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September 2014

Product Guide Specification

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, including *MasterFormat, SectionFormat,* and *PageFormat,* as described in *The CSI Construction Specifications Practice Guide.*

This section must be carefully reviewed and edited by the Architect to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the Drawings. Delete all "Specifier Notes" after editing this section.

Section numbers and titles are from *MasterFormat 2014 Update.*

SECTION 11 61 13

ACOUSTICAL SHELLS

Specifier Notes: This section covers "Opus II" concert shells. Due to the custom nature of the "Opus II" concert shells, consult Memtech Acoustics for assistance in editing this section for the specific application.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Concert shells.

1.2 SUBMITTALS

Specifier Notes: Edit submittal requirements as necessary. Delete submittals not required.

A. Comply with Section 01 33 00 – Submittal Procedures.

B. Product Data: Submit manufacturer's product data, including the following:
   1. Detailed specification of construction and fabrication.
   2. Description of operations, including step by step set-up and take-down tasks.

3. Complete list of deviations from specifications.

C. Shop Drawings: Submit manufacturer's shop drawings, including plans, elevations, sections, and details, indicating dimensions, tolerances, materials, components, fabrication, fasteners, hardware, finish, options, and accessories.

D. Samples: Submit 2 sets of manufacturer's samples for color selection or verification of acoustical reflective material.

E. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

F. Manufacturer's Project References: Submit manufacturer's list of successfully completed concert shell projects, including project name and location, name of architect, and type and quantity of concert shells furnished.

G. Contract Closeout Submittals: Submit contract closeout submittals as follows:
   1. Operating and maintenance manuals, including the following:
      a. Operation, maintenance, adjustment, and cleaning instructions.
      b. Troubleshooting guide.
      c. Parts list.
      d. Detailed information required for Owner to properly operate and maintain concert shells.
   2. Setup configuration layout and details to permit verification of safety design requirements.
   3. Project record documents.

H. Warranty Documentation: Submit manufacturer's standard warranty.

1.3 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Minimum 25 years of experience in the manufacturing of concert shells.

B. Manufacturer's Quality Control:
   1. Manufacturer shall make or have made, under their control, all parts comprising complete concert shells.
   2. Maintain test and inspection procedures, to assure uniform high quality of all raw materials and finished product.
   3. Manufacturer shall have capacity and facilities to furnish quality and quantity required without delaying the Work.

C. Welder's Qualifications: AWS certified for each type of weld required.

1.4 DELIVERY AND STORAGE

A. Delivery Requirements: Deliver concert shells to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage Requirements: Store concert shells at location designated by the Owner.

1.5 WARRANTY

A. Warranty Period: 1 year from date of delivery.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Supplier: Memtech Acoustics, 2175 Avon Industrial Dr., Rochester Hills, MI 48309. Phone 248-289-1123. Website memtechacoustics.com. E-mail sales@memtechacoustics.com.

B. Substitutions: Not permitted.

C. Single Source: Provide all components of concert shells by single manufacturer.

2.2 SYSTEM DESCRIPTION

A. Concert Shells: "Opus II".
   1. Moveable wall towers and ceiling that reflect a maximum range of audible frequencies.

2.3 TOWERS, SIDE AND BACK WALLS

A. Towers:
   1. Self-supporting, sound-reflecting towers with counterweighted, nesting bases.
   2. 3 radiused panels hinged together to obtain tower width as indicated on the Drawings.
   3. Maximum Total Width per Tower: 12 feet.
   4. Maximum Total Height of Tower: 30 feet.

B. Base Assembly:
   1. Counterweight:
      a. Significant weight to safely move towers about stage.
      b. Permanently fastened to tower frame.
   2. Towers nest within each other to use a minimum of storage space.

C. Structural Frame: Incorporate tower wing hinges.

D. Tower Transporter:
   1. Supply 1 tower transporter.
   2. Locks onto and lifts towers, allowing them to move safely about stage.
   3. Transporter Frame:
      a. 2-inch OD steel tube.
      b. Casters: Three 5-point, zero-throw, orbital casters, each with a load rating of 1,750 lbs.
   4. Allow towers to be moved in any direction to speed setup.
   5. Tower Lifting:
      a. Hydraulic pump and rams.
      b. Devices requiring electrical power cord to transport towers: Not acceptable.
   6. Finish: Black, baked-on powder coat.

E. Each Base: 3 adjustable height levelers to allow for minor irregularities in stage floor.

F. At Installation of Towers:
   1. Insert numbered markers flush with stage floor indicating location of each tower to ensure consistent setup.
   2. Markers: Coded to match each of the arrangements indicated on the Drawings.

G. Each Side-Wall Tower: 2 doorways for entering and exiting performing area.

H. Safety Instructions: Affix to tower in plain view instructions pertaining to safe handling and operation of towers.

I. Tower Hardware:
   1. Hardware necessary to safely transport towers to and from storage and lock into place when in use position.
   2. Frame: Modular, 2-inch OD steel tube.
   3. Counterweight: Steel plates stacked in enclosed tamper-proof weight box.
   4. Levelers: Acme thread with 3-inch-diameter rubber pad.
   5. Finish: Black powder coat.

