SECTION 09 5126

ACOUSTICAL WOOD CEILING SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Acoustical wood ceiling panels and concealed suspension systems.

B. Related Documents and Sections: Examine Contract Documents for requirements that directly affect or are affected by Work of this Section. A list of those Documents and Sections include, but is not limited to the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions, and Division 01 General Requirements Specification Sections.
2. Section 06 4000 - ARCHITECTURAL WOODWORK.

1.2 DEFINITIONS

A. CAC: Ceiling Attenuation Class.

B. NRC: Noise Reduction Coefficient.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Ceiling suspension system members.
2. Method of attaching hangers to building structure.
3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
4. Minimum Drawing Scale: 1/8 inch = 1 foot.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.

1. Acoustical Wood Ceiling Panels: Set of 12-inch-square Samples of each type, color, pattern, and texture.
2. Exposed Suspension System Members: Set of 12-inch- long Samples of each type, finish, and color.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical wood panel ceiling.

E. Maintenance Data: For finishes to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations:

1. Obtain wood veneer for wood ceiling panels from veneer supplier through woodworker as specified in Section 06 4000 - ARCHITECTURAL WOODWORK.
2. Acoustical Wood Ceiling Panels and Suspension Systems: Obtain each type of acoustical wood panel and associated suspension system through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide acoustical wood panel ceilings that comply with the following requirements:

1. Surface-Burning Characteristics: Provide acoustical wood panels with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:
   a. Smoke-Developed Index: 50 or less.

C. Seismic Standard: Provide acoustical wood panel ceilings designed and installed to withstand the effects of earthquake motions according to CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings--Seismic Zones 0-2."

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. Size and Location: Minimum 100 square feet for each panel type, in locations acceptable to Architect.
2. Provide complete installations with materials in systems, including panels, suspension system, wall moldings, light fixtures and mechanical grilles and diffusers.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

E. Preinstallation Conference: Conduct conference at Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical wood 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 wood panels, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical wood panels carefully to avoid chipping edges or damaging units.

1.6 PROJECT CONDITIONS

A. Permit wood veneer ceiling materials to reach room temperature and have a stabilized moisture content for a minimum of 72 hours before installation. Remove plastic wrap to allow panels to climatize.

B. Environmental Limitations: Do not install acoustical wood 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.

1.7 COORDINATION

A. Coordinate layout and installation of acoustical wood 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.

1.8 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.

PART 2 PRODUCTS

2.1 WOOD ACOUSTICAL PANELS, GENERAL

A. Hardwood Face Veneers:

1. Species and cut:
   a. Wood Types: As selected by Architect.
2. Match between Veneer Leaves:
   a. Plain sliced veneer: Book match.
   b. Quarter sliced veneer: Slip match.
3. Assembly of Veneer Leaves on Panel Faces: Center-balance match.

B. Panel Substrate:

1. Fire-Retardant Particleboard: ANSI A208.1, minimum 45-lb/cu. ft. density.
   a. Flame spread: ASTM E 84, 0-25.
   b. Grade M-2-Exterior Glue.

2.2 ACOUSTICAL WOOD PANELS

A. Basis-of-Design Product: Woodworks by Armstrong World Industries, Inc. Subject to compliance with requirements, provide the Basis-of-Design Product or a comparable product by one of the following:

1. AVL Systems.
2. Certainteed.
3. 9Wood.
4. Sound Seal.
5. Equivalent acceptable to Architect.

B. Description: Perforated wood acoustical ceiling tile with custom veneer.

1. Surface Texture: Smooth
2. Perforation Pattern: As selected by the Architect
3. Composition: Fire-retardant Particle Board
4. Species/Finish: Matching Architect's sample.
5. Size: 48 in. x 24 in
6. Reveal: Match Architect's Sample.
7. Profile: 15/16 in.
8. Edge Banding: To match face veneer
9. Noise Reduction Coefficient (NRC): ASTM C 423, Classified with UL label on product carton 0.70 minimum.
10. Flame Spread: ASTM E84 HPVA Fire Classification Class A (HPVA)
11. Dimensional Stability: Standard
12. Ceiling attenuation class (CAC Range): ASTM C 1414, not less than 38.

C. Perforation pattern:

1. Fabricate panels with unperforated border around panel perimeter and around penetrations as indicated on Drawings.
2. For panels which are less than full modular size, fabricate panels with unperforated border around panel perimeter of same width as unperforated border for modular size panels.

D. Finish: Stained, followed by ceiling manufacturer’s standard transparent finish.

1. Stain colors: Custom colors to match Architect’s samples. Provide different color stain for each wood species.

2.3 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.

B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.

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: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five 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 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: 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 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.

2.4 ACCESSORIES

A. Glass Fiber Acoustical Infill: Polyethylene-wrapped glass fiber insulation; thickness as required to comply with NRC requirements.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical wood 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 wood panel ceilings.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical wood 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.

3.3 INSTALLATION

A. General: Install acoustical wood panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, per 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 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 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 suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

D. Install acoustical wood panels with undamaged edges and fit accurately into suspension system runners and edge moldings.

1. Field-cutting of panels is not permitted, except where cut edge of panels will be fully concealed by edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
2. Re-finish cut edges of panel remaining exposed after installation; match sheen and color of

exposed panel surfaces using coating recommended in writing for this purpose by acoustical wood panel manufacturer.

E. Lay glass fiber acoustical infill above wood panels, to completely cover panel backs.

3.4 CLEANING

A. Clean exposed surfaces of acoustical wood panel ceilings, including 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