

**Part 1 General**

**1.01 RELATED SECTIONS**

- .1 Section 09 22 27 - Acoustical Suspension.

**1.02 REFERENCES**

- .1 American Society for Testing and Materials (ASTM).
  - .1 ASTM C423-09a. Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
  - .2 ASTM E84-16. Standard Test Method for Surface Burning Characteristics of Building Materials.
  - .3 ASTM E580/E580M-16. Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.

**1.03 DESIGN REQUIREMENTS**

- .1 Load capacity. In addition to its own weight, ensure that anchorage and suspension systems are capable of supporting weight of all ancillary and related components of the ceiling assembly including components likely to impose loads on the assembly or its various parts at any point.
- .2 Integrity. Ceiling panels must be sound, rigid and durable. Design panels to maintain specified dimensional tolerances and be free of deformation delamination, and/or discolouration during service life.
- .3 Sound Ratings. Provide for individual sound ratings for each Ceiling panel as indicated.
- .4 Design systems to accommodate, without damage to components or deterioration of seals, movement between ceilings and perimeter walls. Include allowances for deflection of existing structure.
- .5 Seismic: comply with ASTM E580 and NBC requirements related to seismic forces. Provide lateral restraint to ensure panels do not experience lateral displacement during an event in accordance with NBC.

**1.04 SUBMITTALS**

- .1 Provide Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit manufacturer's standard product data sheets for panels. Include all specified performance criteria.
- .3 Submit shop drawings showing layout, edge profiles and baffle, cloud components, including suspension method, accessories, finish colors and textures.
- .4 Submit samples. Submit duplicate 300 x 300 mm size samples of panel.
- .5 Submit Manufacturer's special installation requirements, including conditions requiring special attention.
- .6 Submit certified Test Results for Fire resistance ratings.
- .7 Provide manufacturer's written certification that products submitted meet or exceed all specified requirements.

- .8 Provide independent certification from a Professional Engineer registered in the Province of Ontario. Certify that the design of the ceiling system conforms to ASTM E580 and NBC requirements related to seismic forces.

**1.05 MOCK-UP**

- .1 Construct Mock-Ups in accordance with Section 01 45 00 - Quality Control.
- .2 Construct Mock-Up of one completed ceiling. Mock-Up to demonstrate typical installation of ceiling including suspended panels, trim and accessories. Minimum size: 10 square meters.
- .3 Construct Mock-Ups where directed by Consultant.
- .4 Allow for inspection of Mock-Up by Consultant before proceeding with additional ceiling work. When accepted, Mock-Up will demonstrate minimum standard for this work. Approved Mock-Up may remain as part of the finished work.

**1.06 DELIVERY, STORAGE AND HANDLING**

- .1 Delivery of acoustic ceiling products will be in the original unopened packages with the manufacturer's label intact
- .2 Handling and storage should be in accordance with the manufacturer's Material Safety Data Sheets (MSDS)
- .3 Individual panels should be handled carefully to avoid damage.

**1.07 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 plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

**1.08 ENVIRONMENTAL REQUIREMENTS**

- .1 Protect product stored on site from moisture damage.
- .2 Permit wet work to dry before commencement of installation.
- .3 Maintain uniform minimum temperature of 15 degrees C and humidity of 20 - 40 % before and during installation or as per manufacturer's published limits for temperature and humidity.
- .4 Areas receiving ceiling panels should be free of construction debris and dust.
- .5 Store materials in work area 48 hours prior to installation.

**Part 2 Products**

**2.01 MATERIALS**

- .1 **TYPE ACT.** Lay in ceiling panels to be provided by same manufacturer of Suspension System as specified in Section 09 22 27 - Acoustical Suspension. Factory fabricated, micro perforated metal panel:
  - .1 Material: electro galvanized sheet steel. Thickness: 0.021 inches.
  - .2 Surface texture: smooth
  - .3 Finish: factory applied baked powder coated finish. Colour: White. (WH).

- .4 Edge profile: square Tegular: for interface with exposed T grid as specified in Section 09 22 27 - Acoustical Suspension.
- .5 Dimensional stability: Standard
- .6 Fire performance: to ASTM E84. Flame Spread Index: maximum 25. Smoke Developed Index: maximum 50.
- .7 Perforations: micro perforated. Hole type: round diagonal layout. Size: 1.5 mm. Open Area: 18.4 %. Pattern number M2.
- .8 Acoustical performance: provide acoustical panel insert to obtain NRC: 0.70 and CAC: 38.
- .9 Panel size: 24 x 48 inches.
- .10 Acceptable Materials: Metalworks Tegular Smooth Texture. 9/16 square tegular. Item 6464.
- .11 Accessories: edge cap for cut panels.
- .2 **TYPE AT1 and AT2:** Horizontally suspended, custom fabricated, acoustical cloud panels. Fabric wrapped. Properties as follows:
  - .1 Sizes: as indicated in the drawings. Maximum: 1219 x 3048 mm.
  - .2 Thickness: 50 mm.
  - .3 Edge detail: square edges hardened with a non resin, Class A hardening solution.
  - .4 Sound absorption: to ASTM C423. Noise Reduction Coefficient: Minimum 1.00 for a 50 mm panel.
  - .5 Surface burning characteristics: Class A to ASTM E84. Flame spread: maximum 25. Smoke developed: maximum 450.
  - .6 Composition:
    - .1 Core: Fiberglass. Weight: 6 7 pounds per cubic foot. Chemically hardened edges.
    - .2 Facing: 100 % polyester fabric. Colour: as selected from fabric manufacturer's standard range of colours.
    - .3 Suspension hardware embedded in back of panel.
  - .7 Acceptable Materials:
    - .1 AT1 Hardside Cloud. Colour: White by Kinetics.
    - .2 AT2 Hardside Cloud. Colour: 797 Sunshine by Kinetics.
  - .8 Accessories: by manufacturer of Panels AT1 and AT2.
    - .1 Attachment hanger: purpose made eye screw hanger as recommended by manufacturer of ceiling panels. For drilling onto rear face of suspended panel to create attachment points. Number and spacing as recommended by panel manufacturer to suit size, thickness and weight of individual panel.
    - .2 Hanger wire: galvanized steel wire or cable of diameter as recommended by panel manufacturer.

### Part 3 Execution

#### 3.01 EXAMINATION

- .1 Sequence work to ensure ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- .2 Install units after interior wet work is dry. Install units after above ceiling work is complete.

- .3 Do not install panels until work above ceiling has been inspected by Consultant, or until any and all unacceptable conditions have been rectified.

**3.02 INSTALLATION**

- .1 Install the ceiling panels in accordance with applicable local code requirements and approved shop drawings.
- .2 Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and datasheet.
- .3 Fit units in place, free from damaged edges or other defects detrimental to appearance and function.
- .4 Install acoustic units level, in uniform plane, and free from twist, warp, and dents.
- .5 Suspend panels from structure. Install panels in accordance with reflected ceiling plan.
- .6 Install Lay-in panels into suspension system as specified in Section 09 22 27 - Acoustical suspension. Install acoustical insert panels.

**3.03 INTERFACE WITH OTHER WORK**

- .1 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into ceiling components.

**3.04 CLEANING AND MAINTENANCE**

- .1 Replace any and all damaged components.
- .2 Clean any and all exposed surfaces in accordance with manufacturer's printed instructions.

**END OF SECTION**