Specifier Notes: Edit the Tower Schedule for the custom concert shell for the specific application.

J. Tower Schedule:
   1. Side Wall: With 2 doors.
      a. _____ Towers: _____ wide by _____ high.
      b. _____ Towers: _____ wide by _____ high, tapered tops.
      c. _____ Towers: _____ wide by _____ high, tapered tops.
      d. _____ Towers: _____ wide by _____ high, tapered tops.
   2. Rear Wall: Without doors.
      a. _____ Towers: _____ wide by _____ high.

2.4 OVERHEAD SOUND REFLECTORS

A. Sound reflective panels supported from existing stage rigging, including integral hardware for single-pipe storage without interference with adjacent stage equipment.

B. Suspended from truss batten.

C. Panel Width Dimensions: Match approximate spacing of rigging cable attachment to pipe batten.

D. Storage:
   1. Allow entire row to be rotated to storage position at 1 time by 2 people.
   2. No tools necessary to rotate panels for storage.
   3. Maximum Storage Space: Typically 5 inches to 7 inches on each side of pipe batten centerline, depending on ceiling and light fixture configuration.

E. Each Row of Overhead Panels: Equip with necessary hardware to hang from recommended 1-1/2-inch schedule 40 pipe batten.

F. Hardware:
   1. Permit angular adjustment from horizontal plane to 40 degrees.
   2. Capability of locking panels in a vertical position, so they may be stored on battens in stage loft.

G. Safety Instructions: Provide instructions pertaining to safe handling of overhead panels.

Specifier Notes: Edit the Ceiling Schedule for the custom concert shell for the specific application.

H. Ceiling Schedule:
   1. Row 1: _____deep by _____ wide, tapered ends.
      a. _____ hanger points, _____ light fixtures.
   2. Row 2: _____deep by _____ wide, tapered ends.
      a. _____ hanger points, _____ light fixtures.
   3. Row 3: _____deep by _____ wide, tapered ends.
      a. _____ hanger points, _____ light fixtures.
   4. Row 4: _____deep by _____ wide, tapered ends.
      a. _____ hanger points, _____ light fixtures.

2.5 PANELS

A. Sound-reflecting laminated panels.

B. Panel Thickness: 1-5/8 inches.

C. Exposed Face:
   1. 0.060-inch-thick, Formica high-pressure laminate.
   2. Fire Rated: Class C.

D. Substrate: 1/8-inch tempered hardboard each side of core.

E. Backing:
   1. Natural finish, high-pressure laminate.
   2. Fire Rated: Class C.

F. Core:
   1. 3/8-inch cell, 80-80-15 phenolic-impregnated, cellulose honeycomb.
   2. Thickness: 1.3 inches.

G. Frame:
   1. Exposed Edges of Individual Panels: Protect by extruded aluminum frame/edging with injected molded corners.
   2. Continuous Edge Slot: Allow mechanical fastener attachment to tower structural frame.

H. Adhesive:
   1. High-solid, pressure-cured, moisture-activated, urethane structural adhesive.
   2. Contact-Type Adhesives: Not acceptable.

I. Exterior Surface Shape: Bowed to 6'-0" radius.

J. Weight:
   1. Minimum of 2-1/2 lbs per square foot, excluding frame weight.
   2. Panels of Less Weight: Deemed insufficient to reflect low-frequency sound; not acceptable.

K. Finish:
   1. Panel Face Surface: No exposed fasteners.
   2. Face Finish: Matte.
   3. Panel Edges: Flat black, anodized.
   4. Panel Face Color: Color will be selected from Formica standard colors by Owner's representative.

2.6 LIGHTING

Specifier Notes: Specify lamps.

A. Lamps: [ETC Source 4 PAR fixture] [Future light 1000 fixture].

B. Owner will have a choice of electrical connections from a list available from manufacturer.

C. Connector Strip:
   1. Provide 1 UL-listed connector strip for each row of ceiling panels.
   2. Circuited as indicated on the Drawings.

2.7 STORAGE

Specifier Notes: Edit the following sentence for the custom towers and transport cart for the specific application.

A. Towers and Transport Cart: Store in an area no larger than _____ wide by _____ deep by _____ high.

PART 3 EXECUTION

3.1 INSTALLATION

A. Three sets of detailed shop drawings and/or instructions shall be furnished by the manufacturer at installation.

Specifier Notes: Delete one of the following two paragraphs.

B. Installation Supervised by Manufacturer: Manufacturer shall supply 1 factory-trained and certified representative to supervise installation of concert shells.

C. Installation Performed by Manufacturer: Manufacturer shall install concert shells.

3.2 TRAINING

A. Provide instruction and training of Owner's personnel in the operation and maintenance of concert shells.

B. Provide instruction and training by factory-trained and certified representative of manufacturer.

END OF SECTION