

LEGEND

Ceiling Materials and Finish		Wall Finish	
AT	Acoustic Tile	PT	Paint - Refer to Spec Section 09911 for complete listing of paint types. Colour allocation(FIN)to be provided by Designer
GWB	Gypsum Wall Board	CT	Glazed Ceramic Wall Tile
EXP	Exposed to Structure		
EX	Existing		
Floor Materials and Finish		Wall Materials	
CPT	Carpet Tile	GWB	Gypsum Wall Board
L	Linoleum	CT	Ceramic Tile
VCT	Vinyl Composite Tile (Static Dissipative)		
C	Concrete sealer & hardener		
Ex	Existing		
Base		Schedule Notes	
R	Rubber Base	1.	See plan A4 for CPT pattern.
CTB	100cm ceramic base to match floor tile	2.	CT for backsplash - refer to millwork Dwg.A12
		3.	See Dwg.A11 for CT pattern
		4.	All ceiling heights as noted on plan A5

Room #	ROOM NAME	FLOOR FINISH		WALL FINISH		CEILING FINISH			SCHEDULE NOTES
		FIN	BASE	MAT	FIN	MAT	FIN	HT	
100	Vestibule	CT	CTB	PT	-	GWB	PT	-	
101	Vestibule	CT	CTB	PT		GWB	PT		
102	General Office Area	CPT	R	PT		AT	-		
102A	Collaborative Area	CPT	R	PT		AT	-		
102B	Collaborative Area	CPT	R	PT		AT	-		
103	Corridor	CT	CTB	PT		AT	-		
103A	Coffee Area	CT	CTB	PT		*GWB	PT		*See tile pattern Dwg.A12
104	Janitor	CT	CTB	*CT/PT		GBW	PT		*See tile pattern Dwg.A11
105	Men's Washroom	CT	CTB	*CT/PT		AT	-		*See tile pattern Dwg.A12
106	Coat Closet	CT	CTB	PT		GBW	PT		
107	Women's Washroom	CT	CTB	*CT/PT		AT	-		*See tile pattern Dwg.A12
108	Storage	CT	CTB	PT		GBW	PT		
109	Computer Forensics	VCT	R	PT		AT	-		
109B	Elec. Rm.	VCT	R	PT		GBW	PT		
110	NFIS Office	CPT	R	PT		AT	-		
111	Storage	C	R	PT		EX	-		
112	Electrical Room	EX	EX	PT		EX	-		
112A	Electrical Room Extn	L	R	PT		AT	-		
113	Corridor	CPT/CT	R/CTB	PT		AT	-		
114	Lunch Room	L	R	*PT/CT		AT	-		*See tile pattern Dwg.A12
115	Exhibit Room	L	R	PT		AT	-		
116	OSO Storage	L	R	PT		AT	-		
117	Corridor	CPT	R	PT		AT	-		
118	Meeting Room	CPT	R	PT		AT	-		
119	Director's Office	CPT	R	PT		AT	-		
120	Office Area	CPT	R	PT		AT	-		

PWGSC
DARTMOUTH ARGO BUILDING FIT-UP
PWGSC PROJECT NO. R.069793.001

FINISH SCHEDULE

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Room #	ROOM NAME	FLOOR FINISH		WALL FINISH		CEILING FINISH			SCHEDULE NOTES
		FIN	BASE	MAT	FIN	MAT	FIN	HT	
121	Corridor	CPT	R	PT		AT	-		
122	Telcom Room	L	R	PT		GBW	PT		
123	Boardroom	CPT	R	PT		EX			
124	Quiet Room	CPT	R	PT		AT	-		
125	Mechanical/Sprinkler	EX	EX	EX		EX			
126	General Office Area	CPT	R	PT		AT	-		
126B	Existing Closet	CPT	R	PT		EX	-		
126A	Collaborative Area	CPT	R	PT		AT	-		
127	Operations Room	CPT	R	PT		AT	-		
128	Corridor	CPT	R	PT		AT	-		
129	Washroom	CT	CTB	*CT/PT		AT	-		*See tile pattern Dwg.A12

END

PART 1 - GENERAL

<u>1.1 RELATED SECTIONS</u>	.1	Section 09 22 16 - Non-Structural Metal Framing.
	.2	Section 09 91 23 - Interior Painting.
<u>1.2 REFERENCES</u>	.1	American Society for Testing and Materials International, (ASTM) .1 ASTM C 36/C36M-03e1, Specification for Gypsum Wallboard. .2 ASTM C 79/C79M-04a, Standard Specification for Treated Core and Non-treated Core Gypsum Sheathing Board. .3 ASTM C 442/C442M-04e1, Specification for Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board. .4 ASTM C 475/C475M-12, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board. .5 ASTM C 630/C630M-03e1, Specification for Water-Resistant Gypsum Backing Board. .6 ASTM C 840-11, Specification for Application and Finishing of Gypsum Board. .7 ASTM C 954-11, Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness. .8 ASTM C 1002-07, Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs. .9 ASTM C1177/C1177M-08, Specification for Glass Mat Gypsum Substrate for Use as Sheathing. .10 ASTM C1178/C1178M-08, Specification for Glass Mat Water-Resistant Gypsum Backing Board. .11 ASTM C 1280-13, Specification for Application of Gypsum Sheathing Board. .12 ASTM C1396/C1396M-13, Standard Specification for Gypsum Board. .13 ASTM/ANSI A-118.10 For Load Bearing, Bonded, Waterproof Membranes for Thinset Ceramic Tile Installation.
	.2	Association of the Wall and Ceilings Industries International (AWEI)
	.3	Underwriters' Laboratories of Canada (ULC) .1 CAN/ULC-S102-10, Surface Burning Characteristics of Building Materials and Assemblies.

1.3 DELIVERY,
STORAGE AND
HANDLING

- .1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.
- .2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.
- .3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.4 SITE
ENVIRONMENTAL
REQUIREMENTS

- .1 Maintain temperature minimum 10° 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 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.5 WASTE
MANAGEMENT AND
DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.
- .3 Divert unused gypsum from landfill to gypsum recycling facility for disposal approved by Departmental Representative.
- .4 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.
- .5 Divert unused wood materials from landfill to recycling facility approved by Project Manager.
- .6 Divert unused paint and caulking material from landfill

to official hazardous material collections site approved by Departmental Representative.

- .7 Do not dispose of unused paint and caulking materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Standard board: to ASTM C36/C36M Type X, 16 mm thick, 1200 mm wide x maximum practical length, ends square cut, edges beveled. For walls, ceilings and bulkheads in general areas.
- .2 Metal furring runners, hangers, tie wires, steel attachment washers, inserts, anchors: to CSA A82.30, galvanized.
- .3 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
- .4 Steel drill screws: to ASTM C 1002.
- .5 Casing beads, control joints and edge trim: to ASTM C 1047, zinc-coated by electrolytic process, 0.5 mm base thickness, perforated flanges, one piece length per location.
- .6 Sealants: in accordance with Section 07 92 00 - Joint Sealing.
- .7 Acoustic sealant: in accordance with Section 07 92 00.
- .8 Acoustic batt insulation: Batt and blanket mineral fibre: to CAN/ULC S702-09.
 - .1 Type: 1.
 - .2 Formaldehyde free, less than 0.022 ppm. Provide testing results.
 - .3 25% minimum recycled content.
 - .4 Thickness: to suit partition thickness, full stud thickness.
- .9 Steel screws, exterior sheathing board: Type S-12 bugle head, self-tapping, rust resistant, fine thread for heavy-gauge steel.
- .10 Joint compound: to ASTM C475/C475M, asbestos-free.

PART 3 - EXECUTION

3.1 ERECTION

- .1 Do application and finishing of gypsum board in accordance with ASTM C840-08 except where specified otherwise.
- .2 Do application of gypsum sheathing in accordance with ASTM C 1280-09.
- .3 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840-08 except where specified otherwise. If not connected to structure overhead provide structural steel support for ceilings to satisfaction of structural engineer using channels spanning across space.
- .4 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .5 Install work level to tolerance of 1:1200.
- .6 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers and grilles.
- .7 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .8 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

3.2 INSULATION
INSTALLATION

- .1 Install insulation in gypsum board partitions to meet acoustic requirements of building elements and spaces.
- .2 Fit insulation firmly between studs and closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation. Use pipe and mixing valve seals with overmolded rubber gasket with waterproof building panel in shower.
- .3 Do not compress insulation to fit into spaces.
- .4 Keep insulation minimum 3" (75mm) from heat emitting devices such as recessed light fixtures.
- .5 Do not enclose insulation until it has been inspected

and approved by Departmental Representative.

3.3 APPLICATION

- .1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.
- .2 Apply single layer of gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.
 - .1 Single Layer Application:
 - .1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840-08.
 - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
- .3 Apply waterproof building panel where indicated. Apply water-resistant sealant per manufacturer's instructions. Apply to all walls in shower as scheduled.
- .4 Apply 12mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs and penetrations.
- .5 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .6 Install gypsum board with face side out.
- .7 Do not install damaged or damp boards.
- .8 At locations where gypsum board abuts the underside of steel deck, cut gypsum board using a template specifically made to ensure the board neatly and accurately follows the profile of the deck, with clearances for deflection.
- .9 Locate edge or end joints over supports.

3.4 INSTALLATION

- .1 Install casing beads around perimeter of suspended ceilings.
- .2 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated.

- .3 Construct control joints of preformed units set in gypsum board facing and supported independently on both sides of joint.
- .4 Provide continuous polyethylene dust barrier behind and across control joints.
- .5 Locate control joints at changes in substrate construction and at approximate 15m spacing on ceilings.
- .6 Install control joints straight and true.
- .7 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - .1 Rigidly secure frames to furring or framing systems.
- .8 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- .9 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.
- .10 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.
- .11 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .12 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

PART1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 09 21 16 - Gypsum Board Assemblies.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
.1 ASTM C 645-13, Specification for Nonstructural Steel Framing Members.
.2 ASTM C 754-11, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

1.3 WASTE
MANAGEMENT AND
DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
.2 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.
.3 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.
.4 Divert unused gypsum materials from landfill to recycling facility approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Non-load bearing channel stud framing: to ASTM C 645-09a, 150 mm stud size, roll formed from 0.91 mm (20 ga.) thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres.
.2 Floor and ceiling tracks: to ASTM C 645-09a, in widths to suit stud sizes, 32 mm flange height.
.3 Metal channel stiffener: 18 x 28 mm size, 1.4 mm thick

cold rolled steel, coated with rust inhibitive coating.

- .4 Acoustical sealant: as per Section 07 92 00.

PART 3 - EXECUTION

3.1 ERECTION

- .1 Align partition tracks at floor and above ceiling and secure at 600 mm on centre maximum. Secure top track using "half track" to wall assembly.
- .2 Place studs vertically at 406 mm on centre and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
- .3 Erect metal studding to tolerance of 1:1000.
- .4 Attach studs to bottom track using screws.
- .5 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .6 Co-ordinate erection of studs with window frames and special supports or anchorage for work specified in other Sections.
- .7 Install two continuous beads of acoustical sealant under studs and tracks around perimeter of all partitions. (Gypsum board is sealed to the leg of the runner rack using a bead of acoustical sealant when the board is installed by 09 21 16.)
- .8 Stud steel thickness:
.1 Use 0.91 mm (20 ga.) studs generally, except where otherwise indicated.

3.2 CLEANING

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

PART 1 - GENERAL

- | | |
|--|---|
| <u>1.1 RELATED SECTIONS</u> | <ul style="list-style-type: none">.1 Section 01 33 00 - Submittal Procedures..2 Section 09 65 19 - Resilient Flooring..3 Section 09 21 16 - Gypsum Board Assemblies. |
| <u>1.2 REFERENCES</u> | <ul style="list-style-type: none">.1 Canadian General Standards Board (CGSB)<ul style="list-style-type: none">.1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction..2 CAN/CGSB-25.20-95, Surface Sealer for Floors..3 ASTM/ANSI A-118.10 for load bearing, bonded, waterproof membranes for thin set ceramic tile installation..2 Canadian Standards Association (CSA International)<ul style="list-style-type: none">.1 CAN/CSA-A3000-03(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005)..3 Terrazzo Tile and Marble Association of Canada (TTMAC)<ul style="list-style-type: none">.1 Tile Specification Guide 09 30 00 2012/2014, Tile Installation Manual..2 Tile Maintenance Guide 2000. |
| <u>1.3 ACTION AND INFORMATIONAL SUBMITTALS</u> | <ul style="list-style-type: none">.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures..2 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.<ul style="list-style-type: none">.1 Include manufacturer's information on:<ul style="list-style-type: none">.1 Ceramic tile, marked to show each type, size, colour and shape required..2 Acrylic cement mortar and grout..3 Commercial cement grout..3 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.<ul style="list-style-type: none">.1 Submit duplicate, sample tiles of each colour, texture, size, and pattern of tile..2 Trim systems: submit 300mm length of each type of trim used for caps, coves and transitions in specified finish. |

1.4 QUALITY
ASSURANCE

- .1 Quality Assurance Submittals:
 - .1 Manufacturer's Instructions: manufacturer's installation instructions.
 - .2 Manufacturer's Field Reports: manufacturer's field reports specified.

1.5 DELIVERY,
STORAGE AND
HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle materials in accordance with manufacturer's instructions.
- .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.

1.6 AMBIENT
CONDITIONS

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 18 degrees C for 48 hours before, during, and 48 hours after, installation.
- .2 Do not install tiles at temperatures less than 12 degrees C or above 28 degrees C.
- .3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

PART 2 - PRODUCTS

2.1 WALL AND
CEILING TILE

- .1 Wall tile 100mm x 400mm, glazed ceramic tile in a range of colours including neutrals and full saturated hues: Kitchen backspashes, washroom walls to 1800mm:
 - .1 CT-1.1 - neutral, matt finish.
 - .2 CT-1.2 - accent colour; bright glazed finish - pattern per Drawing A-11.
 - .3 CT-1.3 - accent colour; bright glazed finish - patterns as per Drawing A-11.
 - .4 Colour selection to be confirmed by Consultant.
- .2 Standard of acceptance: Olympia, Colour and Dimension glazed wall tile. 100 x 400mm.
 - CT-1.1 Arctic Bright White Matte
 - CT-1.2 Turquoise Bright
 - CT-1.3 Dark Grey Bright

- .3 Floor tile:
- .1 Porcelain floor tile, 304mm x 609mm, minimum 40% recycled content; slip resistance minimum R9. Refer to Dwg. A-4 for pattern
 - .1 CT-1 - ground colour
 - .2 CT-2 - accent colour
 - .3 CT-3 - accent colour
 - .2 Aesthetic: Colour range must include neutral earth tones in grey/charcoal and brown/beige and white/off-white hues. Visual texture to have subtle linen like striations.
 - .3 Standard of acceptance: Neostile 304mmx609mm, distributor: Elegant Flooring and Ceragres.
CT-1- PEiv Graphite
CT-2- PEvi Silver
CT-3- PEvi Chalk

2.2 TRIM SHAPES

- .1 Provide all trims required for a finished and professional installation to the intent of the drawings whether indicated in specifications and drawings or not and in accordance with TTMAC details.
- 2. All trims to be from the same manufacturer and in the same finish.
- 3. At all unfinished outside corners, exposed edges of wall tile, and at cut base tile provide Schluter RO AT Satin Nickel sized to suit tile thickness.

2.3 MORTAR MATERIALS

- .1 Adhesives:
 - .1 As per manufacturer's recommendation.
- .2 Dry set cement mortar: to ANSI A108.1.
- .3 Acceptable manufacturers of mortar and grout systems for ceramic tile are listed below. Use materials from one of these manufacturers for the entire project. Do not interchange systems' products.
- .4 MAPEI:
 - .1 Mortar materials:
 - .1 MAPEI Kerabond premium floor and wall DRY-Set mixed with:
 - .2 MAPEI Keralastic Flexible Polymer

- additive.
- .2 Grout materials:
 - .1 General: Keracolor-U / Keracolor-S polymer modified grouting compound, unsanded for walls, sanded for floors.
- .5 FLEXITILE:
 - .1 Mortar materials:
 - .1 #53 thin-set mortar, mixed with:
 - .2 #44 acrylic latex thin-set mortar additive.
 - .2 Grout materials:
 - .1 General: Flexitile Polymer Modified Floor and Wall grout, unsanded for walls, sanded for floors.
- .6 LATICRETE:
 - .1 Mortar materials:
 - .1 Laticrete 272 Thin Set, mixed with:
 - .2 Laticrete 333 latex thin set mortar additive.
 - .2 Grout materials:
 - .1 Wall Laticrete 500 floor grout, sanded; Laticrete 600 wall grout, unsanded, with,
 - .2 Laticrete 3701 grout additive.
- .7 KIESEL:
 - .1 Mortar material:
 - .1 Walls: Kiesel Servolight thinset mortar.
 - .2 Floors: Kiesel Servoflex Trio Supertec thin and medium set mortar.
 - .2 Grout material:
 - .1 Kiesel Servoperl Royal Grout.

2.4 CLEANING COMPOUNDS

- .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.
- .2 Materials containing acid or caustic material are not acceptable.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 WORKMANSHIP

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2012-2014, "Ceramic Tile", except where specified otherwise.
- .2 Apply tile or backing coats to clean and sound surfaces.
- .3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
- .4 Maximum surface tolerance 1:800.
- .5 Make joints between tile uniform and approximately 3mm wide, plumb, straight, true, even and flush with adjacent tile.
- .6 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .8 Make internal angles square. Use Schluter trim on external angles.
- .9 Use Schluter trim at termination of wall tile panels, except where panel abuts projecting surface or differing plane.
- .10 Install divider strips at junction of tile flooring and dissimilar materials.
- .11 Allow minimum 24 hours after installation of tiles, before grouting.
- .12 Clean installed tile surfaces after installation and grouting cured.

3.3 WALL TILE

- .1 Install in accordance with TTMAC details.

