

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Acoustical panels and exposed suspension systems for ceilings.

1.2 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: Provide acoustical panels with surface burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84.
- B. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand the effects of earthquake motions according to the following:
1. International Building Code
 2. CISCA's Recommendations for Acoustical Ceilings: Comply with CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings."
- C. Seismic Loads: Design and size components to withstand seismic loads in accordance with the International Building Code, Section 1613.1 for Category B.

1.3 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Acoustical Ceiling Panels: One full, unopened box of each type and color of ceiling tile installed.

PART 2 - PRODUCTS

2.1 ACOUSTICAL PANELS, GENERAL

- A. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, light reflectances, and humidity resistance unless otherwise indicated.
- B. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.

2.2 ACOUSTICAL PANELS

A. Manufacturers:

1. Armstrong Ceilings & Wall Solutions.
2. CertainTeed Corporation; Saint-Gobain North America.
3. USG Corporation.

B. Panel Types:

1. **Type 1:** ASTM E1264, Type III, mineral base with painted finish; Form 2, Pattern C E, square edge, 24 by 48 inches (610 by 1220 mm) by 5/8 inch (16 mm) thick with mold and mildew inhibitor.
 - a. Basis-of-Design Product and Color: As specified in Division 01 Section "General Interior Finishes and Colors" and "Décor Interior Finishes and Colors."
 - b. Light Reflectance (LR): 0.84.
 - c. Ceiling Attenuation Class (CAC): 35.
 - d. Noise Reduction Coefficient (NRC): 0.55.
 - e. Metal Suspension System: Type A.
2. **Type 2:** ASTM E1264, Type III, mineral base with painted finish; Form 2, Pattern C E K, tegular edge, scored, 24 by 48 inches (610 by 1220 mm) by 3/4 inch (19 mm) thick with mold and mildew inhibitor.
 - a. Basis-of-Design Product and Color: As specified in Division 01 Section "Décor Interior Finishes and Colors."
 - b. Light Reflectance (LR): 0.84.
 - c. Ceiling Attenuation Class (CAC): 35.
 - d. Noise Reduction Coefficient (NRC): 0.55.
 - e. Metal Suspension System: Type A.
3. **Type 5:** ASTM E1264, Type XX, 1/2 inch (13 mm) gypsum base with a 2 mill minimum washable membrane-faced overlay, Pattern G, square edge, 24 by 48 inches (610 by 1220 mm), by 1/2 inch (13 mm) thick.
 - a. Basis-of-Design Product and Color: As specified in Division 01 Section "General Interior Finishes and Colors."
 - b. Light Reflectance (LR): 0.77.
 - c. Ceiling Attenuation Class (CAC): 35.
 - d. Metal Suspension System: Type B.

2.3 METAL SUSPENSION SYSTEMS, GENERAL

A. Manufacturers:

1. Armstrong Ceiling & Wall Solutions.
2. CertainTeed Corporation; Saint-Gobain North America.
3. Rockfon (Rockwool International).
4. USG Corporation.

- B. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," and the International Building Code, Section 1613.1 for seismic building category indicated.
- D. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire, ASTM A 641/A 641M, Class 1 zinc coating, soft temper or nickel-copper-alloy wire, ASTM B 164, nickel-copper-alloy UNS No. N04400.
 - 1. Size: 12-gage minimum or as required so its stress at three times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, and in accordance with the International Building Code, Section 1613.1 for seismic building category indicated.
- E. Aircraft Cable (For Ceiling Cloud Suspension System): Stainless steel, type 304, 7 x 7 multi-stranded complying with Federal Specification RR-W-410E.
 - 1. Size: 1/32 inch (0.8 mm) diameter minimum or as required so its stress at three times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of cable, and in accordance with the International Building Code, Section 1613.1 for seismic building category indicated.
 - 2. Cable Fittings: Provide sleeves, turnbuckles, clamps, terminals as required for a complete installation.
- F. Slotted Channel Framing: As specified in Division 05 Section "Metal Fabrications."

