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**SECTION 09810**  
**ACOUSTICAL SPACE UNITS**  
**SOUND REFLECTORS**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. Section Includes: Custom fabricated Reflectors.

**1.02 REFERENCES**

- A. ASTM International:
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.

**1.03 SYSTEM DESCRIPTION**

- A. Performance Requirements:
1. Surface Burning Characteristics (ASTM E84): Suspended Model Ovation Reflectors (gel coat finish) shall be Class C rated.

**1.04 SUBMITTALS**

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit product data sheet, for specified products.
- C. Shop Drawings: Submit shop drawings showing layout, edge profiles and panel components, including anchorage, accessories, finish colors and textures.
- D. Samples: Submit selection and verification samples of finishes, colors and textures. Product samples with finished wood surfaces will be provided as requested to match a product type, wood type, and a finish if requested. Wood is a natural material, with variations in color, texture, and figure. Variations in color, texture and grain patterns are to be expected.

**1.05 DELIVERY, STORAGE & HANDLING**

- A. General: Comply with Division 1 Product Requirements Section.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions. Environmental conditions required for storage are the same as for installation, see 1.07 – A, Project Conditions.

**1.06 PROJECT CONDITIONS**

- A. Environmental Requirements: Do not install diffusers or reflectors until wet work, such as concrete and plastering, is complete; the building is enclosed; and the temperature and relative humidity are stabilized at 60 - 80 degrees F (16 - 27 degrees C) and 40% to 50%, respectively.

## PART 2 PRODUCTS

### 2.01 ACOUSTICAL REFLECTORS

- A. Manufacturer: Kinetics Noise Control.
1. Contact: Tim O'Neill O'Neill Engineered Systems, Inc. 1420 E. Bristlecone Drive Hartland WI 53029 Telephone: (262) 367-6700; Fax: (262) 367-6760; E-mail: [toneill@noiseproblems.com](mailto:toneill@noiseproblems.com) ; Web site: [www.noiseproblems.com](http://www.noiseproblems.com).
- B. Substitutions: No substitutions permitted.

### 2.02 MANUFACTURED UNITS

- A. Ovation Reflector Panels
1. Core: [Gel coat finish panels, 1/2" (13 mm), 5-ply plywood core with resin coat layer on back of panel] [Wood veneer or laminate faced panels, 3/4" (20 mm) core thickness]
  2. Face: [15 mil smooth finished gel coat with color selected by architect] [high gloss] [satin] finish.

OR

[WilsonArt or approved laminate]

OR

[Natural Wood Veneer with clear coat finish]]

Specifier Note: Gel coat finish panel minimum 10 ft. radius on panels dimensions less than 120 " (305 cm) in bowing direction, on panels over 120" (305 cm), maximum radius is 240" (610 cm). Wood veneer or laminate faced panels, minimum 240" (610 cm) radius.

3. Suspension Point and Bowing system: 1/8-inch (3mm) steel angle painted black and 1/4-inch (6mm) diameter zinc-plated tensioning rods mounted on the top (unexposed) side of the Reflector Panel. Gel coat faced panels shall have through bolt attachment of suspension/flexing angles with bolt heads color matched. Laminate or wood veneer faced panels shall have concealed attachment. Panels shall be flexed to a specified radius before installation.

Specifier Note: Suspension systems are not provided by Kinetics Noise Control. The following system is commonly used, however, other systems may be specified at architect's option.

4. Suspension System: 1/8-inch (6 mm) diameter, commercial grade aircraft cable with cable thimble and double crimp sleeves.
5. Reflector properties:
  - a. Sound Reflectivity: Panels shall be highly acoustically reflective. The panels shall have less than 0.05 Sabines of absorption per sq. ft. of panel for all 1/3-octave band frequencies in the 200 Hz to 2000 Hz range tested per ASTM C423 with a Type J mounting.
  - b. Weight of reflector panel: No less than 2 psf and a maximum of 2.5 psf (9.75 – 12.20 kg/sq. m) Excludes steel framing weight.

Specifier Note: For panels greater than 48" x 120" (122 cm x 305 cm) plywood pieces are joined at factory to create single units.

6. Sizes: As shown on drawings with a maximum size of 112" x 240". (284 cm x 610 cm) for glossy gel coat faced panels] [119"x216" (302 cm x 549 cm) for laminate or wood veneer faced panels]. When a laminate or veneer face is specified, the panel length in the direction of the bowed reflector surface is a maximum 119" (302 cm).
7. Optional Retractable Ovation Panels: Where indicated on drawings, Ovation panels will be supplied with a tilting assembly on the rear of each panel. The tilting assembly shall incorporate a trolley that allows manual positioning and locking of the reflector panel at any point from zero degrees vertical (typically a storage position in the stagehouse) to ninety degrees horizontal. The retractable reflector shall have a single angle bracket at the top of the tilting assembly for mounting an installer supplied batten clamp. Retractable Ovation Panels are limited to a maximum size of 72" (183 cm) x 120" (305 cm).

Specifier Note: Large adjustable reflector sizes are available using multiple suspension points for each panel.

Specifier Note: Large panels are better acoustically but, panels larger than 100 inches (254 cm) in both width and length will require a wide load trailer and permitting for transport. Also, larger panels require larger door openings!

Specifier Note: When spacing panels as independent reflector units, it is generally recommended that panels are no smaller than 8 ft. (244 cm) in length or width to prevent mid and low frequency sound from flowing around the reflector surface.

## 2.03 FABRICATION

- A. Reflector Panel edges will be painted or stained to a finish similar to the exposed face.
- B. Reflector Panels will be fabricated to the sizes shown on the drawings as single units without visible joints or seams. Maximum size is [10 x 20 ft. (305 x 610 cm) for Gel coat finish panels] [8 ft x 18 ft (244 cm x 549 cm) for laminate or wood veneer faced panels]

## PART 3 EXECUTION

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to this specification. Retain or delete paragraph below per project requirements and specifier's practice.

### 3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

### 3.02 EXAMINATION

- A. Site Verification of Conditions: Verify that substrate or supporting structure, which has been previously installed under other sections, is acceptable for product installation in accordance with manufacturer's instructions.

### 3.03 CLEANING

- A. Follow manufacturer's instructions for cleaning panels soiled during installation. Replace panels that cannot be cleaned to as new condition.
- B. Keep site free from accumulation of waste and debris.

**END OF SECTION**