

SECTION 09 51 13
ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes acoustical panels and exposed suspension systems for ceilings.

1.02 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials and equipment necessary to complete the work in this Section, including but not limited to the following:
1. Acoustical ceiling tiles and panels.
 2. Suspended systems, grid systems and ceiling hangers.
 3. Acoustical sealant at edge moldings at acoustical ceilings.
- B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
1. Section 09 21 10 – Gypsum Board Assemblies.
 2. Division 21 – Fire Protection for fire-suppression components located in ceilings.
 3. Division 23 – Heating, Ventilating and Air Conditioning for air handling and distribution components located in ceilings.
 4. Division 26 – Electrical Work for lighting fixture and alarm system components located in ceilings.

1.03 SUBMITTALS

- A. Product Data: Catalog data sheets, specifications, and installation instructions for each item specified
- B. Coordination Drawings: Reflected ceiling plans drawn to scale and coordinating penetrations and ceiling mounted items. Show the following:
1. Ceiling suspension members
 2. Method of attaching hangers to building structure.
 - a. Furnish layouts for cast-in-place anchors, clips and other ceiling attachment devices whose installation is specified in other Sections.
 3. Ceiling mounted items including light fixtures, air outlets and inlets, grilles, sprinkler heads, access panels and special moldings at walls, column penetrations, and other junctures with adjoining construction.

- C. Samples for Verification: For each component indicated and for exposed finish required, prepare a sample of size indicated.
 - 1. Exposed Suspension System members, Moldings, and trim: Set of 12 inch long Samples of each type, finish and color.
 - 2. Acoustical Tile: Full size, each type specified.
 - 3. Adhesive: One quart.
 - 4. Fasteners: Each type required.
 - 5. Wire: 12 inches long piece.
- D. Maintenance data: Two copies of the manufacturer's printed recommendations for cleaning and refinishing the installed products. Include information about materials and methods which may be detrimental to finish and acoustic efficiency.

1.04 QUALITY ASSURANCE

- A. Source Limitations:
 - 1. Acoustical Ceiling Panels: Obtain each type through one source from a single manufacturer.
 - 2. Suspension System: Obtain each type through one source from a single manufacturer.
- B. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following:
 - 1. Fire-Resistance Characteristics: Where indicated, provide acoustical panel ceilings identical to those of assemblies tested for fire resistance per ASTM E 119 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
 - a. Fire-Resistance Rating: Indicated by design designations from UL's "Fire Resistance Directory" or from listing of another testing and inspection agency.
 - b. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 2. Surface-Burning Characteristics: Provide acoustical panels complying with ASTM E 1264 for Class A materials, when tested per ASTM E 84.
 - a. Smoke-Developed Index: 50 or less.
 - b. Flame Spread: 25 or less.
- C. Seismic Standard: Provide acoustical ceiling panel designed and installed to withstand the effects of earthquake motions according to the 2008 NYC Building Code.
- D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them 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 stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.06 PROJECT 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.

1.07 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.08 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: Full-size panels equal to 2.0 percent of quantity installed.
 2. Suspension System Components: Quantity of each exposed component equal to 2.0 percent of quantity installed.

1.09 WARRENTY AND GAURANTEE

- A. Special Installer's Guarantee: Installer's standard form in which Installer agrees to repair or replace all items, parts, equipment, etc. that do not comply with performance and other requirements specified in this Section within the specified guarantee period.
 - 1. Guarantee Period: Two (2) years from the date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which all items, parts, equipment, etc. agrees to repair or replace those that do not comply with performance and other requirements specified in this Section within the specified guarantee period.
 - 1. Guarantee Period: Two (2) years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.01 ACOUSTICAL PANEL CEILINGS, 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 and light reflectance, unless otherwise noted.
- B. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with ASTM C 635.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
 - 1. Anchors in Concrete: Cast-in-Place anchors fabricated from corrosion-resistant materials, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five (5) times that imposed by ceiling construction, as determined by testing per ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.
 - a. Type: post installed expansion anchors.
 - b. Corrosion protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition.
 - 2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to ten (10) times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing and inspecting agency.