3.4 FIELD QUALITY
CONTROL

- .1 Manufacturer's Field Services:
 - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

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CERAMIC TILING

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3.5 CLEANING

.1

Proceed in accordance with Section 01 10 10 - General
Instruction.

PART 1 - GENERAL

<u>1.1 RELATED SECTIONS</u>	.1	Section 01 33 00 - Submittal Procedures.
	.2	Section 01 78 00 - Closeout Submittals.
	.3	Section 09 53 00 - Acoustical Suspension.
<u>1.2 REFERENCES</u>	.1	American Society for Testing and Materials International (ASTM) .1 ASTM C423-02a, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method .2 ASTM E1264-98, Standard Classification for Acoustical Ceiling Products.
	.2	Canadian General Standards Board (CGSB) .1 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
	.3	Health Canada/Workplace Hazardous Materials Information System (WHMIS) .1 Material Safety Data Sheets (MSDS).
<u>1.3 SUBMITTALS</u>	.1	Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
	.2	Submit duplicate full size 1 sample of each type acoustical units.
<u>1.4 WASTE MANAGEMENT AND DISPOSAL</u>	.1	Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
	.2	Remove from site and dispose of packaging materials at appropriate recycling facilities.
	.3	Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, metal, pallets, packaging material in appropriate on-site containers for recycling in accordance with Waste Management Plan.

- .4 Coordinate all work related to Section 01 74 21 with General Contractor.

1.5 DELIVERY,
STORAGE AND
HANDLING

- .1 Protect on site stored or installed absorptive material from moisture damage.
- .2 Store extra materials required for maintenance, where directed by Consultant.

1.6 ENVIRONMENTAL
REQUIREMENTS

- .1 Permit wet work to dry before beginning to install.
- .2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20-40% before and during installation.
- .3 Store materials in work area 48 hours prior to installation.

1.7 EXTRA MATERIALS

- .1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide acoustical units amounting to 2% of gross ceiling area for each pattern and type required for project.
- .3 Ensure extra materials are from same production run as installed materials.
- .4 Clearly identify each type of acoustic unit, including colour and texture.
- .5 Deliver to Departmental Representative upon completion of the work of this section.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Type ACT -1 mineral tile with factory applied latex paint: 610x1220; tegular edge for lay-in 15/16th grid; Class A fire rating; non- directional, medium texture; NRC 0.70; superior sag resistant; anti microbial treatment for mold and mildew and bacterial growth resistant; white; minimum 50% recycled content.
 - .1 Standard of acceptance:

- .1 Armstrong Fine Fissured, Open Plan.
 - .2 CGC Radar High NRC/CAC.
 - .3 Certainteed Fine Fissured, High NRC.
- .2 Type ACT -2 Washrooms 107 and 105: mineral tile with factory applied latex paint: 610x1220; square edge for lay-in 15/16th grid; Class A fire rating; non directional medium texture; NRC 0.55; superior sag resistant; anti microbial treatment for mold and mildew and bacterial growth resistant; washable, impact resistant; scratch resistant scrubbable; white; minimum 50% recycled content.
- .1 Standard of acceptance:
 - .1 Armstrong Georgian.
 - .2 Certainteed Symphone "M".

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

- .1 Install acoustical panels in ceiling suspension system. Provide clips and trims recommended by manufacturer for sloping ceiling applications.

3.3 APPLICATION

- .1 Install acoustical units as per reflected ceiling plan.
- .2 Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.

3.4 INTERFACE WITH OTHER WORK

- .1 Coordinate with Section 09 53 00 - Acoustical Suspension.
- .2 Coordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

PART 1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 09 21 16 - Gypsum Board Assemblies: Suspension systems for gypsum board ceilings.
- .3 Section 09 51 13 - Acoustical Ceilings: Acoustical units.
- .4 Division 23: Trim for recessed mechanical fixtures.
- .5 Division 26: Trim for recessed light fixtures.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM C635-00, Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
 - .2 ASTM C636-96, Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS)

1.3 DESIGN
REQUIREMENTS

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

1.4 WASTE
MANAGEMENT AND
DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, metal, pallets, packaging material in appropriate on-site containers for recycling in accordance with Waste Management Plan.
- .4 Coordinate all work related to Section 017419 with General Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Heavy duty system to ASTM C635.
- .2 Basic materials for suspension system: commercial quality cold rolled steel zinc coated.
- .3 Suspension system: Non-fire rated made up as follows:
Exposed tee bar grid components; shop painted satin sheen colour. Components die cut. Main tee with double web, rectangular bulb and 25mm rolled cap on exposed face for ceilings. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection. Provide 610mmx1220mm grid as shown on ceiling plans. Main tees shall be spaced at 1220mm.
- .4 Hanger wire shall be #12 SWG galvanized steel wire twist-tied to steel joists, installed in accordance with UL Design G205.
- .5 Hanger inserts: purpose made.
 - .1 Acceptable materials:
 - .1 Hilti HCA ceiling anchor.
 - .2 ITW Ramset RA 5170.
 - .3 VCANTIE Wire wedge anchor.
- .6 Accessories: splices, clips, wire ties, retainers and wall mouldings flush to complement suspension system components, as recommended by system manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Installation: in accordance with ASTM C636 except where specified otherwise.
- .2 Install suspension system to manufacturer's instructions.
- .3 Do not erect ceiling suspension system until work

above ceiling has been inspected and approved by
Departmental Representative.

- .4 Secure hangers to overhead structure using attachment methods as indicated.
- .5 Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.
- .6 Lay out system according to reflected ceiling plan.
- .7 Ensure suspension system is co-ordinated with location of related components.
- .8 Install wall moulding to provide correct ceiling height.
- .9 Completed suspension system to support super-imposed loads, such as pendant lighting fixtures diffusers grilles, speakers and radiant heat panels.
- .10 Interlock cross member to main runner to provide rigid assembly.
- .11 Finished ceiling system to be square with adjoining walls and level within 1:1000 where applicable. Note areas of sloping ceilings. Assure equal slope either side of peak in Open Office 102.
- .12 Follow manufacturer's directions for sloping installations. Use manufacturer's trims and moulding specific for sloping application.

3.2 CLEANING

- .1 Touch up scratches, abrasions, voids and other defects in painted surfaces.

PART 1 - GENERAL

1.1 RELATED SECTIONS.1 Section 01 33 00 - Submittal Procedures.

- .2 Section 01 35 29 - Health & Safety Requirements.
- .3 Section 01 45 00 - Quality Control.
- .4 Section 01 61 00 - Common Product Requirements.
- .5 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .6 Section 01 77 00 - Closeout Procedures.
- .7 Section 01 78 00 - Closeout Submittals.
- .8 Section 09 30 13 - Ceramic Tiling.

1.2 REFERENCES

- .1 American Society for Testing and Materials
 - .1 ASTM F710-11, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
 - International (ASTM)
 - .2 ASTM F970-07(2011), Standard test Method for Static Load Limit.
 - .3 ASTM F1861-08(2012)e1, Standard Specification for Resilient Wall Base.
 - .4 ASTM F2034-08 Standard Specification for Sheet Linoleum Floor Covering.
 - .5 ASTM F1066-04(2010)e1, Specification for Static Dissipative Vinyl Composition Floor Tile.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102.2-10, Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies.

-
- 1.3 SUBMITTALS .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide manufacturers' product data and installation instructions for all resilient flooring products in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
.1 Submit duplicate 300 x 300 mm (12" x 12") sample pieces of sheet material, 300mm (12") long sample piece of base, and edge strips.
- .4 Closeout Submittals:
.1 Provide maintenance data for resilient flooring products for incorporation into specified manual in Section 01 78 00 - Closeout Submittals.
-
- 1.4 DELIVERY, STORAGE AND HANDLING .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
-
- 1.5 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.
-
- 1.6 QUALITY ASSURANCE .1 Installer (Trade Contractor) Qualifications and Criteria:
.1 Company and personnel normally engaged in this type of work, with prior experience in installation of these types of materials.
.2 Certified by product manufacturer(s).
.3 Must not sub-contract labour without written approval of Departmental Representative.
.4 Be responsible for proper product installation, including floor testing and preparation as specified and in accordance with resilient flooring manufacturers' written instructions.
-

1.6 QUALITY
ASSURANCE
(Cont'd)

- .2 Pre-Installation Meeting: (Cont'd)
 - .1 The pre-installation meeting shall be held with the following people present:
 - .1 The Departmental Representative.
 - .2 The Trade contractor and his designated crew supervisors who will be working on site on this project.
 - .3 The General Contractor
 - .4 Purpose of meeting shall be to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Coordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.
 - .5 Items to be present - specifications, finish schedule, product data sheets - MSDS.

1.7 AMBIENT
CONDITIONS

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

1.8 WARRANTY

- .1 For all Work of this Section 09 65 16, the 12 month warranty period is extended to a full five (5) year commercial warranty for materials and installation, non pro-rated.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Linoleum Sheet Flooring (LSF):
 - .1 Linoleum sheet to ASTM F2034, Type 1.
 - .2 Products must meet FloorScore or GreenGuard requirements. All components of the flooring system must meet requirements of LEED EQc4.1 and EQc4.3.

