

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C 36/C 36M-01, Specification for Gypsum Wallboard.
 - .2 ASTM C 475-01, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .3 ASTM C 645-00, Specification for Nonstructural Steel Framing Members.
 - .4 ASTM C 754-00, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 - .5 ASTM C 840-01, Specification for Application and Finishing of Gypsum Board.
 - .6 ASTM C 1002-01, Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - .7 ASTM C 1047-99, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - .2 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-1988(R2000), Surface Burning Characteristics of Building Materials and Assemblies.
- 1.2 SUBMITTALS
- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures 01 00 10 - General Instructions.
 - .2 Product Data: submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 47 17 - Sustainable Requirements: Contractor's Verification. Indicate VOC's for sealants.
- 1.3 DESIGN REQUIREMENTS
- .1 Partition assembly to be non-combustible construction.
 - .2 Minimum sound transmission rating of installed panel partition to be STC as indicated, tested to ASTM E 90.
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| <u>1.4 STORAGE AND HANDLING</u> | .1 | Store materials inside, level, under cover. Protect from weather, damage from construction operations and other causes, in accordance with manufacturer's printed instructions. |
| | .2 | Handle materials to prevent damage to edges or surfaces. Protect metal accessories and trim from being bent or damaged. |

PART 2 - PRODUCTS

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| <u>2.1 NON-STRUCTURAL METAL FRAMING</u> | .1 | Non-load bearing channel stud framing: to ASTM C 645, stud size as indicated, roll formed from 0.53 mm 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, in widths to suit stud sizes, 32 mm flange height. |
| | .3 | Metal channel stiffener: 19 x 1.4 mm thick cold rolled steel, coated with rust inhibitive coating. |

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| <u>2.2 GYPSUM BOARD</u> | .1 | Standard board: to ASTM C 36/C 36M regular, Type X, 16 mm thick, 1200 mm wide x maximum practical length, ends square cut, edges tapered. |
| | .2 | Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board. |
| | .3 | Steel drill screws: to ASTM C 1002. |
| | .4 | Casing beads, corner 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. |
| | .5 | Joint compound: to ASTM C 475, asbestos-free. |
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- 2.3 ACCESSORIES
- .1 Acoustical insulation and sealant: Refer to Section 07 21 16 - Blanket Insulation.
 - .2 Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.

PART 3 - EXECUTION

- 3.1 ERECTION OF FRAMING
- .1 Install steel framing members to receive screw-attached gypsum board in accordance with ASTM C 754 except where specified otherwise.
 - .2 Align partition tracks at floor and ceiling and secure at 400 mm on centre maximum.
 - .3 Place studs vertically at 400 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.
 - .4 Erect metal studding to tolerance of 1:1000.
 - .5 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
 - .6 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
 - .7 Install heavy gauge single jamb studs at openings.
 - .8 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
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3.1 ERECTION OF
FRAMING
(Cont'd)

- .9 Provide 40 mm stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.
- .10 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .11 Extend partitions to ceiling height except where noted otherwise on drawings.
- .12 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use double track slip joint.
- .13 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .14 Install insulating strip under studs and tracks around perimeter of sound control partitions.

3.2 ERECTION OF
GYPSUM BOARD AND
ACCESSORIES

- .1 Do application and finishing of gypsum board in accordance with ASTM C 840 except where specified otherwise.
 - .2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C 840 except where specified otherwise.
 - .3 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
 - .4 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles,.
 - .5 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
 - .6 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
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3.2 ERECTION OF
GYPSUM BOARD AND
ACCESSORIES

(Cont'd)

- .7 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .8 Install wall furring for gypsum board wall finishes in accordance with ASTM C 840, except where specified otherwise.
- .9 Install acoustical insulation and sealant in sound rated partitions to correspond with tested assembly.
- .10 Install gypsum boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.

3.3 APPLICATION

- .1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.
- .2 Apply single and double layer gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.

