

SECTION 09 54 29
WOOD PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Wood veneer ceiling panels.
2. Exposed grid suspension system.
3. Wire hangers, fasteners, main runners, cross tees, wall angle moldings and accessories.

B. Related Sections:

1. Section 06 06 60 -Plastic Fabrication (Resin Ceiling Panels)
2. Section 09 20 00 (09250) - Gypsum Board
3. Divisions 23 (15) - HVAC
4. Division 26 (16) Sections - Electrical Work

C. Alternates

1. Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than TEN (10) working days prior to the date established for receipt of bids. Acceptability of a proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be set forth by the Addenda. If included in a Bid are substitute products which have not been approved by Addenda, the specified products shall be provided without additional compensation.
2. Submittals which do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified in Section 1.5); panel design, size, composition, color, and finish; suspension system component profiles and sizes; compliance with the referenced standards.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
2. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot- Dip Process.
3. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
7. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
8. ASTM E 580 Application of Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels in Areas Requiring Seismic Restraint.
9. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.
10. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.
11. ASTM E 1264 Classification for Acoustical Ceiling Products.

B. International Code Council-Evaluation Services - AC 156 Acceptance

Criteria for Seismic Qualification Testing of Non-structural Components

C. International Code Council-Evaluation Services - Evaluation Report,

ESR-1308, Fire- and Nonfire-Resistance-Rated Suspended Ceiling Framing Systems.

D. ASCE 7 Standard - American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures.

E. CISCA Seismic Zones 3 & 4 - Ceilings and Interior Systems Construction Association Guidelines for Seismic Restraint for Direct Hung Suspended Ceiling Assemblies.

1.4 SYSTEM DESCRIPTION

- A. Seismic Loads: Design and size components to withstand seismic loads in accordance with the International Building Code, Section 1621 for Category D,E, and F.

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each type of ceiling unit and suspension system required.
- B. Installation Instructions: Submit manufacturer's installation instructions as referenced in Part 3, Installation.
- C. Samples: Minimum 3-1/2 inch x 5-1/2 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.
- D. Shop Drawings: Layout and details of ceilings. Show locations of items which are to be coordinated with, or supported by the ceilings.
- E. Certifications: Manufacturer's certifications that system complies with specified requirements:
 - 1. For seismic performance: International Code Council Evaluation Report, ESR-1308
 - 2. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.
- F. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.6 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide ceiling panel units and grid components by a single manufacturer.
- B. Fire Performance Characteristics: Identify ceiling components with appropriate markings of applicable testing and inspecting organization.
 - 1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.
 - a. Flame Spread: 25 or less
 - b. Smoke Developed: 50 or less
 - 2. HPVA (Hardwood Plywood and Veneer Association) certification and audit program per ASTM E-84 tunnel test.

C. Seismic Performance: Provide acoustical ceiling system that has been evaluated by an independent party and found to be compliant with the 2003 International Building Code, Seismic Category D, E, and F.

1. Tested per International Code Council - Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components as evidenced by International Code Council Evaluation Report, ESR-1308.

D. Woodworking Standards: Manufacturer must comply with specified provisions of Architectural Woodworking Institute quality standards.

E. Coordination of Work: Coordinate ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store ceiling components in a dry interior location in their cartons prior to installation to avoid damage. Store cartons in a flat, horizontal position. The protectors between the panels should not be removed until installation.

B. Do not store in unconditioned spaces with humidity greater than 55 percent or lower than 25 percent relative humidity and temperatures lower than 50 degrees F or greater than 86 degrees F. Panels must not be exposed to extreme temperatures, for example, close to a heating source or near a window with direct sunlight.

C. Handle ceiling units carefully to avoid chipped edges or damage to units in any way.

1.8 PROJECT CONDITIONS

A. Wood veneer ceiling materials should be permitted 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. The wood veneer panels should not be installed in spaces where the temperature or humidity conditions vary greatly from the temperatures and conditions that will be normal in the occupied space.

C. As interior finish products, the wood veneer panels are designed for installation in temperature conditions between 50 degrees F and 86 degrees F, in spaces where the building is enclosed and HVAC systems

are functioning and will be in continuous operation. Relative humidity should not fall below 25 percent or exceed 55 percent.

1.9 WARRANTY

- A. Wood Veneer Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to:
 - 1. Ceiling Panels: Defects in materials or factory workmanship
 - 2. Grid System: Rusting and manufacturer's defects
- B. Warranty Period:
 - 1. Wood veneer panels: One (1) year from date of installation.
 - 2. Grid: Ten years from date of installation.
- C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.10 MAINTENANCE

- A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.
 - 1. Ceiling Units: Furnish quality of full-size units equal to 2.0 percent of amount installed.
 - 2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 1.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Ceiling Panels - Quality standard:
 - 1. Armstrong World Industries, Inc.
- B. Suspension Systems - Quality standard:
 - 1. Armstrong World Industries, Inc.