2.1 MATERIALS
(Cont'd)

.3 Homogenous mixture of primarily natural materials consisting of linoleum cement, linseed oil, natural tree resin, drying oil catalyst, wood flour, limestone and colour pigments, mixed and calendared onto a natural jute backing. Pattern and colour to extend through total thickness of material.

.4 Width: 2000mm.

.5 Nominal total thickness 2.5 mm.

.6 Top coat/finish: high performance coating to protect the surface.

.7 Seams: colour-matched heat welding rod; Colour from available range.

.8 Acceptable materials:

.1 Linoleum Sheet Flooring (LSF):

.1 Colorette by Armstrong World Industries.

.2 Marmoleum Piano by Forbo Flooring Systems.

.2 Adhesive:

.1 S-782 High Moisture by Armstrong World Industries.

.2 Sustain 885M by Forbo Flooring Systems.

.2 Vinyl Composition Tile(VCT)

305x305mm size in standard colours

Tile shall meet ASTM F1066, Class 2 for Static Dissipative

.1 Acceptable materials:

.1 Armstrong Standard Excelon

.2 Flextile Flex Thru.

.3 Mannington Essentials.

.4 Amtico Colour Through.

.5 Domco Azroc Cortina.

.3 Rubber base (R):

.1 Thermoset rubber wall base to ASTM F1861, Type TS, Group 1

.2 Continuous, top set, complete with premoulded inside and outside corners.

.3 Style: cove base

.4 Thickness: 3.17mm

.5 Height: 100 mm

.6 Lengths: cut lengths from 120' coils.

.7 Colour: as selected by Consultant, from available colour range.

2.1 MATERIALS
(Cont'd)

- .4 Primers and adhesives: of types recommended by flooring manufacturer for specific material on applicable substrate, above, on or below grade.
 - .1 Sheet floor and tile adhesives: maximum VOC limit 60 g/L to SCAQMD Rule 1168.
 - .2 Rubber base adhesives: maximum VOC limit 50 g/L to SCAQMD Rule 1168
- .5 Edge strips
 - .1 Use vinyl reducers/transitions at changes of all resilient flooring materials to concrete or painted concrete flooring.
 - .2 Transitions at ceramic tile by Section 09 30 13.
- .6 Joint Filler:
 - .1 Fast-setting, semi-rigid polyurea joint filler, capable of being trimmed flush with the floor, for all saw cuts in Level 1 topping slabs and at all cold pour joints in structural slabs.
 - .2 Acceptable material: Euco Qwikjoint 200 by The Euclid Chemical Company.
- .7 Sealer: type recommended by manufacturer.
- .8 Wax: type recommended by manufacturer.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSPECTION

- .1 Examine subfloors prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges, and other defects that might prevent adhesive bond or impair durability or appearance of the flooring material.
- .2 Visually inspect for evidence of dusting mold and mildew.

- .3 Report conditions contrary to contract requirements that would prevent a proper installation. Do not proceed with the installation until unsatisfactory moisture and/or conditions have been corrected.
- .4 Failure to call attention to defects or imperfections will be construed as acceptance and approval of the subfloor. Installation indicates acceptance of substrates with regard to conditions existing at the time of installation.

3.3 APPLICATION:
LINOLEUM
SHEET FLOORING

- .1 Install flooring in strict accordance with the latest edition of the manufacturer's printed installation instructions.
- .2 Install flooring wall to wall before the installation of furniture, equipment, movable partitions, etc. Extend flooring into toe spaces, door recesses, closets, and similar openings as shown on the drawings.
- .3 If required, install flooring on pan-type floor access covers. Maintain continuity of colour and pattern within pieces of flooring installed on these covers. Adhere flooring to the subfloor around covers and to covers.
- .4 Scribe, cut, and fit or flash cove to permanent fixtures, columns, walls, partitions, pipes, outlets, and built-in furniture and cabinets.
- .5 Adhere flooring to the subfloor without cracks, voids, raising and puckering at the seams. Roll with a 100 lb. (45 kg.) roller in the field areas. Hand-roll flooring at the perimeter and the seams to assure adhesion. Refer to specific rolling instructions of the flooring manufacturer.
- .6 Lay flooring to provide a minimum number of seams. Avoid cross seams, filler pieces, and strips. Match edges for colour shading and pattern at the seams in compliance with the manufacturer's recommendations.
- .7 Install flooring with adhesives, tools, and procedures in strict accordance with manufacturer's written instructions. Observe the recommended adhesive trowel notching.
- .8 Prepare heat-welded seams with special routing tool supplied for this purpose and heat weld with vinyl welding rod in seams. Use

methods and sequence of work in conformance with written instructions of the flooring manufacturer. Finish all seams flush and free from voids, recesses, and raised areas.

- .9 Install edge strips at unprotected or exposed edges where flooring terminates.

3.4 APPLICATION:
VCT TILE

- .1 Provide a high ventilation rate during installation and for 48 hours after installation.
- .2 Apply adhesive uniformly using recommended trowel in accordance with manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .3 Lay flooring with joints parallel to building lines. Avoid less than half tile widths cut at edges.
- .4 Install flooring to square grid pattern with all joints aligned.
- .5 As installation progresses and after installation roll flooring in two directions with 45kg minimum roller to ensure full adhesion.
- .6 Cut tile to fit neatly around fixed objects. Fit joints tightly.
- .7 Terminate flooring at centre line of door openings where adjacent floor finish is dissimilar. Install appropriate transition strip.

3.5 APPLICATION:
BASE

- .1 Lay out base to keep number of joints at minimum.
- .2 Clean substrate and prime with one coat of adhesive.
- .3 Apply adhesive to back of base.
- .4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
- .5 Install straight and level to variation of 1:1000.
- .6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.
- .7 Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles, minimum 300mm each leg.
- .8 Apply base to all built-in millwork as indicated.

3.6 CLEANING

- .1 Clean in accordance with manufacturer's written instructions.
- .2 Perform initial maintenance in accordance with manufacturer's written instructions. Contact Manufacturer's technical representative prior to initial clean.
- .3 Remove excess adhesive from floor, base and wall surfaces with damp mop and a neutral detergent.
- .4 Seal and wax floors and base using two coats of sealer and three coats of wax. Use materials recommended by the manufacturer for compatibility with maintenance procedures and products.
- .5 Dry buff flooring with a 1000 rpm plus rotary machine fitted with a suitable clean pad.

3.7 PROTECTION

- .1 Protect new floors from after initial cleaning until final inspection.
- .2 Prohibit traffic on floor for 48 hours after installation.

PART 1 - GENERAL

<u>1.1 SUMMARY</u>	.1	Section Includes: Single application sealer-hardener for existing concrete floors.
	.2	Precautions for avoiding staining concrete before and after application.
<u>1.2 REFERENCES</u>	.1	ASTM International (ASTM):
	.1	ASTM C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
	.2	ASTM C779 Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
	.3	ASTM C805 Standard Test Method for Rebound Number of Hardened Concrete.
	.4	ASTM C1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
	.5	ASTM D3359 Standard Test Methods for Measuring Adhesion by Tape Test.
	.6	ASTM G23 Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials (Withdrawn 2000).
<u>1.3 SUBMITTALS</u>	.1	General: Submit listed submittals in accordance with Conditions of the Contract and Section 01 33 00 - Submittal Procedures.
	.2	Product Data: Submit product data, including manufacturer's spec data sheet, installation instructions and technical bulletins for specified products.
	.3	Certificates: Manufacturer's certification that the installer is acceptable.
<u>1.4 QUALITY ASSURANCE</u>	.1	Installer Qualifications: Acceptable to the manufacturer.
<u>1.5 DELIVERY, STORAGE & HANDLING</u>	.1	General: Comply with Division 01 Product Requirements section.
	.2	Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with

identification labels intact.

- .3 Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.
- .4 Handling: Protect materials from dirt, corrosion, oil, grease and other contaminants.

PART 2 - PRODUCTS

2.1 MATERIAL

- 1. Cure-Seal-Hardener: a water-based chemically reactive penetrating sealer and hardener that seals by densifying concrete so that water molecules cannot pass through but air and water vapor can, and allows concrete to achieve full compressive strength, minimizing surface crazing and eliminating dusting.
 - .1 Abrasion Resistance to Revolving Disks: At least a 32.5% improvement over untreated samples when tested in accordance with ASTM C779.
 - .2 Surface Adhesion: At least a 22% increase in adhesion for epoxy when tested in accordance with ASTM D3359.
 - .3 Hardening: As follows when tested in accordance with ASTM C39:
 - .1 After 7 Days: An increase of at least 40% over untreated samples.
 - .2 After 28 Days: An increase of at least 38% over untreated samples.
 - .4 Coefficient of Friction: 0.86 dry, 0.69 wet when tested in accordance with ASTM C1028.
 - .5 Rebound Number: An increase of at least 13.3% over untreated samples when tested in accordance with ASTM C805.
 - .6 Light Exposure Degradation: No evidence of adverse effects on treated samples when tested in accordance with ASTM G23.
- .5 Standard of acceptance:
 - .1 Ashford Formula: Curecrete Distribution Ltd.