3.4 INSTALLATION

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre using contact adhesive for full length.
 - .2 Install casing beads around perimeter of suspended ceilings.
 - .3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
 - .4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
 - .5 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - .1 Rigidly secure frames to furring or framing systems.
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3.4 INSTALLATION
(Cont'd)

- .6 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.
- .7 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.
- .8 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.
- .9 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

PART 1 - GENERAL

<u>1.1 RELATED DOCUMENTS</u>	.1	Drawings and general conditions of contract, including General and Supplementary conditions and Divisions-1 Specification sections apply to work on this section.
<u>1.2 SUMMARY</u>	.1	Section Includes: .1 Metal ceiling panels. .2 Suspension system.
	.2	Related Sections: .1 Section 09 51 99 - Acoustical Ceilings for Minor Works. .1 Divisions 25 - Integrated Automation and 26 - Electrical
<u>1.3 REFERENCES</u>	.1	American Society for Testing and Materials International (ASTM) .1 ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon steel Wire. .2 ASTM C 423 "Sound Absorption and Sound Absorption coefficients by the Reverberation Room Method". .3 ASTM E 84 "Standard Test Method for Surface burning Characteristics of Building Materials". .4 ASTM E 1264 Classification for Acoustical Ceiling Products. .5 ASTM E 1477 "Standard Test for Luminous Reflectance Factor of Acoustical Materials by use of Integrating-Sphere Reflectometers".
<u>1.4 SUBMITTALS</u>	.1	Product Data: Submit manufacturer's technical data for each type of ceiling unit and suspension system required.
	.2	Samples: Minimum 90mm x 90mm samples of specified metal panel 200mm long samples of suspension system if applicable.
	.3	Installation Instructions: submit manufacturer's installation instructions as referenced in Part 3 - Installation.
	.4	Certifications: Manufacturer's certifications that products comply with specified

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| 1.4 SUBMITTALS
(Cont'd) | .4 | Certifications:(Cont'd)
requirements, including laboratory reports
showing compliance with specified tests and
standards. |
| | .5 | If the material supplied by the acoustical
subcontractor does not have a Factory Mutual
classification of acoustical performance on
every carton, subcontractor shall be required
to send material from every production run
appearing on the job to an independent or
NVLAP approved laboratory for testing, at the
architect's or owner's discretion. All
products not conforming to manufacturer's
current published values must be removed,
disposed of and replaced with complying
product at the expense of the Contractor
performing the work. |
| 1.5 QUALITY
ASSURANCE | .1 | Single-source Responsibility: Provide metal
ceiling and suspension components produced by
a single manufacturer with resources adequate
to deliver a product of consistent quality in
terms of appearance and physical properties
for all project scopes without risk of delay
or interruption. |
| | .2 | Fire Performance characteristics: Identify
ceiling components with appropriate
applicable, testing, including:
.1 Surface burning Characteristics: As
follows, tested per ASTM E84:
.1 Flame Spread: 25 or less. |
| | .3 | Coordination of Work: Coordinate ceiling work
with installers of related work including, but
not limited to building insulation, gypsum
board,, light fixtures, mechanical systems,
electrical systems, and sprinklers. |
| 1.6 DELIVERY,
STORAGE AND
HANDLING | .1 | Delivery system components in manufacturer's
original, unopened packages clearly labeled
with the following information: item number
and quantity, manufacturer's name and address,
client name and address and site address. |
| | .2 | Store components in a fully enclosed dry
space where they will be protected against
damage from moisture, direct sunlight, surface
contamination and other construction
activities. |
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- 1.6 DELIVERY,
STORAGE AND
HANDLING
(Cont'd)
- .3 Exercise care in handling components to prevent damage to the surfaces and edges and prevent distortion or other physical damage.
- 1.7 PROJECT
CONDITIONS
- .1 Space Enclosure:
.1 Building areas to receive ceilings shall be free of construction dust and debris. Products may be installed where temperatures are between 32°F (0°C) and 120°F ((49°C) and in spaces before the building is enclosed, where HVAC systems are cycled or not operating. Such installations shall not be exposed to abnormal conditions, namely: chemical fumes, presence of standing water, or contact with moisture, as could result from condensations or building leaks. These products cannot be used in exterior applications unless the system has been specifically designed and approved form exterior application.
- 1.8 WARRANTY
- .1 Ceiling System: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. failures include, but are not limited to:
.1 Ceiling Panels and Suspension System: Rust and manufacturing defects.
- .2 Warranty Period:
.1 One (1) year from date of substantial completion.
.2 Grid: Ten (10) years from date of substantial completion.
- .3 The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.
- 1.9 MAINTENANCE
- .1 Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.
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- 1.9 MAINTENANCE
(Cont'd)
- .1 (Cont'd)
- .1 Ceiling Units: Furnish quantity of full-size units equal to 5 percent of amount installed.
- .2 Suspension System Components: Furnish quantity of each exposed suspension component equal to 1 percent of amount installed.
- .2 Deliver extra stock to Owner's representative.

