: refer to Section 32 16 15.
- .5 Primers and adhesives: 0 or low VOC (see Section 01 47 15 Sustainable Requirements). Water-based, solvent-free type as recommended by flooring manufacturer for each flooring material type and location.
- .6 Sub-floor filler and leveller: 0 or low VOC (see Section 01 47 15 Sustainable Requirements). White premix latex requiring water only to produce a cementitious paste, as recommended by flooring manufacturer.
- .7 Sealer and wax (where required by manufacturer): low VOC type as recommended by resilient flooring material manufacturer for flooring type and location and Section 01 47 15 Sustainable Requirements.
- .8 Coved sheet vinyl base accessories (to match flooring where scheduled): include all accessories necessary to complete a coved base from the same manufacturer as the flooring. ALTRO cove formers, ALTRO C-4, C-7, or Erv Parent Coloured Vinyl Capping Cap Strip.

Part 3 EXECUTION

3.1 SITE VERIFICATION OF CONDITIONS

- .1 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.
- .2 Concrete Moisture Test: Perform moisture tests on concrete floors regardless of the age or grade level with a minimum of three tests for the first 1000 square feet. The test shall be a calcium chloride tests. One test shall be conducted for every 100 square feet of flooring. The test shall be conducted around the perimeter of the room, at columns and where moisture may be evident. Thee moisture emission from the concrete shall not exceed 3.0 lbs per 1000 square feet in 24 hours. For the most accurate results, the weight of the calcium chloride dish shall be made on-site at the start and end of each test. A diagram of the area showing the location and results of each test shall be submitted to the Contract Administrator and the Contractor. If the test results exceed the limitations, the installation shall not proceed until the problem has been corrected.
- .3 Concrete pH Test: Perform pH tests on concrete floors regardless of the age or grade level. If the PH is greater than 10, it must be neutralized prior to beginning the installation.

3.2 PREPARATION

- .1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .2 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
- .3 Remove old flooring as indicated on drawings with trained personnel (report any asbestos content found). Remove or treat old adhesives to prevent from bleeding through to new flooring and from interfering with bonding of new adhesives.
- .4 Prepare concrete slab substrate to resilient flooring manufacturer's printed instructions.

3.3 APPLICATION: FLOORING GENERAL

- .1 Start of installation assumes acceptance that substrate is acceptable for intended use.
- .2 Provide a high ventilation rate with maximum outside air during installation and for 48 to 72 hours after installation. If possible, vent directly to the outside. Do not let contaminated air recirculate through the building air distribution system. Maintain extra air ventilation for at least one month following completion of flooring.

- .3 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
 - .4 Lay flooring with seams parallel to building lines (or as otherwise indicated on drawings) to produce a minimum number of seams. Border widths shall be a minimum of 1/3 width of full material roll.
 - .5 Run sheets in direction of traffic. Double cut sheet joints and continuously heat weld all floor seams according to manufacturer's printed instructions.
 - .6 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.
 - .7 Scribe and cut flooring neatly around fixed objects.
 - .8 Install feature shapes, strips, and floor markings as and where indicated on the drawings. Fit all joints tightly.
 - .9 Install flooring in pan type floor access covers, where applicable. Maintain floor pattern.
 - .10 Continue flooring under all built-in furniture, lockers, and millwork typically.
 - .11 Continue flooring through areas to receive movable type partitions or furniture, without interrupting the floor pattern or joints.
 - .12 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.
 - .13 Install edge transition strips at all unprotected or exposed edges typically, where sheet flooring terminates or changes.
- 3.4 APPLICATION: SAFETY SHEET VINYL FLOORING AREAS
- .1 Continue the floor finish scheduled throughout the entire area of the room.
 - .2 Flooring shall be seamless, with no transition points which disrupt the movement of carts or other equipment with casters.
 - .3 Installation of this flooring is critical to longevity of use and appearance. The floor shall have smooth welded joints and the same continuous texture and colour throughout. Installation shall meet all standards and processes as described in the manufacturer's installation manual.
 - .4 Coordinate flooring with equipment, floor pans, and floor drains, to insure flooring does not impede water drainage or cleaning. Any brackets, edging or inserts shall be approved by the flooring manufacturer, so installation is smooth and seamless.
- 3.5 APPLICATION: BASE
- .1 Lay out base to minimize the number of joints.
 - .2 Clean substrate and prime with one coat of adhesive to the back of the base.
 - .3 Set base against wall and floor surfaces tightly by using 3 kg hand roller and install base straight and level to variation of 1:1000.
 - .4 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.
 - .5 Cope internal corners. Use premoulded corner pieces for right angle external corners. Use formed straight base material for external corners of other angles.
 - .6 Continue a rubber base along the front face of locker bases, where detailed.
- 3.6 APPLICATION AT AREAS SCHEDULED FOR AN INTEGRAL COVE BASE:
- .1 Extend the same flooring material in the room continuously up the wall to form a base, approx. 100 (4") high. Install a filler cove behind with a minimum 25 (1") radius to suit the manufacturer's recommendations and fully apply adhesive to achieve a 100% bond. Cut and mitre all corner joints carefully and heat weld all joints for a watertight finish. At door frames and other interruptions, taper cove base for a length 300 (12") back from the interruption to achieve a flush cove at the face of the door frame. At outside corners, fit a