PART 3 - EXECUTION

3.1 MANUFACTURER'S
INSTRUCTIONS

- .1 Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.2 EXAMINATION

- .1 Do not begin installation until substrates have been properly prepared and are suitable for application of product.
- .2 If substrate preparation is the responsibility of another installer, notify Departmental Representative of unsatisfactory preparation before proceeding.

3.3 PREPARATION

- .1 Clean surfaces thoroughly prior to installation.
- .2 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- .3 Do not use frozen material. Thaw and agitate prior to use.
- .4 If construction equipment must be used for application, diaper all components that might drip oil, hydraulic fluid or other liquids.

3.4 INSTALLATION

- .1 Scope of work in Storage Room 111.
- .2 All work must be performed by an applicator certified by the manufacturer. Certification credentials are required.
- .3 Existing Concrete: Apply cure-seal-hardener only to clean bare concrete.
 - .1 Thoroughly remove previous treatments, laitance, oil and other contaminants.
 - .2 Saturate surface with cure-seal-hardener; re-spray or broom excess onto dry spots.
 - .3 Keep surface wet with cure-seal-hardener for a minimum soak-in period of 30-40 minutes.
 - .4 If most of the material has been absorbed after the 30 minute soak-in period, remove all excess material, especially from low spots, using broom or squeegee.
 - .5 If most of the material remains on the surface after the 30 minute soak-in period, wait until the surface becomes slippery and then flush with water,

removing all cure-seal-hardener residue. Squeegee completely dry, flushing any remaining slippery areas until no residue remains.

.4 If water is not available, remove residue using squeegee.

3.5 PROTECTION

- .1 Protect installed floors for at least 3 months until chemical reaction process is complete.
 - .1 Do not allow traffic on floors for 3 hours after application.
 - .2 Do not allow parking of vehicles on concrete slab. If vehicles must be temporarily parked on slab, place dropcloths under vehicles during entire time parked.
 - .3 Do not allow pipe cutting using pipe cutting machinery on concrete slab.
 - .4 Do not allow temporary placement and storage of steel members on concrete slabs.
 - .5 Clean up spills immediately and spot-treat stains with degreaser or oil emulsifier.
 - .6 Clean floor regularly in accordance with manufacturer's recommendations.

PART 1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 01 33 00 - Submittals.
- .2 Section 01 35 30 - Health & Safety Requirements.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 09 65 19 - Resilient Flooring.

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2 No.27.6-M91, Textile Test Methods - Flame Resistance - Methemine Tablet Test for Textile Floor Coverings.
 - .2 CAN/CGSB-4.2 No.77.1-94/ISO 4919:1978, Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.
 - .3 Aachner/ISO 2551 Dimensional Stability.
 - .4 CAN/CGSB-4.129-93(R1997), Carpets for Commercial Use.
 - .5 CAN/CGSB-25.20 Surface Sealer Floors.
 - .6 CAN/CGSB-4.2 No. 18.8 colour Fastness of Light.
- .2 Carpet and Rug Institute (CRI)
 - .1 CRI Carpet Standard Installation 2011.
 - .2 IAQ Carpet Testing Program.
- .3 National Floor Covering Association (NFCA)
 - .1 Floor Covering Specification Manual 1998.
- .4 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-10, Surface Burning Characteristics of Building Materials and Assemblies.
 - .2 CAN/ULC-S102.2-10, Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies.

1.3 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittals.
- .2 Indicate pattern direction and layout, open edges, pattern mix and other details required by Consultant to clarify work.

1.4 SUBMITTALS

- .1 Submit control submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit verification to demonstrate compliance with

CAN/ULC-102 and CAN/ULC-102.2.

- .3 Submit proof that carpet has been tested and passed the Indoor Air Quality (IAQ) Carpet Testing Program requirements of the Carpet and Rug Institute (CRI) and the Canadian Carpet Institute (CCI).
- .4 Submit testing by an independent agency for the Standards Council of Canada or the U.S. National Institute of Science and Technology National Voluntary Accreditation Program proving Yarn System meets specifications, if internally produced by the carpet manufacturer.
- .5 Submit construction and performance testing program proving that the yarn system meets specification, if produced by an independent fibre manufacturer.
- .6 Submit carpet manufacturer's installation instructions: Indicate special procedures and perimeter conditions requiring special attention.
- .7 Submit certification and description of carpet reclamation and recycling process.

1.5 PRODUCT DATA

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit product data sheet for each carpet, adhesive, carpet protection and subfloor patching compound.
- .3 Submit WHMIS MSDS - Material Safety Data Sheets acceptable to Labour Canada and Health Canada for carpet adhesive and seam adhesive. Indicate VOC content.
- .4 Submit data on specified products, describing physical and performance characteristics, sizes, patterns, colours, and methods of installation.

1.6 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00- Submittal Procedures.
- .2 Submit duplicate architectural folders of standard range carpet goods and full range of colours.
- .3 Submit one full size sample to indicate texture, colour and patterning in each colour to be determined.

1.7 CLOSEOUT SUBMITTALS

- .1 Submit operation and maintenance data for incorporation into manual specified in Section 01 33 00 - Submittal Procedures.

- .2 Submit maintenance data: Include maintenance procedures, recommendations for maintenance materials and equipment, and suggested schedule for cleaning.

1.8 QUALITY
ASSURANCE

- .1 Installer (Trade Contractor):
 - .1 Be responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturer's written instructions.
- .2 Manufacturer:
 - .1 Manufacturer to have available a certified technical representative to assist the contractor in application of the product, field reviews during installation, and final inspection.
 - .2 Manufacturer must have a certified Environmental Management System.
 - .3 Manufacturer must have a Carpet Reclamation Program.

1.9 REGULATORY
REQUIREMENTS

- .1 Prequalification: Tested to CAN/CGSB-4.2-No.27.6.
- .2 Indoor Air Quality: compliance with CRI/CCI Green Label Indoor Air Quality Program, CRI/CCI-IAQ requirements for maximum total volatile chemicals released into air. Label each carpet product with CRI/CCI-IAQ label.

1.10 DELIVERY,
STORAGE AND
HANDLING

- .1 Label packaged materials.
- .2 Store packaged materials in original containers or wrapping with manufacturer's seals and labels intact.
- .3 Store carpeting and accessories in location as directed by Departmental Representative. Store carpet and adhesive at minimum temperature of 18oC and relative humidity of maximum 65% for minimum of 48 hours before installation.
- .4 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
- .5 Store materials in area of installation for minimum period of 48 hours prior to installation.
- .6 Modular carpet: store on pallet form as supplied by Manufacturer. Do not stack pallets.

1.11 WASTE
MANAGEMENT
AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/ Demolition Waste Management And Disposal.
- .2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.

1.12 ENVIRONMENTAL
REQUIREMENTS

- .1 Moisture: Ensure substrate is within moisture limits and alkalinity limits prescribed by manufacturer. Prepare moisture testing and provide report to Departmental Representative.
- .2 Temperature: Maintain ambient temperature of not less than 18oC from 48 hours before installation to at least 48 hours after completion of work.
- .3 Relative humidity: Maintain relative humidity between 10 and 65% RH for 48 hours before, during and 48 hours after installation.
- .4 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
- .5 Ventilation: provide continuous ventilation during and after carpet application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of carpet installation.
- .6 Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- .1 Certified to Carpet and Rug Institute's and the Canadian Carpet Institute IAQ requirements, Green Label Plus Certified.

2.2 MODULAR
CARPET (CPT)

- .1 Project requirements: two coordinating styles in coordinating colours and patterns varying in scale. Refer to Dwg. A4 for pattern.
Carpet Type 1 -field pattern - neutral, heather mix
Carpet Type 2 -accent pattern - neutral base to match Type 1 with the introduction of two colours in striped arrangement running the length of the tile plank.

- .2 Carpet tile dimensions:
 - .1 Plank shape: width range minimum 25cm to maximum 46cm; length range minimum 92cm to maximum 100cm.
- .3 Carpet: to CAN/CGSB 4.129 and as follows:
 - .1 Certified for flammability to Health Canada regulations under "Hazardous Products (Carpet) Regulations" Part II of the Schedule.
 - .2 Maximum flame spread rating 300, maximum smoke developed classification 500 when tested to CAN/ULC-S 1 02 .2.
 - .3 Certified to Carpet and Rug Institute's and the Canadian Carpet Institute's IAQ requirements.
 - .4 Performance rating to ASTM D 5417.
- .4 Water consumption for final product:
 - .1 100% solution dyed: 0 litres/m2.
- .5 Emission Rates During Production:
 - .1 Total Volatile Organic Compound (TVOC's): maximum .5 mg/m2 when tested to ASTM D5116.
 - .2 4-PC: maximum .5 mg/m2 when tested to
 - .3 ASTM D5116 Formaldehyde: maximum .5 mg/m2 when tested to ASTM D5116.
 - .4 Styrene: maximum .4 mg/m2 when tested to ASTM D5116.
 - .5 Volatile Organic Compound (VOC's) for adhesive: Must meet CRI Green Label plus.
- .6 Construction: tufted loop.
- .7 Pile fibre: CAN/CGSB 4.129:
 - .1 100% first quality, bulk continuous filament nylon, branded and certified, externally extruded by a fibre producer offering a construction and performance standards testing program for the carpet specified, either: type 6.6 or 6, Trilobal or Square Hollowfill CrossSection. Fibre shape to have maximum Modification Ratio of 2.6 for soil release capabilities. Internally extruded carpet is acceptable when it meets the construction and performance testing from an independent testing agency accredited to do the specified tests by the Standards Council of Canada or by the U.S. National Institute of Science and Technology's National Voluntary Accreditation Program.
 - .2 Recycled content: average calculated percentage minimum 30%.
- .8 Yarn ply: multiple plies.
- .9 Pile Weight: Minimum 542 gm/m2 (16 oz/sq yard).
- .10 Tuftbind: ASTM D 1335, minimum 35 N.