PART 2 - PRODUCTS

- 2.1 METAL CEILINGS
PLANKS
- .1 Ceiling Panels Type AMP-1:
- .1 Surface Texture: Smooth
- .2 Composition: Aluminum 0.032inch.
- .3 Perforations: M15 perforation.
- .4 Finish: Pre-coated finished.
- .5 Colours: to be selected from Standard colour sections.
- .6 Size: To suite openings x 100mm x 25mm c/w end caps.
- .7 Edge Profile: Square.
- .8 Noise REDuction Coefficient (NRC): 2.5 sabins per perforated blade.
- .9 Flame Spread: ASTM E 1264; Class A per IBC.

- 2.2 SUSPENSION
SYSTEMS
- .1 Components: Heavy 23mm exposed T, black.
- .2 Main Beam: Galvanized Steel23mm T, black.
- .3 Cross Tee: Galvanized Steel23mm T, black.
- .4 Accessories:
- .1 To manufacturers standard for a complete installation.

PART 3 - EXECUTION

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| <u>3.1 EXAMINATION</u> | .1 | Installer must inspect the area where the ceiling system is to be installed for conditions that may affect the work and notify the Contractor in writing of any unsatisfactory conditions before proceeding. |
| | .2 | All work above the ceiling system is to be satisfactorily completed prior to start of the ceiling installation. |
| | .3 | All unsatisfactory conditions potentially affecting the ceiling system are to be corrected prior to the start of ceiling installation. |
| | .4 | Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out. |
| <u>3.2 PREPARATION</u> | .1 | Examine construction and conditions under which system will be installed. Do not proceed with installation until unsatisfactory conditions have been corrected. |
| <u>3.3 INSTALLATION</u> | .1 | Install the suspended ceiling system in accordance with the manufacturer's installation instructions, applicable industry standards and the governing code of jurisdiction. |
| | .2 | Installed panels should be free from damaged edges or other defects detrimental to appearance and function. |
| <u>3.4 FIELD QUALITY CONTROL</u> | .1 | Deflection of any grid components shall not exceed 1/360 of the span. |
| <u>3.5 ADJUSTING AND CLEANING</u> | .1 | Adjust ceiling components to provide a consistent finish and appearance in conformity with pre-established tolerances and requirements. All panels showing signs of damage, either in finish or in form are to be |
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3.5 ADJUSTING AND CLEANING <u>(Cont'd)</u>	.1	(Cont'd) replaced. All exposed surfaces are to be cleaned of any dirt, grease, fingerprints and marks or other imperfections with cleaning materials recommended by the manufacturer.
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PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 09 51 95 - Linear Metal Ceilings.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM C 635/C 635M-07, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
 - .2 ASTM C 636/C 636M-08, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
 - .3 ASTM E 1477-98a(2008), Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
- .3 Green Seal Environmental Standards (GS)
 - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
- .6 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-2007, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for ceiling panels and ceiling suspension system
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- .2 Product Data:(Cont'd)
 - .1 (Cont'd)
and include product characteristics,
performance criteria, physical size, finish
and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in
accordance with Section 01 35 29.06 - Health
and Safety Requirements 01 35 43 -
Environmental Procedures.
- .3 Shop Drawings:
 - .1 Submit reflected ceiling plans for
special grid patterns as indicated.
 - .2 Indicate lay-out, insert and hanger
spacing and fastening details, splicing method
for main and cross runners, change in level
details, and acoustical unit support at
ceiling fixture lateral bracing and
accessories.
- .4 Samples:
 - .1 Submit for review and acceptance of each
unit.
 - .2 Samples will be returned for inclusion
into work.
 - .3 Submit duplicate 152mm x 152mm samples
of each type acoustical units.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in
accordance with Section 01 61 00 - Common
Product Requirements and with manufacturer's
written instructions.
- .2 Delivery and Acceptance Requirements: deliver
materials to site in original factory
packaging, labelled with manufacturer's name
and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors and
in dry location and in accordance with
manufacturer's recommendations in clean, dry,
well-ventilated area.
 - .2 Store materials inside, level, under
cover. Protect from weather, damage from
construction operations and other causes, in
accordance with manufacturer's printed
instructions.
 - .3 Handle materials to prevent damage to
edges or surfaces. Protect metal accessories
and trim from being bent or damaged.

