

**SECTION 09-5100**  
**ACOUSTICAL CEILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

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



**1.02 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.
- C. Coordinate the layout and installation of suspended grid components and ceiling panels with other work supported by or penetrating through ceilings, including light fixtures, HVAC equipment, fire-suppression system components (if any), and partitions systems (if any).

**1.03 SUBMITTALS**

- A. Follow Section 01-3323 for making construction submittals.
  - 1. Manufacturer's Product Data: Indicating all technical information which specifies full compliance with requirements of this Section, including installation instructions for grid system and ceiling panels.
  - 2. Samples: 6" x 6" sample of each type of ceiling panel.
  - 3. Qualification data for firms to demonstrate their capabilities and experience. Include list of completed projects, addresses, names of Architects and Owners.
  - 4. Certifications: Manufacturer's certifications that products comply with specified requirements including laboratory reports for tests and standards indicated.
  - 5. Shop drawings: Indicating grid layouts, and locations of hangers, clips hanger and other accessories needed to meet specified seismic requirements.
- B. Follow Sections 01-7700 and 01-7800 for making closeout submittals
  - 1. Extra Stock: As specified elsewhere within this section.

**1.04 QUALITY ASSURANCE**

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years experience.
- B. Installer: Suspended acoustical ceiling work shall be performed by a firm with a minimum of three years of successful experience in the type of work specified in this Section.

- C. Seismic Performance: Provide acoustical ceiling system that has been evaluated by an independent party and found to be compliant with the local building code for the seismic requirements indicated on Structural Drawings

#### **1.05 DELIVERY, HANDLING, STORAGE**

- A. Do not deliver ceiling panels to job-site until the temperature conditions specified under "Environmental Requirements" of this Section are complied with.
- B. Products shall be delivered to job-site in original unopened packages bearing manufacturer's labels and in accordance with Section 01-6000.
- C. Store and protect ceiling grid components in accordance with manufacturer's recommendations and Section 01-6000.
  - 1. Store ceiling panels in the environmental conditions required under "Environmental Requirements" of this Section.

#### **1.06 ENVIRONMENTAL REQUIREMENTS**

- A. Do not begin installation until all wet work such as concrete is completed and thoroughly dried out. Building areas to receive ceilings shall be free of construction dust and debris.
- B. Maintain uniform temperature of 60 degrees F to 85 degrees F, and maximum humidity of 40 percent at least one week prior to, during, and after acoustical unit installation until Substantial Completion.

#### **1.07 EXTRA MATERIALS**

- A. Provide extra ceiling tile and grid pieces in quantities indicated on Finish Drawings.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Acoustic Tiles/Panels:
  - 1. Armstrong World Industries, Inc: [www.armstrongceilings.com/#sle](http://www.armstrongceilings.com/#sle).
- B. Suspension Systems:
  - 1. Same as for acoustical units.

#### **2.02 ACOUSTICAL UNITS**

- A. Acoustical Units - General: ASTM E1264, Class A; FS SS-S-118B; ASTM E84, Flame Spread 25 or under.
- B. Vinyl Faced Acoustical Panels, Type AC-2: Mineral fiber with membrane-faced overlay, with the following characteristics:
  - 1. Classification: ASTM E1264 Type IV.
    - a. Form: 2, water felted.
    - b. Pattern: "E" - lightly textured.
  - 2. Manufacturer: As indicated on Finish Drawings.
  - 3. Surface Design/Finish/Size/Edge: As indicated on Finish Drawings.

4. NRC Range: 0.50 to 0.55, determined in accordance with ASTM E1264.
  5. Ceiling Attenuation Class (CAC): 35-40, determined in accordance with ASTM E1264.
  6. Color: White.
  7. Suspension System Type 1: Exposed grid.
- C. Sound Reducing Acoustical Panels, Type AC-1: Glass fiber with membrane-faced overlay, with the following characteristics:
1. Classification: ASTM E1264 Type XII.
    - a. Form: 2, cloth.
    - b. Pattern: "E" - lightly textured.
  2. Manufacturer: As indicated on Finish Drawings.
  3. Surface Design/Finish/Size/ Edge: As indicated on Finish Drawings.
  4. NRC Range: 0.90 to 1.0, determined in accordance with ASTM E1264.
  5. Ceiling Attenuation Class (CAC): 26, determined in accordance with ASTM E1264.
  6. Color: White.
  7. Suspension System Type 1: Exposed.

### **2.03 SUSPENSION SYSTEM(S)**

- A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
- B. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
1. Materials:
    - a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.
    - b. Aluminum Grid: Aluminum sheet, ASTM B209/B209M.
  2. Finish: All steel roll-formed parts, including cap, shall be chemically cleaned, electrogalvanized and protective-conversion coated. All exposed surfaces, except aluminum, shall then receive a baked polyester finish. Aluminum caps shall be etched and receive a lacquer finish.
- C. Exposed Suspension System, Type 1: Hot-dipped galvanized steel grid with aluminum cap.
1. Application(s): Seismic.
  2. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
  3. Profile: Tee; 15/16 inch face width.
  4. Finish: Baked enamel.
  5. Color: White.
  6. Products:
    - a. Prelude XL.

## **2.04 ACCESSORIES**

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application 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. Seismic Clips: Manufacturer's standard clips for seismic conditions and to suit application.
- E. Perimeter Moldings: Same metal and finish as grid.
  - 1. Size: As required for installation conditions and specified Seismic Design Category.
- F. Metal Edge Trim for Suspension Systems: Steel or extruded aluminum; provide attachment clips, splice plates, and preformed corner pieces for complete trim system.
  - 1. Trim at window: 6 inch or 12 inch height, straight, extruded aluminum alloy 6063 trim channel with perimeter trim for drywall.
  - 2. Trim for Square Panel: Knife Edge: 6 inch wide horizontal face, extruded aluminum alloy 6063 trim channel.

## **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.
- C. Verify that conditions are adequate to be able to meet seismic requirements.

### **3.02 INSTALLATION - SUSPENSION SYSTEM**

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, ASTM C636/C636M, ASTM E580/E580M, ASTM C636/C636M, and ASTM E580/E580M and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. 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.
- D. ***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. Add 02***

- E. ~~**Seismic Suspension System, Seismic Design Categories D, E, F: Hang suspension system with grid ends attached to the perimeter molding on two adjacent walls; on opposite walls, maintain a 3/4 inch clearance between grid ends and wall. Add 02**~~
- 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.
  - 1. If fixtures or components are too heavy to be supported from ceiling grid, then the fixtures or components shall be supported directly from building structure.
- 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.

### **3.03 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.
- F. Where round obstructions occur, provide preformed closures to match perimeter molding.
- G. Install hold-down clips on panels within 20 ft of an exterior door.

### **3.04 ADJUSTMENTS AND CLEANING**

- A. Adjust any sags or twists which developed in the ceiling systems.
- B. Clean exposed surfaces of grid systems and ceiling panels, including trim and edge moldings.
  - 1. Comply with manufacturer's published instructions for cleaning and touch-up of minor damage to finish.
- C. Remove and replace work which cannot be successfully cleaned and repaired to a condition which permanently eliminates evidence of damage.

**END OF SECTION**