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SECTION 09 84 16 - COMPOUND ACOUSTICAL WOOD REFLECTORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes.
 - 1. Suspended wood veneered compound curved acoustical wood reflectors.
 - 2. **[Suspension system for acoustical wood reflectors.]**
- B. Related Requirements:
 - 1. Section 09 94 24 - Linear Wood Ceilings.
 - 2. Section 09 54 23 - Wood Coffered Ceilings
 - 3. Section 09 51 13 - Acoustical Panel Ceilings; suspension system.
 - 4. Section 09 54 33 - Wood Coffered Ceilings.
 - 5. Section 09 54 63 - Suspended Curved Wood Canopies

1.2 REFERENCES

- A. ANSI A208.1: Particleboard.
- B. ASTM International (ASTM): ASTM E84: Surface Burning Characteristics of Building Materials.
- C. Ceilings and Interior Systems Construction Association (CISCA): Ceiling Systems Handbook.
- D. **[FSC® CoC: Forest Stewardship Council® Chain of Custody Certification]**

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate suspension hanger locations with sizes and locations of wood reflectors.
 - 2. To extent practical, schedule installation of wood reflectors after work above ceiling is complete.
- B. Pre-Installation Meeting: Schedule a pre-installation at the site to coordinate work of suspension system and hanging of reflector panels.
 - 1. Meeting shall be attended by Contractor, Architect, and installer of system components.
 - 2. Comply with requirements in [Section 01 31 00 “Project Management and Coordination”].<Insert Section number and title.>

1.4 ACTION SUBMITTALS

- A. Shop Drawings: Show panel layout and spacing, typical panel dimensions, and suspension angle or angles of each panel. **[Include details of suspension system, and include the following.**
 - 1. **[Face dimensions of custom-sized panels.]**
 - 2. **[Wood veneer locations.]**
- B. Product Data: Manufacturer’s descriptive information for the wood reflector panels, wood veneer, **[and suspension system components]**. **[Include panel flammability characteristics.]**
- C. Sample: Center section of wood reflector panel showing intersecting reveal and exposed edge condition.
 - 1. Sample shall be fabricated using selected wood veneer with manufacturer’s proposed finish coating.
 - 2. Size: Not less than 12 inches by 12 inches.
- A. **[Delegated Design: Seismic and structural design engineering calculations for suspension system prepared by the engineer in responsible charge retained by the Contractor shall be submitted to demonstrate compliance with governing Code and adequacy of suspension system to withstand specified seismic and structural loading. Engineer shall be a civil or structural engineer licensed in the State of [_____].]**
- B. **[Sustainable Design (LEED):**
 - 1. **General:**
 - a. **Submit information necessary to establish and document compliance with the LEED Certification goals for this Project.**
 - b. **LEED design submittals are in addition to other submittals.**
 - c. **If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with specified LEED requirements.**
 - d. **Refer to Section 01 81 13 “Sustainable Design Requirements” for additional information and documentation requirements.**
 - 2. **The following information shall be provided:**
 - a. _____]

1.5 INFORMATIONAL SUBMITTALS

- A. Statement of installer qualifications.
- B. **[Certification that wood items meet specified fire-resistance characteristics if not included with product data.]**
- C. **[Engineering calculations for seismic bracing.]**

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: FSC Chain of Custody Certification.
- B. Mockups: First installed reflector panels shall serve as mockup for review and approval by Architect of workmanship, visual effect, acoustical deflection, and interface with adjoining construction.
 - 1. Mockup shall include a minimum of 4 [] adjacent panels in approved layout and angle.
 - 2. Make modifications to mockup if requested by Architect including adjustments to installation angle or angles of panels.
 - 3. Accepted mockup may remain as part of the work.
 - 4. **[Comply with additional requirements of Section 01 4339, "Mockups."]**

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver wood reflector panels until specified ambient conditions are met.
- B. Store wood panels in conditioned space and keep dry.
- C. Conditioning: Move wood reflector panels into pre-conditioned spaces where they will be installed to allow the moisture content of wood to achieve equilibrium with its environment.
 - 1. Remove panels from sealed packages to facilitate acclimation.
 - 2. Contractor shall allow not less than 72 hours to allow wood panels to acclimate at site.