- .3 Storage and Handling Requirements:(Cont'd)
 - .4 Store and protect acoustic ceiling materials from nicks, scratches, and blemishes.
 - .5 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 COMPONENTS

- .1 Acoustic units for suspended ceiling system: to CAN/CGSB-92.1.
 - .1 Type: Mineral Fibre.
 - .2 Pattern: Fine , Class A.
 - .3 Noise Reduction Coefficient (NRC) designation of 0.80.
 - .4 Light Reflectance: (LR) range of 87% to ASTM E 1477.
 - .5 Edge type: bevelled.
 - .6 Colour: White.
 - .7 Size: 610 x 1220 x 22 mm thick.
 - .8 Shape: Tegular panel.
 - .9 Recycled Content: 68%
- .2 Acoustical Suspension:
 - .1 Intermediate duty system to ASTM C 635.
 - .2 Basic materials for suspension system: commercial quality cold rolled steel, zinc coated.
 - .3 Suspension system: non fire rated, two directional exposed tee bar grid.
 - .4 Exposed tee bar grid components: shop painted satin sheen, white colour. Components die cut. Main tee with double web, rectangular bulb and 25 mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.
 - .5 Hanger wire: galvanized soft annealed steel wire, 3.6 mm diameter for access tile ceilings.
 - .6 Hanger inserts: purpose made.
 - .7 Accessories: splices, clips, wire ties, retainers and wall moulding flush, to

- .2 Acoustical Suspension:(Cont'd)
 - .7 Accessories:(Cont'd)
complement suspension system components, as recommended by system manufacturer.
- .3 Performance/Design Criteria:
 - .1 Maximum deflection: 1/360th of span to ASTM C 635 deflection test.

2.2 ACCESSORIES

- .1 Touch-up paint: in accordance with manufacturer's recommendations for surface conditions:

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions prior to acoustical ceiling installation.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

- .1 Installation: in accordance with ASTM C 636 except where specified otherwise.
 - .2 Suspension System:
 - .1 Erect ceiling suspension system after work above ceiling has been inspected by Departmental Representative.
 - .2 Secure hangers to overhead structure using attachment methods acceptable to Departmental Representative.
 - .3 Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.
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- .2 Suspension System:(Cont'd)
 - .4 Install wall moulding to provide correct ceiling height.
 - .5 Completed suspension system to support super-imposed loads, such as lighting fixtures diffusers grilles and speakers.
 - .6 Support at light fixtures and diffusers with additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
 - .7 Interlock cross member to main runner to provide rigid assembly.
 - .8 Ensure finished ceiling system is square with adjoining walls and level within 1:1000.
- .3 Acoustic Panels:
 - .1 Install acoustical panels and tiles in ceiling suspension system.
 - .2 Co-ordinate ceiling work with work of other sections such as interior lighting, fire protection communication, and intrusion and detection systems.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by acoustical ceiling installation.

PART 1 - GENERAL

1.1 References

- .1 American Association of Textile Chemists and Colorists (AATCC)
 - .1 AATCC 16-1998, Color Fastness to Light.
 - .2 AATCC 23-1999, Color Fastness to Burn Gas Fumes.
 - .3 AATCC 129-2001, Colour Fastness to Ozone in the Atmosphere Under High Humidities.
 - .4 AATCC 134-2001, Electrostatic Propensity of Carpet.
 - .5 AATCC 171-2000, Carpets: Cleaning of; Hot Water Extraction Method.
 - .6 AATCC 174-1998, Antimicrobial Activity Assessment of Carpets.
 - .7 AATCC 175-1998, Stain Resistance: Pile Floor Coverings.
 - .8 AATCC 189-2001, Fluorine Content of Carpet Fibers.
 - .2 American Society for Testing and Materials (ASTM International)
 - .1 ASTM D 1335-98, Tuft Bind of Pile Floor Coverings.
 - .2 ASTM D 3936-00 Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering.
 - .3 ASTM D 5417-99, Standard Practice for Operation of the Vettermann Drum Tester.
 - .4 ASTM E 84-01, Test Method for Surface Burning Characteristics of Building Materials.
 - .5 ASTM E 662-01, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
 - .3 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 CGSB 4-GP-36M-78, Carpet Underlay, Fiber Type.
 - .4 CAN/CGSB-4.129-93(R1997), Carpets for Commercial Use.
 - .5 CGSB 20-GP-23M-78, Cushion, Carpet, Flexible Polymeric Material.
 - .6 CAN/CGSB-25.20-95, Surface Sealer Floors.
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- .4 Carpet and Rug Institute (CRI)
 - .1 CRI-104-96, Standard Installation of Commercial Carpet.
 - .2 IAQ Carpet Testing Program.
- .5 National Floor Covering Association (NFCA)
 - .1 Floor Covering Specification Manual 1998.
- .6 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102.2-88(R2000), Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies.