- butterfly inset, mitre, and wrap around the corner at a 45 degree angle. At the bottom of the wall finish, trim the top edge of the sheet vinyl cove base straight and neat; terminate into the same metal transition strip to match that specified. Seal the top of this coved base for a continuous waterproof seal with cap strip specified. Finish with a continuous clear bead of clear silicone caulking at all joints, as specified in Section 07 92 00.
- .2 The floor shall be seamless, with no transition points which disrupt the movement of carts or other equipment with casters.
 - .3 Installation of this flooring is critical to longevity of use and appearance. The floor shall have smooth welded joints and the same continuous texture and colour throughout. Installation shall meet all standards and processes as described in the manufacturer's installation manual.
 - .4 Coordinate flooring with equipment, floor pans, and floor drains, to insure flooring does not impede water drainage or cleaning. Any brackets, edging or inserts shall be approved by the flooring manufacturer, so installation is smooth and seamless.

3.7 CLEANING

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

3.8 PROTECTION

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

END OF SECTION

Part 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 47 15 - Sustainable Requirements
- .2 Section 05 12 00 – Structural Steel
- .3 Section 05 30 00 and 05 31 00 – Metal Deck
- .3 Section 05 50 00 – Metal Fabrications
- .4 Section 06 20 00 – Finish Carpentry
- .5 Section 08 14 00 – Wood Doors
- .6 Section 09 29 00 - Gypsum Board

1.2 REFERENCES

- .1 Architectural Painting Specifications Manual, Master Painters Institute (MPI) Systems and Specifications Manual, SSPC Painting Manual, Volume Two, Society for Protective Coatings (SSPC).
- .2 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) (EPA).
- .3 National Fire Code of Canada.

1.3 QUALITY ASSURANCE

- .1 Contractor shall have a minimum of five years proven satisfactory experience. When requested, provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.
- .2 Qualified journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in the Work of this Section. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.
- .3 Conform to latest MPI requirements for exterior and interior painting including preparation and priming.
- .4 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) shall be in accordance with MPI Painting Specification Manual "Approved Product" listing and shall be from a single manufacturer for each system used.
- .5 Other paint materials such as linseed oil, shellac, turpentine, etc. shall be the highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and shall be compatible with other coating materials as required.
- .6 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Contract Administrator.
- .7 Standard of Acceptance:
 - .1 Walls: No defects visible from a distance of 1000 mm at 90 deg to surface.
 - .2 Ceilings: No defects visible from floor at 45 deg to surface when viewed using final lighting source.
 - .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.4 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

- .1 Refer to LEED Section 01 47 15 for VOC type

1.5 SCHEDULING OF WORK

- .1 Submit schedule for various stages of painting Work to Contract Administrator for approval and advise a minimum of 48 hours in advance of proposed operations.
- .2 Obtain written authorization from Contract Administrator for any changes in schedule.
- .3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.6 SUBMITTALS

- .1 Submit product data and manufacturer's installation/application instructions for each paint and coating product to be used in accordance with Section 01 33 00.
- .2 Submit WHMIS MSDS which include VOC levels in g/L.
- .3 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.
 - .5 Manufacturer's Material Safety Data Sheets (MSDS).

1.7 SAMPLES

- .1 Upon request, submit 300 x 300 mm sample panels of each paint, stain and special finish with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards submitted on the 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.
- .2 When approved, sample panels shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.

