

1 ASSEMBLY - GENERAL

- 1.1 The work of this section includes the provision of all design, labour, materials, equipment and services required to fabricate and install ceiling finishes as required for a complete project. The work includes, but is not necessarily limited to, the items referenced herein:
- 1.1.1 Suspended acoustical tile ceiling system
 - 1.1.2 Gypsum board on suspended metal furring system.
- 1.2 Refer to Section C3040 - Interior Painting for field applied paint finish requirements for ceilings.
- 1.3 Regulatory Requirements: Fire-resistance rated floor/ceiling and roof/ceiling assembly: certified by a Canadian Certification Organization accredited by Standards Council of Canada.
- 1.4 Refer to room data sheets for ceiling finish and ceiling heights.

2 ASSEMBLY DESIGN CRITERIA

- 2.1 Provide water-resistant gypsumboard to all ceiling areas susceptible to moisture or water such as washrooms and locker rooms.
- 2.2 Where exposed structure is to be the finished ceiling, provide complete paint finish throughout. All structural, mechanical, electrical and other building systems shall be clean, neatly arranged and suitable for exposed condition.

3 ASSEMBLY COMPONENTS

3.1 ACOUSTICAL CEILING SYSTEMS

- 3.1.1 General:
- 3.1.1.1 Submittals: Material and colour boards to fully illustrate compatibility of proposed wall, floor, and ceiling, door and other special finishes. Duplicate samples of each acoustical tile type and suspension system to illustrate size, profile, colour, and texture.
 - 3.1.1.2 Mock-up: Construct mock-up 10m² minimum of acoustical tile ceiling including one inside corner and one outside corner. Mock-up may be part of finished work.
 - 3.1.1.3 Submit samples in accordance with Section 01340 - Shop Drawings, Product Data, Samples and Mock-ups. Submit two representative models of each type ceiling suspension system and duplicate full size samples of each type acoustical units.. Ceiling system to show basic construction and assembly, treatment at walls, recessed fixtures, splicing, interlocking, finishes, acoustical unit installation.

- 3.1.1.4 Maintenance Material: Provide minimum 2% of each type of acoustical tile specified from same production run.
- 3.1.1.5 Environmental Requirements: Do not install ceiling finishes in areas where dust is being generated. Conform to manufacturer's recommended air temperatures, relative humidity, and substrate moisture content at installation area before, during and after application.
- 3.1.2 Design:
 - 3.1.2.1 Comply with flame spread requirements of OBC. Provide finishes which are compatible and consistent with each other to suit level of finish specified in this section. Select from readily available stock from suppliers with proven delivery record.
 - 3.1.2.2 Use ULC listed assembly for design of fire rated floor/ceiling and roof/ceiling.
 - 3.1.2.3 Provide finishes which are compatible and consistent with each other to suit level of finish specified in this section. Select from readily available stock from suppliers with proven delivery record.
 - 3.1.2.4 Completed suspension system to support super-imposed loads.
 - 3.1.2.5 Maximum deflection of suspended acoustical ceiling assembly: 1/360th of span to [ASTM C635] deflection test.
 - 3.1.2.6 Maximum deflection of suspended gypsum board ceiling assembly: 1/360th of span to [ASTM C645] deflection test.
 - 3.1.2.7 Design independent suspension systems at expansion joints.
 - 3.1.2.8 [ASTM C635-87] Specifications for Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
 - 3.1.2.9 [ASTM C636-86] Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
 - 3.1.2.10 [CAN/CGSB-92.1-M77] Acoustical Units, Prefabricated.
 - 3.1.2.11 [CAN4-S102-M83] Surface Burning Characteristics of Building Materials.
- 3.1.3 Materials/Finishes:
 - 3.1.3.1 Intermediate duty system to [ASTM C635].
 - 3.1.3.2 Basic materials for suspension system: commercial quality cold rolled steel, zinc coated. Suspension system: non fire-rated, two directional exposed tee bar grid.

