# 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 Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019.

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; 2022.

D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

### 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 (610 by 610 mm).
   3. Thickness: 7/8 inch (____ mm).
   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 Tegular.
   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.

**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 (24 mm) 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 (2 mm) 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 (9 mm) 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 (152 mm) 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 (25 mm) 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 (1219 mm) either side of acoustical partitions as indicated.

H. Install hold-down clips on panels within 20 ft (6 m) of an exterior door.

**3.05 TOLERANCES**

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet (3 mm in 3 m).

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

**END OF SECTION**