1.8 QUALITY CONTROL

- .1 Prepare and paint designated surfaces, areas, rooms or items (in each colour scheme) to requirements specified herein, with specified paint or coating showing selected colours, gloss/sheen, textures and workmanship to MPI Painting Specification Manual standards for review and approval. Upon review by Contract Administrator, such surface, area, room and/or items shall become the acceptable standard of finish quality and workmanship for all similar on-site work.

1.9 EXTRA MATERIALS

- .1 Submit maintenance materials in accordance with Section 01 78 00.
- .2 Submit one full, four-litre can of each type and colour of stain and finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

- .3 Deliver to The City and store where directed.

1.10 DELIVERY, HANDLING AND STORAGE

- .1 Deliver, store and handle materials in accordance with Section 01 60 00.
- .2 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.
- .3 Remove damaged, opened and rejected materials from the Site.
- .4 Provide and maintain dry, temperature controlled, secure storage.
- .5 Observe manufacturer's recommendations for storage and handling.
- .6 Store materials, equipment, and supplies away from heat generating devices and in a well-ventilated area with temperature range 7 deg C to 30 deg C.
- .7 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
- .8 Keep areas on-site used for storage, cleaning and preparation, clean and orderly. After completion of operations, return areas to the original clean condition.
- .9 Remove paint materials from storage only in quantities required for same day use.
- .10 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- .11 Fire Safety Requirements:
 - .1 Provide one 9 kg Type ABC fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.11 SITE REQUIREMENTS

- .1 Heating, Ventilation and Lighting:
 - .1 Ventilate enclosed spaces.
 - .2 Perform no painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 deg 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 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 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities shall be provided by the Contractor.
 - .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Unless specifically pre-approved by the specifying body and the applied product manufacturer, perform no painting work when:
 - .1 Ambient air and substrate temperatures are below 10 deg C.
 - .2 Substrate temperature is over 32 deg 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 deg C variance between the air/surface temperature.
 - .2 Perform no painting work when the maximum moisture content of the substrate exceeds:
 - .1 12% for concrete and masonry (clay and concrete brick/block).
 - .2 15% for wood.
 - .3 12% for plaster and 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.
- 1.12 WASTE MANAGEMENT AND DISPOSAL
- .1 Separate and recycle waste materials in accordance with Section 01 74 21.
 - .2 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
 - .3 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

- .4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .5 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground the following procedures shall be strictly adhered to:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
 - .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
 - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
- .6 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .7 Close and seal tightly partly used sealant and adhesive containers and store protected in well-ventilated fire-safe area at moderate temperature.

Part 2 PRODUCTS

2.1 MATERIALS

- .1 Materials and resources in accordance with Section 01 47 15.
- .2 All paint material used shall be listed on the MPI Approved Products List (APL) and have an E2 "Environmentally Friendly" rating, unless stated otherwise. VOC ratings shall be below that required for LEED, as specified in Section 01 47 15.
- .3 Products for each surface type shall be from a single manufacturer.
- .4 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, shall:
 - .1 Be water-based unless otherwise specified.
 - .2 Be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
 - .3 Comply with LEED VOC requirements.
 - .4 Not contain toxic metal pigments.
 - .5 Have a recycled content if cost neutral.
- .5 Water-borne surface coatings must be manufactured and transported in a manner that steps of process, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).
- .6 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .7 Water-borne surface coatings and recycled water-borne surface coatings must have a flash point of 61.0 deg C or greater.

- .8 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.
- .9 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.
- .10 Recycled water-borne surface coatings must not contain:
 - .1 Lead in excess of 600.0 ppm weight/weight total solids.
 - .2 Mercury in excess of 50.0 ppm weight/weight total product.
 - .3 Cadmium in excess of 1.0 ppm weight/weight total product.
 - .4 Hexavalent chromium in excess of 3.0 ppm weight/weight total product.
 - .5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.
- .11 The following must be performed on each batch of consolidated post-consumer material before surface coating is reformulated and canned. These tests must be performed at a laboratory or facility which has been accredited by the Standards Council of Canada.
 - .1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.
 - .2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.
 - .3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

2.2 COLOURS

- .1 Typical Interior Colour scheme: generally allow for a typical field colour ("Natural White" or "Cloud White", to be confirmed) plus an accent wall paint colour for each room, to be selected and confirmed by the Consultant. Colour changes will generally occur at inside or outside corners of walls and stop at ceilings and floors.

2.3 MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to the Site. On-site tinting of painting materials is allowed only with Contract Administrator's written permission.
- .2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.
- .3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or 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 Contract Administrator.
- .5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

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

Gloss Level Category	Units @ 60 deg	Units @ 85 deg
G1 - matte finish	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 finish	35 to 70	
G6 - gloss finish	70 to 85	
G7 - high gloss finish	> 85	

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

.3 Reflectance Values:

- .1 Ceilings >80%
- .2 Walls 50-70%

2.5 EXTERIOR PAINTING SYSTEMS

.1 Asphalt pavement marking: line painting (refer to drawings) to MPI EXT 2.1A

.1 Latex zone/traffic marking finish to Gloss level G5.

.2 Galvanized steel: doors, frames, misc. steel, pipes, etc. to MPI EXT 5.3J

.1 One coat of waterborne zinc rich primer and two coats of acrylic waterborne to Gloss level G5.

.3 Galvanized structural steel columns, posts, girts, beams, channels, angles, and related connections: Prepare galvanized surfaces for finish coating in accordance with ASTM D7803-12, Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Powder Coating. 1 epoxy primer coat and 2 finish coats in accordance with ASTM standards for Powder Coating. Finish to be a duplex-coated, heat-cured, polyester type powder coating system. 1 RAL colour to be selected by Contract Administrator. Location: structure at new entry canopy.

.4 Factory primed steel deck (for Envista F4.5A model only): soffit and wall decking, to MPI EXT 5.3C

.1 Two finish coats of Waterborne Acrylic Epoxy sprayed dry fall, low odor, non-yellowing, (Tnemec H.B. Tneme-Tufcoat, series #113) to Gloss level G4 typical

.5 Aluminum decorative fence panels: Prepare surfaces for an epoxy primer coat and 2 finish coats in accordance with ASTM standards for Powder Coating. Finish to be a duplex-coated, heat-cured, polyester type Powder Coating system. 3 RAL colours to be selected by Contract Administrator.

.6 Stainless steel (unpolished): to MPI EXT 5.6C (Guardrails, handrails, connectors, fasteners, hardware, etc.)

.1 Solvent wipe and apply 2 coats of self-priming, self-levelling, impact resistant, graffiti resistant, clear coat with rust inhibitor ('ProtectaClear' by Everbrite Coatings, as dist. by Euro Forgings Inc., tel: 1.800.465.7143) to Gloss level G4 typical.

- 2.6 INTERIOR PAINTING SYSTEMS (See Section 01 47 15 Sustainable Requirements for VOC).
- .1 Concrete floor sealer (general) on concrete horizontal surfaces (clear finish) to MPI INT 3.2F & 3.2G
 - .1 Waterborne clear concrete floor sealer– first coat reduced and two finish coats full strength.
 - .2 Concrete: exposed ceilings, soffits, beams, columns (in non-humid areas) to MPI INT 3.1A
 - .1 One coat latex sealer/primer and two finish coats of acrylic latex to Gloss level G1 for ceilings/beams/soffits and G5 for columns.
 - .3 Concrete and Concrete Block walls (in pool/spray pad and humid areas): to MPI INT 3.1G & 4.2G
 - .1 One coat latex block filler/primer and two finish coats of Waterborne Acrylic Epoxy (Tnemec H.B. Tneme-Tufcoat series #113) to Gloss level G4 typical
 - .4 Concrete and Concrete Block walls (in non-humid areas): to MPI INT 3.1A & 4.2A
 - .1 One coat latex block filler/primer and two finish coats of acrylic latex to Gloss level G5.
 - .5 Galvanized structural steel columns, beams, girts, connections, and metal fabrications above the pool deck in Pool/Spray Pad area and humid areas: Prepare galvanized surfaces for finish coating in accordance with ASTM D7803-12, Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Powder Coating. 1 epoxy primer coat and 2 finish coats in accordance with ASTM standards for Powder Coating. Finish to be a duplex-coated, heat-cured, polyester type Powder Coating system. One RAL colour to be selected by Contract Administrator.
 - .6 Factory primed steel deck (for Envista F4.5A model only) within Spray Pad area and humid areas: roof and wall decking, to MPI INT 5.3D
 - .1 Two finish coats of Waterborne Acrylic Epoxy sprayed dry fall, low odor, non-yellowing, (Tnemec H.B. Tneme-Tufcoat, series #113) to Gloss level G4 typical
 - .7 Other galvanized miscellaneous metal fabrications in Pool/Spray Pad area and humid areas: girts, angles, pipes, conduit, ducts, etc. to MPI INT 5.3D
 - .1 One coat epoxy primer and two finish coats of Waterborne Acrylic Epoxy sprayed dry fall, low odor, non-yellowing, (Tnemec H.B. Tneme-Tufcoat series #113) to Gloss level G4 typical
 - .8 Galvanized steel in Pool/Spray Pad area and in humid areas (within touch): doors, frames, misc. steel pipes, conduits, ducts, etc. to MPI INT 5.3D
 - .1 One coat epoxy primer and two finish coats of Waterborne Acrylic Epoxy (Tnemec H.B. Tneme-Tufcoat series #113) to Gloss level G4 typical
 - .9 Galvanized steel in non-humid areas: doors, frames, railings, misc. steel, pipes, etc. to MPI INT 5.3M
 - .1 One coat waterborne primer and two finish coats of acrylic waterborne to Gloss level G5.