- .11 Pile Thickness: minimum 2.00 mm, maximum 5.00 mm.
- .12 Pile Density: minimum 9.5 Kilotex or 5400 density.
- .13 Yarn Dye Method: 100% solution.
- .14 Total Weight: minimum 4376 gmlm2 for carpet tile with fiberglass or nylon reinforced vinyl composite secondary backing and 3187 gmlm2 for carpet tile with polyolefin secondary backing.
- .15 Colourization: multiple colour tones.
- .16 Colourfastness to light: CAN/CGSB 4.2 No.18.3, AA TCC 16E, minimum L5.
- .17 Colour Fastness to Atmospheric Fading: to AATCC 129 and AATCC 23.
- .18 Colourfastness to Crocking AATCC 165 >or- than 4.0 wet, dry.
- .19 Primary Backing: non-woven.
- .20 Secondary Backing: fiberglass or nylon reinforced vinyl composite; polyolefin.
 - .1 Density: as per ASTM D 1667.
 - .2 Dimensional Stability: ISO 2551 (Aachner Test), maximum 0.15% change.
 - .3 Delamination: ASTM D3936: minimum 5N/cm.
 - .4 Recycled Content: Minimum average calculated percentage 40%.
- .21 Colour, texture and pattern to be selected from bidder's standard range of carpet product.
- .22 Installation:
 - .1 Installation pattern per drawing A-1xxx Flooring Plan.
 - .2 Contractor must verify and obtain written approval for installation with Departmental Representative on site prior to installation.
- .23 Adhesives:
 - .1 Releasable, pressure sensitive adhesive to conform to carpet manufacturers specifications.
 - .2 Acrylic polymer emulsion, resin mixture, latex adhesive.
 - .3 Alternate adhesive method may be required to be used (eg: "peel and stick") at the discretion of the Departmental Representative.
- .24 Recycling:
 - .1 New Carpet: Must be eligible for recycling by the supplying mill or fibre producer within an existing program in place; submit program parameters.

2.3 SPECIAL
REQUIREMENTS -
ALL PRODUCTS

- .1 Soil Resistance: An average of 3 fluorine analyses AA TCC 189 of a single composite sample to be a minimum of 300 ppm fluorine by weight when new and an average of 3 fluorine analyses of a single composite using AA TCC 189 to be a maximum of 200 ppm fluorine by weight after 2 AA TCC 171 (HWE) cleanings.
- .2 Stain Resistance: AA TCC I 7 5, Pile Floor Covering AA TCC 1 71 minimum 2 washings as per AA TCC 171 to simulate removal of topical treatments by hot water extraction, followed by: AA TCC Red 40 Reference Scale.
- .3 Appearance Retention: Hexapod Drum ASTM D5252 for 12,000 cycles, minimum rating of 3.0 using CRI TM-101 Reference Scales.
- .4 Permanent static control: to AATCC 134, 3500V maximum at 20% RH and 22°C.
- .5 Antimicrobial: To AATCC 134 washed and AATCC 174 Part 2 & 3.
- .6 Acceptable Product:
Interface
Carpet Type 1-Harmonize 104044 Pewter
Carpet Type 2 -Ground Waves 104056 Pewter/Colors

2.4 ACCESSORIES

- .1 Rubber base: 100mm high, colour to be selected by the Consultant. Sample to be approved by the Departmental Representative before installation.
- .2 Carpet protection: non-staining, heavy duty draft paper.
- .3 Concrete floor sealer to CAN/CGSB 25.20, Type I.
- .4 Sub floor patching compound: Portland cement base filler, mix with latex and water to form a cementations paste.

PART 3 - EXECUTION

3.1 SUB-FLOOR
TREATMENT

- .1 Concrete shall be inspected to determine special care required to make it a suitable foundation for carpet. Cracks 3 mm wide or protrusions over 0.8 mm will be filled and levelled with appropriate and compatible latex polymer fortified patching compound.

- .2 Do not exceed manufacturer's recommendations for patch thickness.
- .3 Large patch areas are to be primed with a compatible primer.
- .4 At all intersections of resilient flooring with engineered wood, and where indicated, feather sub-floor up with specified levelling material so that the top surfaces of the wood and carpet tile are flush. Feathered area to extend back 3000mm minimum from intersection and ensure there is no apparent visual slope. Wood flooring is approximately 16mm thick.
- .5 Concrete substrates shall be cured, clean and dry.
- .6 Concrete substrates shall be free of paint, dirt, grease, oil, curing or parting agents, and other contaminants, including sealers, that may interfere with the bonding of the adhesive.
- .7 Wherever a powdery or porous concrete surface is encountered, a primer compatible with the adhesive shall be used to provide a suitable surface for glue-down installation.

3.2 PREPARATION

- .1 Prepare floor surfaces in accordance with CRI 104 Standard for Installation of Commercial Carpet.
- .2 Pre-condition carpeting following manufacturer's printed instructions.

3.3 MODULAR CARPET APPLICATION

- .1 Apply release type adhesive and install modular carpet in accordance with manufacturer's written instructions.
- .2 Lay modular carpet with butt seams.
- .3 Roll modular carpet with appropriate roller for complete contact of carpet with mill-applied adhesive to sub-floor.

3.4 SEAMS

- .1 Seal edges of cut-outs with latex.
- .2 Carpet visibility of joints to acceptable industry standards.

3.5 BASE INSTALLATION

- .1 Install resilient base in accordance with Section 09 65 19.

3.6 PROTECTION OF
FINISHED WORK

- .1 Vacuum carpets clean immediately after completion of installation. Protect traffic areas.
- .2 Prohibit traffic on carpet for a period of 24 hours until adhesive is cured.
- .3 Install carpet protection to satisfaction of Consultant.

PART1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 05 50 00 - Metal Fabrications.
- .2 Section 08 11 14 - Metal Doors and Frames.
- .3 Section 08 36 13.02 - Sectional Metal Doors.
- .4 Section 09 91 23 - Interior Painting: Painting of Interior Surfaces.

1.2 REFERENCES

- .1 Painting Specifications Manual (2007), Master Painters Institute (MPI).
- .2 Systems and Specifications Manual, SSPC Painting Manual, Volume Two, 2008 Edition, Society for Protective Coatings (SSPC).
- .3 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA).
- .4 National Fire Code of Canada (2005).

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 Conform to latest MPI requirements for exterior painting work including preparation and priming.
- .3 Materials (primers, paints, coatings, 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.
- .4 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.
- .5 Standard of Acceptance:
 - .1 Walls: No defects visible from a distance of 1000 mm at 90° to surface.
 - .2 Soffits: No defects visible from floor at 45°

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 Provide paint products meeting MPI "Environmentally Friendly" E2 ratings based on VOC (EPA Method 24) content levels.

1.5 INSPECTION
REQUIREMENTS

- .1 Exterior painting and decorating work shall be inspected by the manufacturer's technical representative (Inspector) acceptable to the Departmental Representative. Painting contractor shall notify the Inspector a minimum of one week prior to commencement of work and provide a copy of project painting specification, plans and elevation drawings (including pertinent details) as well as a Finish Schedule.
- .2 Exterior surfaces requiring painting shall be inspected by the Inspector who shall notify Departmental Representative and General Contractor in writing of defects or problems, prior to commencing painting work, or after prime coat shows defects in substrate.
- .3 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer shall provide as part of work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost.

1.6 SCHEDULING OF
WORK

- .1 Submit work schedule for various stages of painting to Departmental Representative for approval. Submit schedule minimum of 48 hours in advance of proposed operations.
- .2 Obtain written authorization from Project Manager for changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.7 SUBMITTALS

- .1 Submit product data and manufacturer's installation/application instructions for paints and coating products to be used in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit WHMIS MSDS - Material Safety Data Sheets.
- .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).

1.8 QUALITY CONTROL

- .1 Provide mock-up of existing metal siding
- .2 Prepare and paint existing metal siding surface designated by the Departmental Representative, with specified paint custom coloured to match colours, gloss/sheen, and texture of new siding. Prepare the mock up to meet MPI Painting Specification Manual standards for review and approval. Provide minimum full. When approved, surface and/or items shall become acceptable standard of finish quality and workmanship for similar on-site work.