2.4 METAL SUSPENSION SYSTEM

- A. **Type A:** Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, hot-dip galvanized according to ASTM A 653/A 653M, G30 (Z90) coating designation, with prefinished, cold-rolled, 15/16-inch- (24-mm-) wide, metal caps on flanges.
 - 1. Structural Classification: Intermediate-duty system.
 - 2. End Condition of Cross Runners: Butt-edge or override type.
 - 3. Face Design: Flat, flush.
 - 4. Cap Material: Steel cold-rolled sheet.
 - 5. Cap Finish: Factory painted to match adjacent acoustical panel, unless noted otherwise.
- B. **Type B:** Wide-Face, Capped, Double-Web, Hot-Dip Galvanized, G60 (Z180), Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, hot-dip galvanized according to ASTM A 653/A 653M, G60 (Z180) coating designation, with prefinished, cold-rolled, 15/16-inch- (24-mm-) wide, metal caps on flanges.
 - 1. Structural Classification: Intermediate-duty system.
 - 2. End Condition of Cross Runners: Override type.
 - 3. Face Design: Flat, flush.
 - 4. Cap Material: Aluminum.
 - 5. Cap Finish: Factory painted to match adjacent acoustical panel, unless noted otherwise.

2.5 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical panel edge details and suspension systems indicated; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.
1. Provide 7/8 inch (22 mm) horizontal flange.

2.6 CEILING CLOUD SUSPENSION SYSTEM

- A. Edge Trim System: Extruded aluminum alloy 6063 trim channel, 10 foot straight and curved profiles.
1. Products:
 - a. Armstrong Ceiling & Wall Solutions; Axiom Classic.
 - b. Certainteed Corporation; Saint-Gobain North America; Cloud Perimeter Trim.
 - c. Rockfon (Rockwool International); Infinity.
 - d. USG Corporation; Compasso.
 2. Face Width: As indicated.
 3. Flange Width: 3/4 inch (19 mm)
 4. Field Suspension Grid: Type A
 5. Acoustical Panel: As indicated on Drawings.
 6. Brackets, Clips, Connectors: Manufacturer's standard.
 7. Load Transfer Bracket: Manufacturer's standard.

2.7 SOUND ATTENUATION BLANKETS

- A. Sound Attenuation Blankets: As specified in Division 09 Section "Gypsum Board."

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.2 mm in 3.66 m). Miter corners accurately and connect securely.

2. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- C. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- D. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
- E. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.
- F. Install minimum **3 inch (76 mm)** thick sound attenuation blankets as specified in Division 09 Section "Gypsum Board" above ceiling where indicated.
 1. Lay Sound Attenuation blankets over designated ceiling area so that insulating material is supported by ceiling suspension system. Grid support is not to exceed **24 inches (610 mm)**. Laying batts directly on ceiling panels so that they are the sole support of the insulation is prohibited.

3.2 INSTALLATION, SEISMIC DESIGN CATEGORIES A & B

- A. General: Install acoustical panel ceilings to comply with ASTM C 636.
- B. Hangers
 1. Attachment of the hangers to the building structural steel must be by means demonstrated to be suitable by standard construction practice or by certified test data. Attach hangers to top chord or flange of structural members or to slotted channel framing installed at top chord or flange of structural members. Do not attach hangers to roof deck.
 2. Space hangers four feet on center or adjust suspension system allowable load based on actual center spacing.
 3. Hangers must be plumb within one in six (plus or minus 10 degrees) unless counter-sloping wire or horizontal bracing is provided.
 4. Devices used to attach wires to the grid must be certified to carry five times the design load.
 5. Wires loops must be tightly formed and secured by a minimum of three complete wraps completed within three inches.
- C. Main Beams
 1. Level within 1/4- inch in 10 feet.
 2. Align connections properly (plus or minus 0.015-inch vertical or horizontal) with no visually apparent angular displacement.
 3. Gaps between connected main beams must be less than 0.020-inch.
- D. Cross Tees:
 1. Install within 1/32-inch of required center spacing.
 2. Form right angles with the main beams.

3. Install flush with the mains. (-0.0-inch +0.015-inch)

3.3 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13