2.2 WOOD VENEER CEILING UNITS

- A. Ceiling Panels Type AP-1 - Quality standard:
 - 1. Surface Texture: Smooth
 - 2. Composition: Wood

3. Finish: Manufacturer's standard natural veneer
4. Species: Constants - Cherry
5. Perforations:
 - a. Pattern #: RG 6006
 1. Hole size: 6 mm
 2. On center spacing: 22.6 mm
 3. % Open area: 4.7
6. Size: 24in X 24in X 3/4in
7. Edge Profile: Vector for interface with Prelude XL 15/16" Exposed Tee.
8. Edge Banding and Trim: To match face veneer
9. Noise Reduction Coefficient (NRC): ASTM C 423; 0.40
10. Ceiling Attenuation Class (CAC): ASTM C 1414; 28
11. Flame Spread: ASTM E 1264; Class A (HPVA)
12. Dimensional Stability: Standard
13. Design & Quality Standard Product: WoodWorks Vector, item# 5401W2, as manufactured by Armstrong World Industries.
- B. Accessories - Design & Quality Standard:
 1. WoodWorks Infill Panel (fiberglass infill) #8200100
 2. Edge Banding for field-modified panels: Pre-finished pressure sensitive adhesive banding is available 1½ inch wide and in 25 foot lengths.
 - a. Item #6408CCH - Constants - Cherry

2.3 SUSPENSION SYSTEMS

- A. Components: Main beams and cross tees In accordance with the International Building Code, Section 1621 for Category D, E and F as described in ESR-1308.
- B. Design Standard Product: Prelude XL by Armstrong.
 1. Structural Classification: ASTM C 635, Heavy Duty.
 2. Color: Silver-gray.
 3. Design & Quality Standard Systems: Prelude XL 15/16" Exposed Tee System as manufactured by Armstrong World Industries.
- C. Attachment Devices: In accordance with the International Building Code, Section 1621 for Category D, E, and F.
- D. Wire for Hangers and Ties: In accordance with the International Building Code, Section 1621.

E. Wall Moldings: In accordance with the International Building Code, Section 1621 for Category D, E. and F or method as described in ESR-1308.

1. Nominal 15/16 inch x 15/16 inch x 1/4 inch, pre-finished shadow molding (7877).

F. Accessories:

1. BERC2 - 2 inch Beam End Retaining Clip, 0.034 inch thick, hot-dipped galvanized cold-rolled steel per ASTM A568 - used to join main beam or cross tee to wall molding.
2. SJCG - Seismic Joint Clip, 5 inches x 1-1/2 inch, hot-dipped galvanized cold-rolled steel per ASTM A568. The two piece unit is designed to accommodate a seismic separation joint. The clip is compatible with 15/16 inch and 9/16 inch grid systems including Prelude, Suprafine, and Silhouette The SJCG is not suitable for use with Vector panel installations.
3. SJMR15 - Seismic Joint Clip - Main Beam, 1 inch x 4 inches, commercial quality cold rolled hot dipped galvanized steel per ASTM A568, chemically cleansed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out.
- B. Proper design for both supply air and return air, maintenance of the HVAC filters and building interior space are essential to minimize soiling. Before starting the HVAC system, make sure supply air is properly filtered and the building interior is free of construction dust.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

3.3 INSTALLATION (Category D,E,F)

A. Install suspension system and panels in accordance with the International Building Code, Section 1621, except as noted in Section 4.4.3.1 of ESR-1308, and with the authorities having jurisdiction.

B. ESR-1308, Section 4.4.3.1, Alternate Seismic Design Category D,E and F Installation:

Under this installation, the runners must be rated heavy-duty and have a minimum simple span uniform load of 16.35 pounds per lineal foot (238 N/m); maximum ceiling weight permitted is 4.0 pounds per square foot (19.5 kg/m²).

1. The BERC-2 clip is used to secure the main runners and cross runners on two adjacent walls to the structure and the two opposite walls to the perimeter trim, as detailed below. A nominal 7/8-inch (22 mm) wall molding is used in lieu of the 2-inch (51 mm) perimeter supporting closure angle required by Section 9.6.2.6.2.2 (b) of ASCE-7 for Seismic Design Categories D, E and F. Except for the use of the BERC-2 clip and the 7/8-inch (22 mm) wall molding and elimination of spreader bars, installation of the ceiling system must be as prescribed by the applicable code.
 2. The BERC-2 clip is attached to the wall molding by sliding the locking lances over the hem of the vertical leg of the wall molding. Clips installed on the walls where the runners are fixed are attached to the runner by a sheet metal screw through the horizontal slot in the clip into the web of the runner.
 3. Clips installed on the walls where the runners are not fixed to the runner allow the terminal runner end to move 3/4 inch (19.1 mm) in both directions. BERC-2 clips installed in this manner are an acceptable means of preventing runners from spreading in lieu of spacer bars required in CISCA 3-4, which is referenced in ASCE 7, Section 9.6.2.6.2.2, which is referenced in IBC Section 1621.
- C. The SJCG Seismic Separation Joint Clip is to be installed per the manufacturer's instructions, CS-3815.
- D. The SJMR15 Seismic Joint Clip Main Beam is to be installed per the manufacturer's instructions, CS-3955.

E. The presence of a hanger wire within 3 inches of an expansion relief joint as called for in ASTM C636 shall be required in addition to the requirements of the International Building Code, Section 1621.2.5 and with the authorities having jurisdiction.

1. Only applies when using Prelude XL Fire Guard 15/16"; Prelude Plus XL Fire Guard 15/16"; and Suprafine XL Fire Guard 9/16" Exposed Tee Systems.

F. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

G. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.4 FIELD QUALITY CONTROL

A. Suspended ceiling shall be subject to the special inspection requirements in Section 01 45 33 (01450) - Code-Required Special Inspections and Procedures.

3.5 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of ceilings panels, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

- - -END OF SECTION- - -