

**SECTION 09 5100  
ACOUSTICAL CEILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Acoustical units.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 3100 - Steel Decking: Placement of special anchors or inserts for suspension system.
- B. Section 07 2100 - Thermal Insulation: Acoustical insulation.
- C. Section 21 1300 - Fire-Suppression Sprinkler Systems: **Sprinkler heads in ceiling system.**
- D. Section 26 5100 - Interior Lighting: Light fixtures in ceiling system.
- E. Section 28 4600 - Fire Detection and Alarm: Fire alarm components in ceiling system.
- F. Applicable sections from Divisions 21, 23, & 26.

**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; 2013a.
- 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; 2014.
- D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.
- E. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2015.
- F. UL (FRD) - Fire Resistance Directory; current edition.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning, junctions with other ceiling finishes, and mechanical and electrical items installed in the ceiling.
- C. Product Data: Provide data on suspension system components and acoustical units.
- D. Samples: Submit two full size samples illustrating material and finish of acoustical units.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

**1.05 QUALITY ASSURANCE**

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

## 1.06 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F (16 degrees C), and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

## PART 2 PRODUCTS

### 2.01 ACOUSTICAL UNITS - SEE FINISH SCHEDULE

- A. Acoustical Panel Ceilings (**ACT-1**)
  - 1. Surface Texture: Medium Texture
  - 2. Composition: Mineral fiber
  - 3. Color: See finish schedule.
  - 4. Size: 24 in x 24 in
  - 5. Edge Profile: Square Lay-In
  - 6. Noise Reduction Coefficient (NRC) ASTM C 423 Classified w/ UL label on product carton: 0.55
  - 7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton: 33, 35, 40
  - 8. Flame Spread: ASTM E 1264; Class A
  - 9. Light Reflectance (LR) White Panel: ASTM E 1477; 0.80
  - 10. Dimensional Stability: Standard
  - 11. Recycle Content: Up to 43% total recycled content. (Total recycled content: pre-consumer, post-consumer and post-industrial)
  - 12. Material Ingredient Transparency: Health Product Declaration (HPD); Declare Label
  - 13. Life Cycle Assessment: Third Party Certified Environment Product Declaration (EPD)
  - 14. Indoor Air Quality Certified to SCS-105 v.4.2-2023
  - 15. Basis of Design: **CORTEGA 770**, as manufactured by Armstrong World Industries, Inc.
- B. Acoustical Panel Ceilings (**ACT-2**)
  - 1. Surface Texture: Smooth Texture
  - 2. Composition: Mineral Fiber
  - 3. Perforation: Unperforated
  - 4. Color: See finish schedule.
  - 5. Size: 24 in x 24 in
  - 6. Edge Profile: Square Lay-In
  - 7. Ceiling Attenuation Class (CAC) : ASTM E1414/E1414M; Classified with UL label on product carton: 40
  - 8. Flame Spread: ASTM E1264; Class A
  - 9. Light Reflectance (LR) White Panel: ASTM E 1477; 0.80
  - 10. Dimensional Stability: Standard
  - 11. Recycle Content: Up to 41% total recycled content. (Total recycled content: pre-consumer, post-consumer and post-industrial)
  - 12. Indoor Air Quality Certified to SCS-105 v4.2-2023
  - 13. Basis of Design: **Clean Room VL 868**, as manufactured by Armstrong World Industries, Inc.
- C. Acoustical Panel Ceilings (**ACT-3**)
  - 1. Surface Texture: Smooth Texture
  - 2. Composition: Fiberglass
  - 3. Color: White
  - 4. Size: 24 x 24
  - 5. Edge Profile: Square Lay-in

6. Noise Reduction Coefficient (NRC) ASTM C 423 Classified w/ UL Label on product carton: 0.90, 0.95, 1.00
7. Ceiling Attenuation Class (CAC) : ASTM E1414/E1414M; Classified with UL label on product carton: N/A, 26
8. Articulation Class (AC): ASTM E 1111; Classified with UL Label on product carton: N/A, 180, 190
9. Flame Spread: ASTM E 1264; Class A
10. Light Reflectance (LR) White Panel: ASTM E 1477; 0.88
11. Dimensional Stability: HumiGuard Plus
12. Recycle Content: Up to 71% total recycled content. (Total recycled content: pre-consumer, post-consumer and post-industrial)
13. Life Cycle Assessment: Third Party Certified Environmental Product Declaration (EPD)
14. Basis of Design: **OPTIMA Lay-in**, as manufactured by Armstrong World Industries, Inc.

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

- A. Suspension Systems - Main beams and cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Main beams and cross tees are double-web steel construction exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.
  1. Exposed Steel Suspension System Type 1: Formed steel, commercial quality cold rolled; heavy-duty.
    - a. Profile: Tee; 15/16 inch (24 mm) wide face.
    - b. Finish: White painted.
    - c. Product: Equal to Armstrong Prelude XL 15/16" or Donn DXL 15/16"
    - d. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

## **2.03 ACCESSORIES**

- A. Perimeter Moldings: Same material and finish as grid.
  1. At Exposed Grid Type I: Provide L-shaped molding for mounting at same elevation as face of grid.
- B. 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 INSTALLATION - SUSPENSION SYSTEM**

- A. Install suspension system in accordance with ASTM C 636/C 636M, ASTM E 580/E 580M, ASTM C 636/C 636M, ASTM E 580/E 580M, ASTM C 636/C 636M, and ASTM E 580/E 580M 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.
- D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

- E. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- 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 (150 mm) of each corner, or support components independently.
- I. Do not eccentrically load system or induce rotation of runners.
- J. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
  - 1. Use longest practical lengths.
  - 2. Miter corners.
- K. Coordinate with mechanical, plumbing and electrical.

### **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 units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
  - 1. Cut to fit irregular grid and perimeter edge trim.
  - 2. Make field cut edges of same profile as factory edges.
- G. Where round obstructions occur, provide preformed closures to match perimeter molding.
- H. Install hold-down clips on panels within 20 ft (6 m) of an exterior door.

### **3.04 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 09 5100**