1.9 EXTRA MATERIALS

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

1.10 DELIVERY,
HANDLING AND
STORAGE

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

sealed, with labels intact.

- .3 Labels shall clearly indicate:
 - .1 Manufacturer's name and address.
 - .2 Type of paint or coating.
 - .3 Compliance with applicable standard.
 - .4 Colour number in accordance with established colour schedule.
- .4 Remove damaged, opened and rejected materials from site.
- .5 Provide and maintain dry, temperature controlled, secure storage.
- .6 Observe manufacturer's recommendations for storage and handling.
- .7 Store materials and supplies away from heat generating devices.
- .8 Store materials and equipment in a well ventilated area with temperature range 7° C to 30° C.
- .9 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
- .10 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Departmental Representative.
- .11 Remove paint materials from storage only in quantities required for same day use.
- .12 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- .13 Fire Safety Requirements:
 - .1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site 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 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Unless specifically pre-approved by specifying

body, Inspector and applied product manufacturer, perform no painting work when:

- .1 ambient air and substrate temperatures are below 10 ° C.
 - .2 substrate temperature is over 32 ° C unless paint is specifically formulated for application at high temperatures.
 - .3 substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.
 - .4 the relative humidity is above 85% or when dew point is less than 3 ° C variance between air/surface temperature.
 - .5 rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.
- .2 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 Apply paint finishes only when conditions forecast for entire period of application fall within manufacturer's recommendations.
 - .5 Do not apply paint when:
 - .1 Temperature is expected to drop below 10 ° C before paint has thoroughly cured.
 - .2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.
 - .3 Surface to be painted is wet, damp or frosted.
 - .6 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.
 - .7 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
 - .8 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

1.12 WASTE
MANAGEMENT AND
DISPOSAL

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

- .2 Paint 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 the ground the following procedures shall be strictly adhered to:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
 - .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 contaminate 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 Set aside and protect surplus and uncontaminated finish materials:. Deliver to or arrange collection by employees, individuals, or organizations for verifiable re-use or re-manufacturing.
- .8 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 Paint materials listed in the latest edition of the MPI Approved Products List (APL) are acceptable for

use on this project.

- .2 Paint materials for paint systems shall be products of a single manufacturer.
- .3 Only qualified products with E2 "Environmentally Friendly" rating are acceptable for use on this project.
- .4 Paints, coatings, solvents, cleaners, and other fluids, shall:
 - .1 be water-based water soluble water clean-up.
 - .2 be non-flammable biodegradable.
 - .3 be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
 - .4 be manufactured without compounds which contribute to smog in the lower atmosphere.
- .5 Water-borne surface coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).
- .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.

2.2 COLOURS

- .1 Departmental Representative will provide Colour Schedule after Contract award.
- .2 Colour schedule will be based upon selection of three base colours and one accent colours. No more than four colours will be selected for the entire project and no more than three colours will be selected in each area.
- .3 Selection of colours will be from manufacturers full range of colours.
- .4 Where specific products are available in a restricted range of colours, selection will be based on the limited range.
- .5 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND
TINTING

- .1 Perform colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials is allowed only with Departmental Representative's written permission.
- .2 Paste, powder or catalysed 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 Departmental Representative.
- .5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 EXTERIOR
PAINTING SYSTEMS

- .1 Paint formula types are based on the following manufacturers' products:
 - .1 PPG: Pittsburg Paints.
 - .2 BM: Benjamin Moore.
 - .3 ICI: ICI, Glidden or Devoe
- .2 Paint XP-1: For exterior primed metal doors and frames and both interior and exterior faces of overhead doors, apply:
 - .1 Two coats of Pitthane Ultra Acrylic Urethane (PPG Code 95-812 Series) @ 2 to 3 mils DFT per coat.
 - .2 Two coats aliphatic acrylic urethane (BM M74/M75) @ 2 to 3 mils DFT per coat.
 - .3 Two coats Devoe acrylic urethane (ICI 379) @ 2 to 3 mils DFT per coat.
- .3 Paint XP-2: For exterior galvanized railings, galvanized frames at overhead doors, steel bollards without sleeves, galvanized compactor chute, exposed column at entrance, etc., apply:
 - .1 One coat Rapid Coat epoxy primer (PPG Code 95-245 Series) @ 5 to 7 mils DFT. Two coats of Pitthane Ultra Acrylic Urethane (PPG Code 95-812 Series) @ 2 to 3 mils DFT per coat.
 - .2 One coat mastic epoxy primer (BM M45/M46) @ 5 to 7 mils DFT. Two coats aliphatic acrylic urethane

(BM M74/M75) @ 2 to 3 mils DFT per coat.

.3 One coat Devco epoxy primer (ICI 205) @ 5 to 7 mils DFT. Two coats acrylic urethane (ICI 379) @ 2 to 3 mils DFT per coat.

PART 3 - EXECUTION

3.1 GENERAL

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

3.2 EXISTING CONDITIONS

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Project Manager damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

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 Departmental Representative.
- .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
- .3 Protect factory finished products and equipment.
- .4 Protect passing building occupants in and about the building.
- .5 Remove light fixtures, surface hardware on doors, and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Securely store and re-install after painting is completed.
- .6 Move and cover exterior furniture and portable

equipment as necessary to carry out painting operations. Replace as painting operations progress.

- .7 As painting operations progress, place "WET PAINT" signs in pedestrian and vehicle traffic areas.

3.4 CLEANING AND PREPARATION

- .1 Clean and prepare exterior surfaces in accordance with MPI Painting Specification Manual requirements. Refer to the MPI Manual in regard to specific requirements and as follows:
 - .1 Remove dust, dirt, and other surface debris by brushing, wiping with dry, clean cloths or compressed air.
 - .2 Wash surfaces with a biodegradable detergent (and bleach where applicable) and clean warm water using a stiff bristle brush to remove dirt, oil and 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 On overhead doors, lightly sand existing factory finishes to provide adequate adhesion of site applied coatings.
- .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 Do not apply paint until prepared surfaces have been accepted by the Departmental Representative.

3.5 APPLICATION

- .1 Method of application to be as approved by Departmental Representative. Apply paint by brush roller, air sprayer or airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
 - .1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.
 - .2 Work paint into cracks, crevices and corners.
 - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
 - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple unless approved by Departmental Representative.
 - .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 Spray Application:
 - .1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - .2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
 - .3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.
 - .4 Brush out immediately runs and sags.
 - .5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Departmental Representative.
- .5 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .7 Sand and dust between coats to remove visible defects.
- .8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as projecting ledges.
- .9 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

-
- 3.6 OVERHEAD DOORS .1 Use masks and templates to paint patterns, lines, numbers and letters on overhead doors as indicated on drawings.
- .2 Paint both inside and outside surfaces of overhead doors. Interior surfaces to have same pattern, lines, numbers and letters as indicated on the drawings for the exterior surfaces.
-
- 3.7 FIELD QUALITY CONTROL .1 Field inspection of exterior painting operations to be carried out by the manufacturer's trained technical representative.
- .2 Advise Departmental Representative when each surface and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .3 Co-operate with Inspector and provide access to areas of work.
-
- 3.8 RESTORATION .1 Clean and re-install all hardware items removed before undertaken painting operations.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Project Manager. Avoid scuffing newly applied paint.
- .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33
- .2 Environmental Protection Agency (EPA)
 - .1 EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 - 1995, (for Surface Coatings).
- .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 Master Painters Institute (MPI)
 - .1 MPI Architectural Painting Specifications Manual, 2004.
 - .2 MPI Green Performance Standard.
- .5 National Fire Code of Canada - 2005
- .6 Society for Protective Coatings (SSPC)
 - .1 SSPC Painting Manual, Volume Two, 2008 Edition, Systems and Specifications Manual.

1.2 QUALITY
ASSURANCE

- .1 Mock-Ups:
 - .1 Provide 2500mm x 2500mm mock-up. Prepare and paint designated surface, area, room or item (in each colour scheme) to specified requirements, with specified paint or coating showing selected colours, gloss/sheen, textures.
 - .2 Mock-up will be used:
 - .1 To judge workmanship, substrate preparation, operation of equipment and material application and workmanship to MPI Architectural Painting Specification Manual standards.
 - .3 Locate where directed by Departmental Representative.
 - .4 Allow 48 hours for inspection of mock-up before proceeding with work.
 - .5 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.
- .2 Pre-Installation Meeting:
 - .1 Convene pre-installation meeting two weeks prior to beginning work of this Section.
 - .1 Verify project requirements.

- .2 Review installation and substrate conditions.
- .3 Test surfaces in scope of work for type of paint that has been applied. Report instances of alkyd or epoxy based paint to Departmental Representative.
- .4 Coordination with other building subtrades.
- .5 Review manufacturer's installation instructions and warranty requirements.
- .2 The pre-installation meeting shall be held with the following people present:
 - .1 The Departmental Representative.
 - .2 The applicator and his designated inspectors and crew supervisors who will be working on site on this project.
 - .3 The General contractor's inspection staff.
- .3 Items to be present - specifications, finish schedule, colour schedule, product data sheets - MSDS.
- .3 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety Requirements.