- .10 Stainless steel (unpolished) at Entry Lobby 101 and in Pool/Spray Pad area and humid areas: to MPI INT 5.6C (Guardrails, handrails, connectors, fasteners, hardware, ladders, accessories, etc.)
 - .1 Solvent wipe and apply 2 coats of self-priming, self-levelling, impact resistant, graffiti resistant, clear coat with rust inhibitor ('ProtectaClear' by Everbrite Coatings, as dist. by Euro Forgings Inc., tel: 1.800.465.7143) to Gloss level G4 typical.
- .11 Dressed Lumber painted (wood doors, frames, trim, casings, panels): to MPI INT 6.3A.
 - .1 One coat of modified low VOC alkyd primer and two finish coats of acrylic waterborne to Gloss level G5.
- .12 Dressed Lumber clear coated (wood trim, panels, wood strip ceilings, etc.): to MPI INT 6.3C and 6.3W.
 - .1 One coat of semi-transparent stain wiped and two coats of clear waterborne acrylic to Gloss level G5.
- .13 Gypsum Board in pool/Spray pad areas, shower areas, Change Room areas, Washrooms, and humid areas: to MPI INT 9.2F
 - .1 One coat epoxy primer and two finish coats of Waterborne Acrylic Epoxy (Tnemec H.B. Tneme-Tufcoat series #113) to Gloss level G4 typical
- .14 Gypsum Board in non-humid areas: to MPI INT 9.2B
 - .1 One coat latex sealer/primer and two finish coats of high performance acrylic latex to Gloss levels G4 (for walls) and G1 (ceilings & bulkheads).

Part 3 EXECUTION

3.1 GENERAL

- .1 Perform preparation and operations for interior 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.

3.2 EXISTING CONDITIONS

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Contract Administrator any damages, defects, unsatisfactory or unfavourable conditions before proceeding with the Work.
- .2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Contract Administrator. Do not proceed with the 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%.

3.3 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 Contract Administrator.
- .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
- .3 Protect factory finished products and equipment.
- .4 Protect passing pedestrians and general public 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 by The Contractor. Items shall be securely stored and re-installed after painting is completed by The Contractor.
- .6 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

3.4 CLEANING AND PREPARATION

- .1 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 or wiping with dry, clean cloths.
 - .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. However, minimize the use of kerosene or any such organic solvents to clean up water-based paints.
- .2 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
- .3 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.

- .4 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.
- .5 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by blowing with clean dry compressed air, or vacuum cleaning.
- .6 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.
- .7 Do not apply paint until prepared surfaces have been accepted by Contract Administrator.

3.5 APPLICATION

- .1 Method of application to be as approved by Contract Administrator. Apply paint by brush and roller. 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 Contract Administrator.
 - .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Contract Administrator.
- .4 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .5 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .6 Sand and dust between coats to remove visible defects.
- .7 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .8 Finish closets and alcoves as specified for adjoining rooms.
- .9 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

- .1 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.
- .2 In service rooms, leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
- .3 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- .4 Do not paint over nameplates.
- .5 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
- .6 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .7 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.
- .8 Do not paint interior transformers and substation equipment.

3.7 FIELD QUALITY CONTROL

- .1 At least 48 hours ahead of time for site inspection, advise Contract Administrator when sufficient surfaces have received the primer and the first coat of finish colours. Do not proceed with subsequent coats until previous coats or colours have been reviewed and approved. Provide access to areas of the work.

3.8 RESTORATION

- .1 Clean and re-install all hardware items removed before undertaking painting operations.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Contract Administrator. Avoid scuffing newly applied paint.
- .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Contract Administrator.

END OF SECTION