1.2 Description

- .1 Work required consists of:
 - .1 Supply and installation of carpet tiles.

1.3 Qualifications

- .1 Installer Qualifications:
 - .1 Flooring contractor requirements.
 - .1 Specialty contractor normally engaged in this type of work, with prior experience in installation of these types of materials.
- .2 Be responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturers written instructions.

1.4 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.

1.5 Delivery, Storage and Handling

- .1 Label packaged materials. For carpet tile products indicate installation direction.
- .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 Consultant. Store carpet and adhesive at minimum temperature of 18° C 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, remove from cartons.
- .6 Modular carpet: store on pallet form.

1.6 Waste Management and Disposal

- .1 Separate and recycle waste materials in accordance with Waste Reduction Workplan.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.

1.7 Environmental Requirements

- .1 Moisture: Ensure substrate is within moisture limits and alkalinity limits prescribed by manufacturer. Prepare moisture testing and provide report to Consultant.
 - .2 Temperature: Maintain ambient temperature of not less than 18° C 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:
 - .1 Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.
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- .5 Ventilation:(Cont'd)
 - .2 Provide continuous ventilation during and after carpet application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 3 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 Standard of acceptance: Interface FLOR.

2.2 Accessories

- .1 Adhesive (Type 1 and 2):
 - .1 Pressure sensitive type: recommended by carpet manufacturer for floating installation of modular carpet or specialty backed carpets.
 - .2 Chemical composition: compounded acrylic adhesive, applied to PET polyester backing with PET polyester release liner.
 - .3 Dimensions: 76mm x 76mm.
 - .4 Zero calculated VOCs.
 - .5 Standard of acceptance: Interface Flor Tactiles.
- .2 Carpet protection: non-staining heavy duty kraft paper.

PART 3 - EXECUTION

3.1 Preparation

- .1 Prepare floor surfaces in accordance with Interface Floor Requirements.

3.2 Installation

- .1 Install in accordance with manufacturer's printed instructions and in accordance with Carpet and Rug Institute Standard for Installation of Commercial Carpet, CRI 104.

- .2 Install carpet after finishing work is completed but before telephone and electrical pedestal outlets are installed.
- .3 Finish installation to present smooth wearing surface free from conspicuous seams, burring and other faults.
- .4 Fit neatly around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
- .5 Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- .6 Install carpet smooth and free of bubbles, puckers, and other defects.

3.3 Modular Carpet

- .1 Install modular carpet in accordance with manufacturer's written instructions.
- .2 Lay modular carpet with butt seams.

3.4 Base Installation

- .1 Install 101 mm toeless rubber base. Refer to finish schedule for size and colour.
- .2 Install toeless type base before installation of carpet on floors.
- .3 Lengths: cut lengths minimum 2400 mm.
- .4 Follow manufacturer's installation instructions.

3.5 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 Departmental Representative.
-

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PART 1 - GENERAL

- 1.1 RELATED SECTIONS
- .1 Section 05 50 00 - Metal Fabrications.
 - .2 Section 06 40 00 - Architectural Woodwork.
 - .3 Section 08 11 00 - Steel Doors and Frames.
- 1.2 REFERENCES
- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
 - .2 Master Painters Institute (MPI)
 - .1 MPI Architectural Painting Specifications Manual, 2004.
 - .2 MPI - Maintenance Repainting Manual, 1998.
- 1.3 SUBMITTALS
- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit product data and instructions for each paint and coating product to be used.
 - .2 Submit product data for the use and application of paint thinner.
 - .3 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOCs during application and curing
 - .4 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .5 Submit manufacturer's installation and application instructions.
- 1.4 STORAGE AND HANDLING
- .1 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 within temperature as recommended by manufacturer.
-

1.4 STORAGE AND
HANDLING
(Cont'd)

- .2 Fire Safety Requirements:
- .1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

1.5 WASTE
MANAGEMENT AND
DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 35 73 - Procedures for Deconstruction of Structures.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Place materials defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.
- .4 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.