1.9 FIELD CONDITIONS

- A. Ambient Conditions: Do not proceed with installation until dust-generating activities have been terminated and building temperature and humidity conditions approximate conditions that will exist when the Building is occupied.
- B. Do not install wood reflector panels until work above or behind them is completed, including testing and approval of mechanical work.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Acceptable Manufacturer: Madrid Inc.
 - 1. Address: 7800 Industry Ave., Pico Riviera, CA 90660
 - 2. Phone: 562-942-0707
 - 3. Email sales@madridinc.com
 - 4. Web: madridinc.com
- B. Substitutions: [**Not permitted.**] [**Substitutions will be considered according to requirements specified in Section 01 25 00 “Substitution Procedures.”**]

2.2 DESIGN AND PERFORMANCE CRITERIA

- A. Seismic Requirements: Provide compression struts, bracing, and other suspension system components to meet requirements of the governing Code.
- B. Ceiling suspension system shall not be visible from eye level of a person standing on the floor. Orient suspension and bracing away from visible edges.
- C. [**Sustainable Design:**
 - 1. Refer to Section 01 81 13 “Sustainable Design Requirements” for additional information.]

2.3 SUSPENSION SYSTEM

- A. Comply with ASTM C635.
- B. Structural Classification: Heavy-duty.
- C. Suspension Wire and Rods:
 - 1. Hanger Wire: 0.106-inch nominal diameter (12 gage), ASTM A641, Class 1 zinc coating, soft temper.
 - 2. Bracing Wire: 0.120-inch nominal diameter (10 gage), ASTM A641, Class 1 zinc coating, soft temper.
 - 3. Suspension Rods: Low-strength steel “all-thread,” diameter as required, Class 1 zinc coating.
- D. Attachment Devices: Size for five times design load required by ASTM C635, Table 1, Direct Hung, unless otherwise indicated.

2.4 PANELS

- A. Wood Reflector Panels: Wood veneer faced panel fabricated to a compound curvature and with a reveal dividing the panel into four triangular quadrants; “Compound Acoustical Wood Reflectors: by Madrid, Inc.
 - 1. Face Dimensions: [4'-0" x 4-0"]' [5-0" x 5'-0"] [Custom, as shown].
 - 2. Thickness: 3/4 inches.
 - 3. Reveal: 1/4 inch wide by 1/8 inch deep, with black finish.

4. Wood Veneer: As specified.

2.5 PANEL MATERIALS

- A. Veneer Core:
 1. Recycled Fiber: ANSI A208.1 Grade M-2, complying with Composite Panel Association's Environmentally Preferable Product Downstream Program 2-06; Madrid "Bio-Blend."
 - a. Indoor Air Quality: No VOC. No added urea formaldehyde.
 2. Medium Density Fiberboard (MDF): ANSI A208.2, Grade 130.**[Fire-treated.]**
- B. Face Veneer: Align grain within each quadrant with perimeter edge of panel.
 1. Species and Cut:
 - a. **[Plain][Rift]** sliced Oak.
 - b. **[Plain][Quarter]** sliced Cherry.
 - c. **[Plain][Quarter]** sliced Maple.
 - d. **[Plain][Quarter]** sliced Mahogany.
 - e. Natural Bamboo, wide strips.
 - f. Dark Bamboo, wide strips.
 - g. **<Insert veneer from custom options> .**
 2. **[Wood veneer shall be FSC® Certified.]**
- C. Adhesives: EPA **[and California Air Resources Board]** VOC compliant.
- D. Backside Blocking and Cross Braces: B-D, or B-C, Interior grade, with exterior glue.
- E. Metal Suspension Clips: "L" shape brackets **[galvanized] [powder coated]** steel with factory punched openings to receive wire for attachment to suspension system on backside of panel.

2.6 FABRICATION

- A. Panel edges shall be banded with matching veneer and finish.
 1. Joint: Butt with wood block backing.
 2. Height: As standard with manufacturer. [_____].]
- B. Panels shall have full width wood backing rails, curved to required profile, and used to secure metal hanging clips for four-point suspension.
- C. Fabrication Tolerances: Complying with CISCA Wood Ceilings Technical Guidelines.

2.7 FINISHES

- A. Shop Finishing: **[Transparent, water-based UV-cured matte finish as standard with manufacturer.]<Insert custom requirements.>**

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install suspension system, including necessary hangers and other supporting hardware, in accordance with governing code and applicable requirements of ASTM C636.
- B. Panels:
 - 1. Panels shall be mechanically suspended-mounted in accordance with manufacturer's recommendations and as shown.
 - 2. Lay out ceiling pattern in accordance with approved shop drawings.
 - 3. Adjust each hanger wire to assure each panel is angled to match approved mockup.

3.2 CLEANING AND PROTECTION

- A. Clean panels as recommended by manufacturer.
- B. Prevent damage to panels during remainder of construction.

END OF SECTION 09 84 16