

**1 General****1.01 REFERENCES**

- .1 Acoustic Materials Association (AMA):
  - .1 AMA111 Ceiling Sound Transmission Test by the TwoRoom Method
- .2 American Society for Testing and Materials (ASTM):
  - .1 ASTM C423 Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
  - .2 ASTM C635 Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustic Tile and Layin Panel Ceilings
  - .3 ASTM C636 Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustic Tile and LayIn Panels
  - .4 ASTM A641/A641M Standard Specification for ZincCoated (Galvanized) Carbon Steel Wire
  - .5 ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
  - .6 ASTM E1111 Standard Test Method for Measuring the Interzone Attenuation of Ceiling Systems
  - .7 ASTM E1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
  - .8 ASTM E1264 Standard Classification for Acoustic Ceiling Products
- .3 Canadian General Standards Board (CGSB):
  - .1 CAN/CGSB92.1M, Sound Absorptive Prefabricated Acoustic Units
- .4 Underwriters Laboratories of Canada (ULC):
  - .1 CAN/ULCS10220 Surface Burning Characteristics of Building Materials and Assemblies

**1.02 SUBMITTALS**

- .1 Comply with requirements of Section 01 33 00.
- .2 Submit duplicate 150mm x 150mm samples of each type of acoustic board and 150mm long samples of exposed T-bar to the Departmental Representative.

**1.03 DESIGN CRITERIA**

- .1 Maximum deflection:  $1/360^{\text{th}}$  of span to ASTM C635 deflection test.
- .2 Determine the superimposed loads which will be applied to suspension systems by components of the building other than the ceiling and ensure that adequate hangers are installed to support the additional loads in conjunction with the normal loads of the system.

**1.04 PRODUCT HANDLING AND STORAGE**

- .1 Deliver all materials in the manufacturer's original packaging, undamaged, with seals and labels intact.
- .2 Deliver acoustical materials to the area where they will be installed, after suitable conditions for installation have been established and will be maintained.
- .3 Maintain all materials in the manufacturer's original packaging, undamaged, with seals and labels intact.

**1.05 ENVIRONMENTAL CONDITIONS**

- .1 Do not install acoustic unit ceilings until the building is enclosed, sufficient heat is provided, overhead mechanical work is completed, tested and approved, and dust and moisture producing activities have been completed.
- .2 Maintain uniform temperatures of not less than 16°C, and relative humidity of not more than 40% from the time of installation onwards. Ensure that changes of temperature and humidity are not sudden.

**2 Products****2.01 METAL SUSPENSION SYSTEM**

- .1 Metal Suspension System:. Manufacturer's standard direct hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C 635 requirements and as supplied by same materials supplier as acoustic panels for intermediate duty, exposed tee bar and as follows:
  - .1 Tee bar grid face width: 24 mm (15/16") and 15 mm (9/16") as appropriate for materials specified
  - .2 Module: Sized as appropriate to acoustic panel size
  - .3 Hangers, Braces and Ties: minimum 2.78 mm (0.109" (12 ga.)) Ø steel wire, galvanized
  - .4 Exposed Finish: Manufacturer's standard satin, white finish
  - .5 Corrosion Resistance: Hotdip galvanized or stainless steel components
  - .6 Acceptable materials: materials to match products specified, use only materials from same manufacturers of panel products
- .2 Attachment Devices: Size for five (5) times design load indicated in ASTM C 635, Table 1, Direct Hung, having corrosion protection for moderate service conditions, and as follows:
  - .1 Rod and Flat Hangers: Mild steel, zinc coated
  - .2 Angle Hangers: Minimum 22 mm (7/8") x 22 mm (7/8") x 1 mm (1/24") thick angles, Z275 (G90) galvanized steel sheet in accordance with ASTM A 653/A 653M; bolted connections using 8 mm (5/16") Ø bolts

**2.02 EDGE MOULDINGS AND TRIM**

- .1 Sheet Metal Edge Mouldings and Trim: Manufacturer's standard mouldings for edges and penetrations that fit specified acoustic panel edge and suspension system, and as follows:
  - .1 Provide stepped edge moulding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member for lay in panels with tegular edged materials.
  - .2 Provide edge mouldings fabricated to diameter required to fit circular penetrations exactly.
  - .3 Provide edge mouldings and trims that match width and configuration of exposed runners, including but not limited to, the following configurations:
    - .1 Sheet metal fillers: Light zinc coated sheet steel finished to match the Tbar.
    - .2 Shadow mould: Rolled sheet metal, one piece, having 19 mm ( $\frac{3}{4}$ ") x 13 mm ( $\frac{1}{2}$ ") flange and reveal.
    - .3 Wall moulding: Angle shape with a 22 mm ( $\frac{7}{8}$ ") exposed face.

**2.03 ACOUSTIC PANELS**

- .1 Provide manufacturer's standard panels of configuration indicated that comply with CAN/CGSB92.1 and ASTM E1264, 610mm (24") x 1220mm (48") x 19mm ( $\frac{3}{4}$ ") random fissured, non-tegular edged; white colour.
- .2 Surface burning properties, all types: Flame spread of 25 or less and smoke developed of 50 or less when tested in accordance with CAN/ULC S102, substantiated by ULC labels on materials supplied.

**3 Execution****3.01 INSTALLATION**

- .1 Install ceiling suspension and acoustic panels in accordance with the manufacturer's instructions.
- .2 Install suspension systems in accordance with ASTM C636, insofar as it is consistent with other requirements of this specification.
- .3 Install ceilings in the indicated locations, level to within a tolerance of 3 mm ( $\frac{1}{8}$ ") in 3600 mm (12').
- .4 Attach hangers directly to the structure wherever possible. Elsewhere attach them in VPairs, or to nested carrying channels suspended below the obstruction. Do not kink or bend suspension wires to fit around obstructions or to adjust ceiling height.
- .5 Do not attach ceilings to overhead ducts or pipes, do not allow suspension system to rest against or be deformed by ducts or pipes.
- .6 Do not use powder actuated fasteners. Ensure that fastening methods used cannot damage building structure.

- .7 Furnish additional hangers at lay-in electrical fixtures, one at each corner and, if required, stabilizer bars to prevent overloading or rotation of the suspension members.
- .8 Unless otherwise indicated centre pattern of board in room or area so that perimeter board not less than half the panel size.
- .9 Use a sheet metal filler where any face dimension of a piece of acoustic board, measured from centre of Tee to face of wall is less than 75 mm (3").

### **3.02 CLEANING AND ADJUSTING**

- .1 Do not level ceilings by putting kinks in the suspension wires.
- .2 Clean soiled or discoloured surfaces of acoustic boards and exposed suspensions of installed ceilings.
- .3 Remove and replace units which are damaged or improperly installed.

**END OF SECTION**