1.3 SCHEDULING

- .1 Submit work schedule for various stages of painting to Departmental Representative for review. Submit schedule minimum of 72 hours in advance of proposed operations.
- .2 Obtain written authorization from General Contractor for changes in work schedule.

1.4 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit product data and instructions for each paint and coating product to be used.
 - .2 Submit product data for the use and application of paint thinner.
 - .3 Submit three copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOCs during application and curing.
- .3 Samples:
 - .1 Submit full range of colour sample chips.
- .4 Manufacturer's Instructions:

.1 Submit manufacturer's installation and application instructions.

.5 Closeout Submittals: submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals include following:

.1 Product name, type and use.

.2 Manufacturer's product number.

.3 Colour numbers.

.4 MPI Environmentally Friendly classification system rating.

1.5 MAINTENANCE

.1 Extra Materials:

.1 Deliver extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals.

.2 Quantity: provide one - four litre can of each type and colour of primer and finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

.3 Delivery, storage and protection: comply with Departmental Representative's requirements for delivery and storage of extra materials.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.1 Pack, ship, handle and unload materials in accordance with manufacturer's written instructions.

.2 Acceptance at Site:

.1 Identify products and materials with labels indicating:

.1 Manufacturer's name and address.

.2 Type of paint or coating.

.3 Compliance with applicable standard.

.4 Colour number in accordance with established colour schedule.

.3 Remove damaged, opened and rejected materials from site.

.4 Storage and Protection:

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

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

.3 Store materials and equipment in well ventilated area with temperature range 7°C to 30°C.

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

- .6 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.
- .7 Remove paint materials from storage only in quantities required for same day use.
- .8 Fire Safety Requirements:
 - .1 Provide one 9kg Type ABC dry chemical fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.
- .9 Waste Management and Disposal:
 - .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management System.
 - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
 - .3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling in accordance with Waste Management Plan (WMP).
 - .4 Separate for reuse and recycling and place in designated containers Steel Metal and Plastic waste in accordance with Waste Management Plan (WMP).
 - .5 Place materials defined as hazardous or toxic in designated containers.
 - .6 Handle and dispose of hazardous materials in accordance with appropriate regulations.
 - .7 Ensure emptied containers are sealed and stored safely.
 - .8 Unused paint materials must be disposed of at official hazardous material collections site as approved by Departmental Representative.
 - .9 Paint finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
 - .10 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
 - .11 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
 - .12 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:

- .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
- .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
- .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
- .4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.
- .5 Empty paint cans are to be dry prior to disposal or recycling.
- .13 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .14 Set aside and protect surplus and uncontaminated finish materials: Deliver to or arrange collection by or organizations for verifiable re-use or re-manufacturing.

1.7 SITE CONDITIONS

- .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 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
 - .3 Provide continuous ventilation for seven days after completion of application of paint.
 - .4 Coordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
 - .5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
 - .6 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Unless pre-approved written approval by and product manufacturer, perform no painting when:
 - .1 Ambient air and substrate temperatures are below 10 degrees C.
 - .2 Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.
 - .3 Substrate and ambient air temperatures are not expected to fall within paint manufacturer's

prescribed limits.

.4 The relative humidity is under 85 % or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.

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

.6 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.

.2 Perform painting work when maximum moisture content of the substrate is below:

.1 Allow new concrete and masonry to cure minimum of 28 days.

.2 15 % for wood.

.3 12 % for plaster and gypsum board.

.4 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".

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

.3 Surface and Environmental Conditions:

.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.

.2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.

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

.4 Additional interior application requirements:

.1 Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 All site applied interior paints must confirm to VOC content requirements in MPI Green Performance Standard GPS-1-2 and GPS-2-12.

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

2.2 COLOURS

- .1 Departmental Representative will provide Colour Schedule after Contract award.
- .2 Colour schedule will be based upon selection of two base colours and four accent colours. No more than eight colours will be selected for entire project and no more than three colours will be selected in each area.
- .3 Where specific products are available in restricted range of colours, selection will be based within the restricted range.
- .4 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 INTERIOR PAINTING SYSTEMS

- .1 The following interior paint formula types are based on the following manufacturers' products.
 - .1 PPG: Pittsburgh Paints.
 - .2 BM: Benjamin Moore.
 - .3 ICI: ICI, Glidden or Devoe.
- .2 Paint PT-2: For gypsum board walls, apply:
 - .1 Two coats gloss water based epoxy (PPG Code 98 Line) @ 2.0 to 3.0 mils DFT per coat.
 - .2 Two coats gloss water based epoxy (BM M43-44) @ 2.0 to 3.0 mils DFT per coat.
 - .3 Two coats gloss water based epoxy (ICI 4408) @ 2.0 to 3.0 mils DFT per coat.
- .3 Paint PT-3: For gypsum board ceilings, apply:
 - .1 Two coats of acrylic latex eggshell (PPG Code 89-Line) @ 1.5 to 2.0 mils DFT per coat.
 - .2 Two coats acrylic latex eggshell (BM 223) @ 1.5 to 2.0 mils DFT per coat.
 - .3 One coat latex primer (ICI 36600). Two coats acrylic latex eggshell (ICI 59325) @ 1.5 to 2.0 mils DFT per coat.
- .4 Paint PT-4: For steel doors and frames (interior), apply:
 - .1 Two coats of scrubable gloss 100% acrylic (PPG Code 90-374 Series) @ 2.0 to 3.0 mils DFT per coat.
 - .2 Two coats of scrubable gloss 100% acrylic (BM M-29) @ 2.0 to 3.0 mils DFT per coat.

- .3 Two coats of scrubable gloss 100% acrylic (ICI 4216) @ 2.0 to 3.0 mils DFT per coat.
- .5 Paint PT-5: For exposed galvanized duct work:
 - .1 One coat Pitt Tech Primer (PPG Code 90-712) @ 2mils DFT. Two coats of acrylic latex eggshell (PPG Code 89-Line) @ 1.5 to 2.0 mils DFT per coat.
 - .2 One coat acrylic latex metal primer (BM Code M04) @ 2mils DFT. Two coats acrylic latex eggshell (BM 223) @ 1.5 to 2.0 mils DFT per coat.
 - .3 One coat Devoe Galvanized primer (ICI 4020) @ 2mils DFT. Two coats acrylic latex eggshell (ICI 59325) @ 1.5 to 2.0 mils DFT per coat. Two Coats of same paint as GWB ceilings.
- .6 Paint PT-6: For clear maple doors and frames:
 - Base application of stain and toner to match existing salvaged maple doors.
 - One coat of catalyzed sealing lacquer.
 - Two coats of catalyzed top coat lacquer.
 - Sand between coats.
 - Acceptable products:
 - .1 ML Campbell
 - .2 Sadolin

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

3.2 GENERAL

- .1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Report instances of alkyd or epoxy based existing coating before proceeding with work.

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

- .4 Maximum moisture content as follows:
 - .1 Gypsum board: 12%.
 - .2 Concrete: 12%.
 - .3 Concrete Block/Brick: 12%.
 - .4 Wood: 15%.

3.4 PREPARATION

- .1 Protection:
 - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Departmental Representative.
 - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - .3 Protect factory finished products and equipment.
- .2 Surface Preparation:
 - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
 - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
 - .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.
- .3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
 - .1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
 - .2 Wash surfaces with a biodegradable detergent and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
 - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
 - .4 Allow surfaces to drain completely and allow to dry thoroughly.
 - .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

- .6 Use trigger operated spray nozzles for water hoses.
- .7 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
- .4 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.
- .5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
 - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
 - .2 Apply wood filler to nail holes and cracks.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes blowing with clean dry compressed air or vacuum cleaning.
- .8 Touch up of shop primers with primer as specified.
- .9 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.

3.5 APPLICATION

- .1 Method of application to be as approved by Departmental Representative. Apply paint by brush, roller, air sprayer or airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
 - .1 Apply paint in uniform layer using brush and/or roller type suitable for application.
 - .2 Work paint into cracks, crevices and corners.
 - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
 - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
 - .5 Remove runs, sags and brush marks from finished work and repaint.

- .3 Spray application:
 - .1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - .2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
 - .3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
 - .4 Brush out immediately all runs and sags.
 - .5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.
- .5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .7 Sand and dust between coats to remove visible defects.
- .8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .9 Finish closets and alcoves as specified for adjoining rooms.
- .10 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 MECHANICAL EQUIPMENT

- .1 In unfinished areas leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish.
- .2 Do not paint over nameplates.
- .3 Keep sprinkler heads free of paint.
- .4 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.

3.7 FIELD QUALITY
CONTROL

- .1 Standard of Acceptance:
- .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
- .2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
- .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

- .2 Advise Departmental Representative when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .3 Cooperate with inspection firm and provide access to areas of work.
- .4 Retain purchase orders, invoices and other documents to prove conformance with specification when requested by Project Manager.

3.8 RESTORATION

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

END