

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for ceilings.
- B. Related Requirements:
  - 1. Division 01 Section "Coordination Drawings" for requirements to coordinate the work of this Section with the construction elements indicated as "Coordination Drawing Content" and as required by the other Prime Contractors for the Project Coordination Drawings.
  - 2. Division 09 Section "Acoustical Insulation and Sealants."

1.3 UNIT PRICES

- A. Specific work of this section is itemized as Unit Prices on the Bid Form to add or deduct specific units of work to the project. Unit Price descriptions, requirements and units of work are enumerated in Division 01 Section "Unit Prices". Unit Prices are inclusive of all labor, materials, overhead and profit per unit of work indicated.

1.4 ALLOWANCES

- A. Work Included in Base Bid: The Contractor shall include in the space provided on the Bid Form, the allowances for work of this section itemized on the Bid Form. The cost of these quantities shall be computed using the Unit Prices stated on the Bid Form. The work listed is in addition to that required to complete the work of the Contract and, consequently, the sum therefore may be deducted from the Contract amount if the corresponding work is not required by actual conditions encountered.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, minimum 6 inches in size of specified acoustical panel and 8 inch long samples of moldings and suspension systems.

1.6 INFORMATIONAL SUBMITTALS

- A. Product Certificates: Manufacturer's certification that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material shall carry an approved independent laboratory classification.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Acoustical Ceiling Panels: Full-size panels equal to 2 percent of quantity installed.
  - 2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.9 QUALITY ASSURANCE

- A. Source Limitations: Obtain each set of linear metal pans and suspension systems from one source with resources to provide products of consistent quality in appearance, physical properties, and performance.
- B. Surface-Burning Characteristics: Complying with ASTM E 1264 for Class A materials, as determined by testing identical products according to ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Build mockup of typical ceiling area as shown on Drawings.
  - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- D. Installer Qualifications: Firm with not less than 3 years of successful experience in installation of acoustical ceilings similar to requirements for this project and has a successful record of installation in accordance with the manufacturer's installation requirements.

1.10 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review specification requirements.
  - 2. Review installation procedures.
  - 3. Inspect project conditions.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages that indicate UL classification on product label. Store acoustical panels, suspension-system components and accessories in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

#### 1.12 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
  - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

#### 1.13 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace acoustical panel ceiling components that fail in materials or workmanship within the specified warranty period:
  - 1. Failures include, but are not limited to, the following:
    - a. Acoustical panels that sag, warp or growth of mold or mildew on panels to resist antimicrobial growth.
    - b. Grid: Rust and manufacturer's defects.
  - 2. Warranty Period: As indicated for each product.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
  - 2. Smoke-Developed Index: 50 or less.

#### 2.2 ACOUSTICAL PANELS, GENERAL

- A. Source Limitations:
  - 1. Acoustical Ceiling Panel: Obtain each type from single source from single manufacturer.
  - 2. Suspension System: Obtain each type from single source from single manufacturer.
- B. Glass-Fiber-Based Panels: Made with binder containing no urea formaldehyde.
- C. 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, and light reflectances unless otherwise indicated.

- D. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
- E. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