- 3.1.3.3 Exposed tee bar grid components: shop painted satin sheen, white colour. Components die cut. Main tee with double web, rectangular bulb and 25mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.
- 3.1.3.4 Acoustic units for suspended ceiling system: to [CAN2-92.1].
- 3.1.3.5 Type and pattern to match tiles by [Armstrong World Industries Inc.].
- 3.1.3.6 Flame spread rating of 25 or less. Smoke developed 0 - 25 or less.
- 3.1.3.7 Noise reduction coefficient (NRC) designation of .50 - .60.
- 3.1.3.8 Light reflectance range of 75%. Colour: white.
- 3.1.3.9 Size 610 x 1220 x 19mm thick.
- 3.1.3.10 Acceptable material: [Second Look 1, 1220 x 610 x 19 thick, surface scored to 305 x 305 squares or Celotex CDS-224, or CGC Auratone Illusion Eight/12. Second Look 20/20, 508 x 1524 x 19 thick, surface scored to 508 x 508 squares or Celotex CDS-320, or CGC Auratone Illusion Three/20].
- 3.1.3.11 Light diffusers for valances: white aluminum egg crate type 10 x 10 x 10mm deep.
- 3.1.3.12 Carrying channels: 38 x 25mm channel of 1.2mm thick galvanized steel.
- 3.1.3.13 Accessories: splices, clips, wire ties, retainers and wall moulding, reveal to complement suspension system components, as recommended by system manufacturer.
- 3.1.3.14 Hold down clips: purpose made to secure tile to suspension system, approved for use in fire rated assemblies.
- 3.1.4 Fabrication/Installation:
 - 3.1.4.1 Installation: in accordance with [ASTM C636-86] except where specified otherwise.
 - 3.1.4.2 Install suspension system to manufacturer's instructions.
 - 3.1.4.3 Do not erect ceiling suspension system until work above ceiling has been inspected.
 - 3.1.4.4 Secure hangers to overhead structure using acceptable attachment methods.
 - 3.1.4.5 Install hangers spaced at maximum 1200mm centres and within 150mm from ends of main tees.

- 3.1.4.6 Ensure suspension system is coordinated with location of related components.
- 3.1.4.7 Completed suspension system to support superimposed loads, such as lighting fixtures, diffusers, grilles and speakers.
- 3.1.4.8 Support at light fixtures and diffusers with additional ceiling suspension hangers within 150mm of each corner and at maximum 600mm around perimeter of fixture.
- 3.1.4.9 Interlock cross member to main runner to provide rigid assembly.
- 3.1.4.10 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
- 3.1.4.11 Finished ceiling system to be square with adjoining walls and level within 1:1000.
- 3.1.4.12 Coordinate ceiling work to accommodate components such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

3.2 INTERIOR GYPSUMBOARD

- 3.2.1 General:
 - 3.2.1.1 Not applicable.
- 3.2.2 Design:
 - 3.2.2.1 Do work in accordance with *[CSA A82.31-M1980]* or as required.
- 3.2.3 Materials/Finishes:
 - 3.2.3.1 Metal furring runners, hangers, tie wires, inserts, anchors: to *[CSA A82.30-M1980]*, galvanized.
 - 3.2.3.2 Standard board: to *[CSA A82.27-M1977]* regular, and Type X, 12.7mm thick (13mm) and 15.9mm thick (16mm), 1200 mm wide x maximum practical length, ends square cut, edges beveled.
 - 3.2.3.3 Water resistant board: to *[CSA A82.27-M1977]* regular, 15.9mm thick, 1200mm wide x maximum practical length.
 - 3.2.3.4 Screws: to *[CAN/CSA-A82.31-M91]*.
 - 3.2.3.5 Casing beads, comer beads: commercial grade sheet steel with Z275 zinc finish to *[ASTM A 525-93]*, perforated flanges. One-piece length per location.
 - 3.2.3.6 Acoustic sealant: to *[CAN/CGSB-19.21-M87]*.
 - 3.2.3.7 Joint compound: to *[CAN/CSA-A82.31-M91]*, asbestos-free.

- 3.2.3.8 Outside corner trim: extruded aluminium 19mm radius corner trim, Acceptable material (or equal): *[Pittcon Industries Inc.]*
- 3.2.3.9 Wall reveal trim: extruded aluminium 12mm wide reveal moulding trim, Acceptable material (or equal); *[Pittcon Industries Inc.]*
- 3.2.3.10 Access doors: Panels of bonderized steel prime painted. 1.5mm thick frame, 1.9 mm thick door, flush door hinge design.
- 3.2.4 Fabrication/Installation:
 - 3.2.4.1 Install gypsum board in accordance with *[CAN/CSA-A82.31-M31]* or as required.
 - 3.2.4.2 Install work level to tolerance of 1:1200.
 - 3.2.4.3 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
 - 3.2.4.4 Construct control joints of preformed units or two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.
 - 3.2.4.5 Provide continuous polyethylene dust barrier behind and across control joints.
 - 3.2.4.6 Locate control joints at changes in substrate construction, at approximate 10 m spacing on long corridor runs and at approximate 10m spacing on ceilings.
 - 3.2.4.7 Construct expansion joints, at building expansion and construction joints. Provide continuous dust barrier.
 - 3.2.4.8 Rigidly secure frames to furring or framing systems
 - 3.2.4.9 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

End of Section