- D. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire; ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 - 1. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch diameter wire.
- E. Hold-Down Clips: At Vestibules and areas subject to wind uplift, provide manufacturer's standard hold-down clips spaced 24 inches on all cross tees.
- F. Seismic perimeter stabilizer bars, seismic struts, and seismic clips.
- G. Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.
- H. Suspension Trim: Subject to compliance with requirements, provide one of the following:
 - 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, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than

2.02 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
- B. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Armstrong World Industries, Inc.
 - 2. Conwed Designscape
 - 3. USG Interiors, Inc.
 - 4. Or approved equal
- C. Classification: Provide fire-resistance-rated panels complying with ASTM E 1264 for type and form as follows:
 - 1. Type and Form: Type III, mineral base with painted finish; Form 1, nodular, 2, water felted, 4, cast or molded.
 - 2. Type and Form: Type IX: mineral-base panels with scrubbable finish, resistant to heat, moisture, and corrosive fumes.
- D. Color: White
- E. Light Reflectance Coefficient (LR): Not less than .075 or greater; ASTM E 1477.

- F. Noise Reduction Coefficient (NRC): Not less than 0.50, Type E-400 mounting per ASTM E 795.
- G. Ceiling Attenuation Class (CAC): Not less than 35 or greater; ASTM E 1414.
- H. AC: Not less than <Insert AC>.
- I. Edge/Joint Detail: Beveled, kerfed and rabbeted or Square, kerfed and rabbeted.
- J. Thickness: 5/8 inch.
- K. Modular Size: 24 by 24 inches.

2.03 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
- B. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Armstrong World Industries, Inc.
 - 2. USG Interiors, Inc.
 - 3. Celotex Corporation; Architectural Ceiling market Department
 - 4. Gordon, Inc.
 - 5. Or approved equal
- C. Double-Web, Fire-Rated 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 (Z90) coating designation, with prefinished 15/16-inch wide metal caps on flanges.
 - 1. Structural Classification: Heavy-duty system.
 - 2. End Condition of Cross Runners: Override (stepped) or butt-edge type.
 - 3. Face Design: Flush, flat.
 - 4. Cap Material: Steel or aluminum cold-rolled sheet.
 - 5. Cap Finish: Painted white

2.04 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 For lay-in panels with reveal edge details, provide stepped edge molding that

forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.

- 2 For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
 - 3 For narrow-face suspension systems, provide suspension system and manufacturer's standard edge moldings that match width and configuration of exposed runners.
- B. Suspension Trim: Subject to compliance with requirements, provide one of the following:
- 1 Armstrong World Industries, Inc.
 - 2 Celotex Corporation; Architectural Ceiling market Department
 - 3 USG Interiors, Inc.;
 - 4 Or approved equal

2.05 ACOUSTICAL SEALANT

- A. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), recommended for sealing interior concealed joints to reduce airborne sound transmission.
- B. Available Products:
1. Acoustical Sealant for Exposed and Concealed Joints:
 - a. Pecora Corp; AC-20 FTR Acoustical and Insulation Sealant.
 - b. United States Gypsum Co.; SHEETROCK acoustical Sealant
 2. Acoustical Sealant for Concealed Joints:
 - a. OSI Sealants, Inc.; Pro-Series SC-170 Rubber Base Sound Sealant
 - b. OSI Sealants, Inc.; Pro-Series SC-175 Rubber Base Sound Sealant
 - c. Pecora Corp.; BA-98
 - d. Tremco, Inc.; Tremco Acoustical Sealant

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine surfaces and areas scheduled to receive acoustical tile for unevenness, irregularities, dampness, and other conditions that will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. 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.
- C. 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 the supporting structure or 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 spacing that interfere with location of hangers at spacing required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by reference standards and publications.
 - 4. Secure flat angle, channel and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hangers involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion or elevated temperatures.
 - 5. Do not support ceilings directly from permanent metal forms or floor deck; anchor into concrete slabs.
 - 6. Do not attach hangers to steel deck tabs or to steel roof deck. Attach to structural steel members.
 - 7. 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 end of each member.

- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet Miter corners accurately and connect securely.
- E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- 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.

3.03 ADJUSTING AND CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trims, edge moldings and suspension system members that have been soiled. Follow manufacturer's instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components which have been damaged or cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION