SECTION 09 8436
SOUND-ABSORBING CEILING UNITS
(Acoustic Clouds – Wood Veneer and High-Pressure Laminate)

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Factory-fabricated horizontally suspended acoustical ceiling clouds consisting of an acoustically absorptive core faced with wood veneer or high-pressure laminate, with finished edges and a finished underside, together with the suspension hardware and required to attach clouds to Aircraft cable.
   1. Product: AAPG Acoustic Clouds.
   2. Facings: [Real Wood Veneers LLC “AA” architectural veneer.] [High-pressure laminate.]
   3. [Perforated face with acoustically transparent backer and infill.]

B. Products Not Furnished or Installed Under This Section:
   1. Structural support, blocking, and attachment points in the overhead structure.
   2. Suspended acoustical tile ceilings and metal suspension grid.
   3. Lighting, sprinklers, and mechanical devices integrated with or penetrating the clouds.
   4. Aircraft cable, suspension fasteners for connection to framing members

1.2 RELATED SECTIONS

A. Section [_____] - Rough Carpentry (blocking and backing).
B. Section [_____] - Metal Fabrications (support framing).
C. Section [_____] - Acoustical Ceilings.
D. Section [_____] - Interior Lighting.
E. Section [_____] - Fire Suppression Sprinkler Systems.
F. Section 09 8436 - Sound-Absorbing Ceiling Units (Acoustic Baffles).

1.3 REFERENCES

A. ASTM International (ASTM):
   1. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
   2. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   3. ASTM E795 - Standard Practices for Mounting Test Specimens During Sound Absorption Tests.
   4. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
   5. ASTM C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

B. American National Standards Institute (ANSI):
   1. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications.

C. Architectural Woodwork Standards, as jointly published by AWI, AWMAC, and WI, Edition 1.
D. International Building Code (IBC), Chapter 8 - Interior Finishes, and applicable seismic design requirements.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer’s data for each product specified, including cloud sizes and shapes, edge profiles, core construction, facing materials, perforation patterns, suspension hardware, and installation methods.

B. Shop Drawings: Submit reflected ceiling plans and sections indicating cloud layout, dimensions, shape, elevation and mounting height, tilt or slope where applicable, suspension point locations, attachment details, and coordination with lighting, sprinklers, diffusers, and other overhead devices.
   1. Indicate edge conditions, joint alignment between adjacent clouds, and the treatment of clouds at walls and penetrations.
   2. Indicate seismic restraint and lateral bracing details where required by the authority having jurisdiction.

C. Selection Samples: Submit manufacturer's standard color, veneer, and pattern selection samples representing the full range of available finishes.

D. Samples for Verification: Submit one cloud corner sample, minimum 12 inches by 12 inches (305 mm by 305 mm), for each facing and perforation pattern selected, showing the edge treatment, finished underside, and core.

E. Acoustical Performance Data: Submit independent laboratory test reports establishing sound absorption in accordance with ASTM C423.
   1. Report absorption as sabins per cloud at the tested plenum height and percentage of ceiling coverage, and identify both.

F. Fire-Test Data: Submit independent test reports showing surface burning characteristics of the finished cloud in accordance with ASTM E84. Faces must be ASTM E84 Class A.

G. Structural Data: Submit the weight per cloud and manufacturer's data or calculations confirming the suspension method and attachment capacity.

H. Safety Data Sheets (SDS): Submit manufacturer's Safety Data Sheets for adhesives, sealants, and other pertinent materials prior to their delivery to the site.

I. Maintenance Instructions: Submit manufacturer's cleaning and maintenance instructions.

1.5 QUALITY ASSURANCE

A. Single-Source Responsibility: Obtain clouds and suspension hardware from a single manufacturer.

B. Surface Burning Characteristics: Provide finished clouds with a [Class A (Class 1): flame-spread index 25 or less, smoke-developed index 450 or less] [Class C] rating when tested in accordance with ASTM E84.

C. Installer Qualifications: Engage an installer experienced in the installation of suspended architectural ceiling systems and acceptable to the manufacturer.

D. [Mockup: Provide one full-size cloud, including typical suspension points and a typical edge condition, for review. Approved mockup may remain as part of the Work.]

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver units and associated materials factory-packaged on sturdy pallets, properly packaged and protected against soiling, moisture, and physical damage.
   1. Upon delivery, carefully inspect all cartons, packages, pallets, and protective wrap for damage or material shortage.
   2. Immediately report any damaged or missing materials to the shipper and to AAPG.
   3. Do not commence installation if any components are missing or damaged.
   4. Contact AAPG with any questions, problems, or concerns.

B. Storage: Store products flat, in the manufacturer's unopened packaging, in a clean, dry, conditioned interior space until ready for installation. Do not store units on edge or beneath other materials.

C. Handling: Handle units with clean, dry hands or gloves to avoid soiling finished faces. Maintain protective wrap in place during on-site handling until ready for installation. Do not drag or stack units face-to-face after removal of protection.

D. Store clouds flat and fully supported. Do not stack units in a manner that deflects the face or damages finished edges.

1.7 PROJECT CONDITIONS

A. Wood composite and laminate products are subject to the effects of humidity and temperature. Do not use in exterior, high-humidity, or wet locations.

B. Do not install units until all wet work is complete and dry, the building is enclosed and weathertight, and the HVAC system is operating and balanced to normal operating conditions.

C. Environmental Conditions: Maintain temperature, humidity, and ventilation within the limits recommended by the manufacturer. Maintain a temperature range of 60 to 80°F (16 to 27°C) and a relative humidity range of 35 to 55 percent during storage, installation, and the product life cycle. Follow the environmental guidelines specified by AWI.

D. Do not install suspended units until overhead work, including mechanical, electrical, fire protection, and structural work, is complete and inspected.

1.8 COORDINATION AND SEQUENCING

A. Coordinate cloud layout with the reflected ceiling plan, lighting, sprinkler heads, air devices, speakers, and structural members before fabrication.

B. Coordinate the location and capacity of overhead attachment points with the structural trades and confirm they are in place before delivery.

C. Coordinate plenum height above the clouds, which materially affects acoustical performance, with the Architect and the acoustical consultant.

D. Sequence installation to follow completion of all work above the cloud field.

1.9 WARRANTY

A. Manufacturer’s Warranty: Submit the manufacturer’s standard written warranty covering materials and workmanship against defects for a period of [one (1) year] from the date of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Acceptable Manufacturer: American Architectural Products Group (AAPG), 248 James Street, Venice, FL 34285. Telephone: +1-844-307-9571. Email: pwest@aapgco.com.

B. Product: AAPG Acoustic Clouds.

C. Distributor: Koroseal Interior Products, 1111 Medina Road, Medina, OH 44256. Telephone: 855-753-5474. Email: info@koroseal.com.

2.2 SUBSTITUTIONS

A. [No substitutions permitted.] [Substitutions permitted in accordance with Section 01 25 00 - Substitution Procedures.]

2.3 CLOUDS

A. Cloud Construction: Factory-assembled unit with a finished exposed underside, finished edges on all sides,

B. Core: [Medium-density fiberboard (MDF) conforming to ANSI A208.2, industrial grade, with No Added Formaldehyde] [HEMP with No Added Formaldehyde]

C. Cloud Dimensions and Shape:

1. Face Dimensions: [Nominal 48 inches by 48 inches (1219 mm by 1219 mm)] [Nominal 48 inches by 96 inches (1219 mm by 2438 mm)] [As indicated on the Drawings].
2. Shape: [Rectangular.] [Square.] [Circular.] [Custom shape as indicated on the Drawings.]
3. Thickness: [1 inch (25 mm)] [1-1/2 inches (38 mm)] [2 inches (51 mm)].

D. Edge Profile: [Square.] [Beveled.] [Radiused.] [Concealed aluminum edge frame, factory-finished.] All exposed edges finished to match the underside.

E. Acoustic Treatment:
   1. Perforation Pattern: [Micro-perforated: 0.020-inch (0.5 mm) diameter holes.] [Perforated: 1/8-inch (3 mm) diameter holes.] [Grooved.] [Non-perforated, absorptive core only.]
   2. Open Area: [_____] percent, as required to achieve the specified acoustical performance.
   3. Acoustic Backer: Acoustically transparent non-woven black fleece factory-laminated behind the perforated face, continuous across all perforations.
   4. [Acoustic Infill: Mineral wool or polyester batt, minimum [_____] pcf density, encapsulated within the cloud.]

F. Wood Veneer Facing: Real Wood Veneers “AA” architectural-grade wood veneer laminated to the core and coated with a furniture-grade catalyzed finish as a protective topcoat.
   1. Veneer Face: 0.010 inch (0.25 mm) to 0.015 inch (0.38 mm), with a catalyzed finish of approximately 0.003 inch (0.08 mm).
   2. Balancing Backer: Wood veneer measuring between 0.015 inch (0.38 mm) and 0.025 inch (0.64 mm).
   3. Species and Cut: [_____] [As selected by the Architect from the manufacturer’s selection.]
   4. Grain Direction: [As indicated on the Drawings.] Maintain consistent direction across the cloud field.
   5. [Wood veneer stained to match approved submittal.] [Natural finish with clear topcoat.]

G. High-Pressure Laminate Facing: Vertical-grade high-pressure plastic laminate adhered to the core, with a balancing backer sheet.
   1. Color and Pattern: [_____] [As selected by the Architect from the manufacturer’s standard selection.]

H. Acoustical Performance: Provide clouds achieving the following minimum sound absorption when tested in accordance with ASTM C423:

Cloud Size	Plenum Height Above Cloud	Sabins per Cloud
48 in. x 48 in. (1219 x 1219 mm)	[12 in. (305 mm)]	22
48 in. x 96 in. (1219 x 2438 mm)	[12 in. (305 mm)]	44
48 in. x 96 in. (1219 x 2438 mm)	[24 in. (610 mm)]	47

2.4 SUSPENSION HARDWARE AND ACCESSORIES

A. Suspension Method: [Aircraft cable with adjustable gripper and ceiling attachment, minimum four points per cloud.] [Rigid rod suspension.] [Concealed aluminum carrier frame suspended from structure.]

B. Cable and Grippers: Galvanized or stainless steel aircraft cable with a minimum safety factor of 5:1 against the supported load. Provide adjustable grippers permitting field leveling.

C. Attachment Devices: Corrosion-resistant anchors, hangers, and fasteners suitable for the overhead structure, rated for the imposed load.

D. Provide all frames, clips, splice connectors, and trim recommended by the manufacturer for a complete installation.

E. Finish of Exposed Hardware: [Manufacturer’s standard.] [White.] [Black.] [Match adjacent finish.]

2.5 FABRICATION

A. Factory-fabricate clouds to the sizes, shapes, and profiles indicated, complete with factory-installed suspension attachment points and integral framing, ready to install.

1. Locate and reinforce suspension points to carry the cloud load without deflection, sag, or facing distortion.
2. Machine perforations cleanly and uniformly, free of tear-out and raised fibers; align patterns consistently from unit to unit.
3. Factory-form cut-outs for lighting, sprinklers, and devices where indicated on the approved shop drawings; seal exposed core at all cut edges.
4. Sequence and mark clouds to maintain veneer color, grain progression, and pattern continuity.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Installer's Examination: Examine the structure and conditions under which the Work of this Section is to be performed. Submit written notification to the Architect and the system manufacturer if such conditions are unacceptable. Beginning installation constitutes the installer's acceptance of conditions.
   1. Verify that overhead attachment points are installed, correctly located, and capable of supporting the imposed loads.
   2. Verify that all work above the cloud field, including mechanical, electrical, fire protection, and structural work, is complete and inspected.
   3. Verify that the deck or structure visible above and around the clouds is finished as indicated.
   4. Verify that the available plenum height matches that assumed in the acoustical design.

3.2 PREPARATION

A. Conditioning: Allow clouds to acclimate to a balanced environment in the installation location for 72 hours prior to installation.

B. Protect completed work below with drop cloths.

C. Before installing, examine units and arrange them to achieve the best combination of color, grain, and pattern in the sequence provided by the manufacturer.

3.3 INSTALLATION

A. Install clouds in strict accordance with the manufacturer's installation instructions and the approved shop drawings.
   1. Suspend clouds level and true to line at the elevation, orientation, and spacing indicated, or at the slope indicated where applicable.
   2. Secure all suspension points to structure; do not attach to ductwork, piping, conduit, or other non-structural elements.
   3. Adjust grippers so that all clouds align at a uniform elevation, without sag, rocking, or visible cable slack.
   4. Maintain consistent grain direction, perforation alignment, and uniform joints between adjacent clouds.

B. Seismic Restraint: Where required by the authority having jurisdiction, provide lateral bracing and restraint in accordance with the approved details and applicable code.

C. Installation Tolerances: Install clouds within 1/8 inch (3 mm) of the indicated elevation, level within 1/8 inch in 12 feet (3 mm in 3.6 m), with a maximum variation of 1/16 inch (1.6 mm) in alignment between adjacent units.

D. Avoid contamination of finished faces with adhesives, solvents, cleaners, or fingerprints during installation.

3.4 CLEANING AND PROTECTION

A. Clean and remove dust and other foreign matter from cloud surfaces. Vacuum perforations with a soft brush attachment; do not force debris into the acoustic backer.

B. Clean finishes in accordance with the manufacturer's instructions; do not use solvents or abrasive cleaners.
C. Protect installed clouds from damage and soiling until Substantial Completion. Replace units that cannot be cleaned or repaired to the Architect's satisfaction.

END OF SECTION 09 8436