## 2.3 ACOUSTICAL PANELS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers in the following sections:
- B. Mineral Fiber – Type 1: Provide panels complying with ASTM E 1264 as follows:
  - 1. Material: Wet Formed Mineral Fiber; Type III, Form 2, Pattern C E.
  - 2. Texture: Medium.
  - 3. Finish: Factory-applied Latex paint.
  - 4. Edge Profile: Square, Lay-in.
  - 5. Thickness: ¾".
  - 6. Color: White.
  - 7. Light Reflectance: .84.
  - 8. Noise Reduction Coefficient: .70.
  - 9. Warranty Period: 10 years.
  - 10. Products:
    - a. Armstrong: School Zone Fine Fissured - "1713/1714" (non-fire-resistance rated);
    - b. USG: Radar Education – "22421/22441 (non-fire- resistance rated),
    - c. CertainTeed: Fine Fissured High NRC – "HHF-457/HHF-497" non-fire resistance rated.
- C. Vinyl-Faced Gypsum Board – Type 2: Provide panels complying with ASTM E 1264, Type XX, as follows:
  - 1. Material: Gypsum core with vinyl face.
  - 2. Finish: Factory-adhered, scrubbable.
  - 3. Edge Profile: Square, Lay-in.
  - 4. Thickness: 1/2-inch.
  - 5. Color: White.
  - 6. Light Reflectance: .78.
  - 7. CAC: 34 (2 x 2) and 36 (2 x 4).
  - 8. Warranty Period: 10 years.
  - 9. Products:
    - a. Armstrong: Vinylclad.
    - b. CertainTeed: Vinylrock™.
    - c. National Gypsum: Gridstone®.
- D. Fiberglass – Type 3: Provide panels complying with ASTM E 1264 as follows:
  - 1. Material: Fiberglass, Type XII, Form 2, Pattern E.
  - 2. Texture: Fine.
  - 3. Finish: Factory-applied Latex paint.
  - 4. Edge Profile: Flush.
  - 5. Thickness: ¾"
  - 6. Color: White.

7. Light Reflectance: .90.
8. Noise Reduction Coefficient: .90.
9. Warranty Period: 10 years.
10. Products:
  - a. Armstrong: Optima "3150/3151."
  - b. CertainTeed: Symphony F "1322-IOF-1/1320-IOF-1."
  - c. USG: Halcyon Clima Plus "97221/97241."

#### 2.4 METAL SUSPENSION SYSTEMS, GENERAL

- A. 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 635M.
- B. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- C. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
  1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
  2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch-diameter wire.

#### 2.5 METAL SUSPENSION SYSTEM

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Armstrong World Industries, Inc.
  2. CertainTeed Corp.
  3. Rockfon.
  4. USG Interiors, Inc.; Subsidiary of USG Corporation.
- B. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 coating designation; with prefinished 15/16-inch- wide metal caps on flanges. Main beams and cross tees shall have rotary stitching.
  1. Structural Classification: Heavy-duty system.
  2. Face Design: Flat, flush.
  3. Cap Material: Steel cold-rolled sheet.
  4. Cap Finish: Painted white to match ceiling tile.
  5. Warranty: 10 years.

#### 2.6 METAL EDGE 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 formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.
- B. Trim Accessories: Provide Manufacturer's premanufactured outside corner pieces for use at bullnose masonry gypsum board assemblies

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.
- B. Coordination: Perform the following prior to installing ceiling grid:
  1. Review reflected ceiling plans, lighting plans, ductwork plans, sprinkler shop drawings, electrical systems plans, coordination drawings, and other applicable project drawings prior to installing ceilings.
  2. Confirm ceiling elevations and main runner locations with all Contractors with work located in or above the ceiling.
  3. Report any conflicts promptly to the Architect in writing.
  4. Proceed with grid installation only after all conflicts have been resolved. Conflicts realized during installation will require removal and reinstallation of the ceiling grid at the Contractors expense.

#### 3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
  1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
  2. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
  4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
  5. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
  6. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
  7. Do not attach hangers to steel deck tabs.
  8. Do not attach hangers to steel roof deck. Attach hangers to structural members.
  9. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
  10. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
- D. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. After installation of suspension-system, acoustical panels shall not be installed until after Architect has performed above ceiling inspection and all deficiencies have been rectified. Acoustical ceiling panels installed prior to this shall be removed at the Contractors expense.
- F. 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.
1. Install hold-down clips in areas with fire-resistance rated ceilings; space as recommended by panel manufacturer's written instructions unless otherwise indicated.
  2. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.
- G. Install premanufactured outside corner pieces neatly and securely on all outside corners at masonry and gypsum wallboard assemblies. Inside corners shall be accurately and cleanly mitered and securely connected.

### 3.4 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