1.6 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
 - .1 Ventilate enclosed spaces.
 - .2 Co-ordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
 - .3 Provide minimum lighting level of 323 Lux on surfaces to be painted.
 - .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.
-

- 1.6 SITE CONDITIONS .2 (Cont'd)
- (Cont'd)
- .2 Test concrete, masonry and plaster surfaces for alkalinity as required.
 - .3 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.
 - .3 Additional application requirements:
 - .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 in occupied facilities during silent hours only. Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Only paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
 - .2 Provide paint materials for paint systems from single manufacturer.
 - .3 Only qualified products with E2 "Environmentally Friendly" rating are acceptable for use on this project.
 - .4 Conform to latest MPI requirements for all painting work including preparation and priming.
 - .5 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual "Approved Product" listing.
 - .6 Provide paint products meeting MPI "Environmentally Friendly" E2 ratings based on VOC (EPA Method 24) content levels.
 - .7 Use MPI listed materials having minimum E2 rating where indoor air quality (odour) requirements exist.
-

2.2 COLOURS .1 Colour schedule will be based upon selection of 2 base colours and 2 accent colours.

2.3 MIXING AND TINTING .1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written instructions. Obtain written approval from Consultant for tinting of painting materials.

.2 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.

.3 Thin paint for spraying in accordance with paint manufacturer's instructions.

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

2.4 GLOSS/SHEEN RATINGS .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

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

2.4 GLOSS/SHEEN
RATINGS
(Cont'd)

- .2 Gloss level ratings of painted surfaces as indicated and as noted on Finish Schedule.

2.5 INTERIOR
PAINTING

- .1 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock" type material, etc.
.1 INT 9.2A - Latex Eggshell finish (over latex sealer).
- .2 Galvanized Metal: doors frames, railing, misc. steel, pipes, overhead decking, ducts, etc.
.1 INT 5.3B Waterborne light industrial semi-gloss coating.
.2 INT 5.3M High performance architectural latex semi-gloss finish.
- .3 Dressed Lumber: including doors, door and window frames, casings, mouldings, etc.
.1 INT 6.3A High performance architectural latex low lustre finish.
.2 INT 6.3K Polyurethane varnish low lustre finish.
.3 INT 6.3Q Waterborne clear acrylic low lustre finish.
- .4 Wood Paneling and Casework: partitions, panels, shelving, millwork, etc.
.1 INT 6.4J Polyurethane varnish low lustre finish.
.2 INT 6.4M waterborne clear acrylic low lustre finish.

PART 3 - EXECUTION

3.1 GENERAL

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.
- .2 Perform preparation and operations for interior painting in accordance with MPI - Architectural Painting Specifications Manual and MPI - Maintenance Repainting Manual except where specified otherwise.
-

- 3.2 EXAMINATION
- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
 - .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

- 3.3 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 Consultant.
 - .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 and MPI - Maintenance Repainting Manual specific requirements and coating manufacturer's recommendations.
 - .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before
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3.3 PREPARATION
(Cont'd)

- .4 (Cont'd)
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.
 - .3 Tint filler to match stains for stained woodwork.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements.
- .8 Touch up of shop primers with primer as specified.
- .9 Do not apply paint until prepared surfaces have been accepted by Consultant

3.4 APPLICATION

- .1 Method of application to be as approved by Departmental Representative. Conform to manufacturer's application instructions unless specified otherwise.
 - .2 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
 - .3 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
 - .4 Sand and dust between coats to remove visible defects.
 - .5 Finish surfaces both above and below sight lines as specified for surrounding surfaces,
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|--|---|
| 3.4 APPLICATION
(Cont'd) | .5 (Cont'd)
including such surfaces as tops of interior
cupboards and cabinets and projecting ledges. |
| | .6 Finish inside of cupboards and cabinets as
specified for outside surfaces. |
| | .7 Finish closets and alcoves as specified for
adjoining rooms. |
| | .8 Finish top, bottom, edges and cutouts of
doors after fitting as specified for door
surfaces. |
| 3.5
MEC
ANICAL/ELECTRICAL
EQUIPMENT | .1 Paint conduits, piping, hangers, ductwork and
other mechanical and electrical equipment
exposed in finished areas, to match adjacent
surfaces, except as indicated. |
| | .2 Do not paint over nameplates. |
| | .3 Keep sprinkler heads free of paint. |
| | .4 Paint disconnect switches for fire alarm
system and exit light systems in red enamel. |
| | .5 Paint both sides and edges of backboards for
telephone and electrical equipment before
installation. Leave equipment in original
finish except for touch-up as required, and
paint conduits, mounting accessories and other
unfinished items. |