

**SECTION 09 51 00**  
**ACOUSTICAL CEILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

**1.03 REFERENCE STANDARDS**

- A. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2017.
- B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2020.
- D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2019.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Sequence work to ensure acoustical 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.
- B. Do not install acoustical units until after interior wet work is dry.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning and seismic details to resist seismic design loads and class, including grid type, perimeter channels, hanger spacing, and cross bracing.
- C. Product Data: Provide data on suspension system components and acoustical units.
- D. Samples: Submit samples illustrating material and finish of acoustical units, maximum 6 by 6 inch.
- E. Certifications: Manufacturer's certifications that products and assemblies comply with specified requirements, including laboratory reports showing compliance with specified test, codes, and standards.
- F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- G. Provide manufacturer's standard material warranty.

**1.06 QUALITY ASSURANCE**

- A. Seismic Requirements: Complete assembly shall comply with the International Building Code, as adopted by authority having jurisdiction.
  - 1. Seismic Design Criteria: As required by Code and as indicated.
    - a. Importance Factor: 1.0
    - b. Seismic Site Class: Class D.
    - c. Seismic Design Category: C.
  - 2. Contractor is responsible for obtaining approval of the authority having jurisdiction for manufacturer's alternative components and methods.
- B. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

- C. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

#### **1.07 FIELD CONDITIONS**

- A. Maintain uniform temperature and maximum humidity as directed by manufacturer, during, and after acoustical unit installation.

#### **1.08 WARRANTY**

- A. Acoustical Panel: 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 the following:
  - 1. Acoustical Panels: Sagging and warping.
  - 2. Grid System: Rusting and manufacturer's defects.
- B. Warranty Period:
  - 1. Acoustical panels: Ten (10) years from date of substantial completion.
  - 2. Suspension: Ten (10) years from date of substantial completion.
  - 3. Ceiling System: Thirty (30) years from date of substantial completion.

### **PART 2 PRODUCTS**

#### **2.01 ACOUSTICAL UNITS**

- A. Acoustical Units - General: ASTM E1264, Class A.
- B. Acoustical Panels (ACT-1): Mineral fiber with membrane-faced overlay, with the following characteristics:
  - 1. Classification: ASTM E1264 Type A.
    - a. Form: 2, water felted.
    - b. Pattern: "E" - lightly textured.
  - 2. Size: 24 by 24 inches.
  - 3. Thickness: 7/8 inch.
  - 4. NRC: 0.80 minimum, determined in accordance with ASTM E1264.
  - 5. Articulation Class (AC): 170 minimum, determined in accordance with ASTM E1264.
  - 6. Ceiling Attenuation Class (CAC): 35 minimum, determined in accordance with ASTM E1264.
  - 7. Panel Edge: Beveled Tegal.
  - 8. Color: White.
  - 9. Suspension System: Exposed grid system.
  - 10. Products:
    - a. Armstrong World Industries, Inc; Ultimate High NRC Model No. 1941: [www.armstrongceilings.com](http://www.armstrongceilings.com).

#### **2.02 SUSPENSION SYSTEM(S)**

- A. Manufacturers:
  - 1. Same manufacturer as acoustical units.
  - 2. Substitutions: Not permitted.
- B. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
- C. Exposed Suspension System: Hot-dipped galvanized steel grid with steel cap.
  - 1. Structural Classification: Heavy-duty, when tested in accordance with ASTM C635/C635M.
  - 2. Profile: Tee; 15/16 inch face width.
  - 3. Finish: Baked enamel.
  - 4. Color: White.

## **2.03 ACCESSORIES**

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.
- C. Hold-Down Clips: Manufacturer's standard clips to suit application.
- D. Perimeter Moldings: Same metal and finish as grid.
- E. Touch-up Paint: Type and color to match acoustical and grid units.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

### **3.02 PREPARATION**

- A. Install after major above-ceiling work is complete.
- B. Coordinate the location of hangers with other work.

### **3.03 INSTALLATION - SUSPENSION SYSTEM**

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size, unless otherwise indicated.
- D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
  - 1. Use longest practical lengths.
  - 2. Overlap and rivet corners.
- E. Seismic Suspension System, Seismic Design Category C: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Maintain a 3/8 inch clearance between grid ends and wall.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- I. Do not eccentrically load system or induce rotation of runners.
- J. Form expansion joints as detailed. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.

### **3.04 INSTALLATION - ACOUSTICAL UNITS**

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- E. Cutting Acoustical Units:

1. Cut to fit irregular grid and perimeter edge trim.
  2. Make field cut edges of same profile as factory edges.
  3. Double cut and field paint exposed reveal edges.
- F. Where round obstructions occur, provide preformed closures to match perimeter molding.
- G. Lay acoustical insulation for a distance of 48 inches either side of acoustical partitions as indicated.
- H. Install hold-down clips on panels within 20 ft of an exterior door.

### **3.05 TOLERANCES**

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

**END OF SECTION**