

SECTION 08 92 10

ACOUSTIC LOUVER SCREEN WALL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Acoustic Louver Screen wall.

1.2 ACTION SUBMITTALS

- A. Product Data: Technical data for each type of product indicated. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.
- B. Shop Drawings: Submit plans, elevations, sections, details, and attachments to other Work including but not limited to the following:
  - 1. Indicate all support components, connections and anchorages.
  - 2. Show frame profiles and blade profiles, angles, and spacing.
  - 3. Detail all acoustic louver details, mullions both vertical and horizontal.
  - 4. Detail integration of manufactured copings as specified in Section 07 71 00 Roof Specialties.
- C. Show weep paths, gaskets, flashings, sealants, and other means of preventing water intrusion.
  - 1. Show mullion profiles and locations.
- D. Samples: Submit for each type of metal finish required.
- E. Delegated Design Submittal: For louvers indicated to comply with structural and seismic performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on evaluation of comprehensive tests performed according to AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver and showing compliance with performance requirements specified.
- B. Windborne debris impact resistance test reports.

1.4 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
- B. AWS D1.2/D1.2M.

1. AWS D1.3/D1.3M.
2. AWS D1.6/D1.6M.

- C. Source Limitations: Obtain fixed louvers from single source from a single manufacturer where indicated to be of same type, design, or factory applied color finish.

## 1.5 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

## 1.6 WARRANTY

- A. Finish Warranty: Written warranty signed by Manufacturer in which the Manufacturer agrees to repair or replace components on which finishes fail in materials or workmanship within specified warranty period.
- B. Deterioration includes, but is not limited to:
- a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
  - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
  - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
2. Warranty Period: 20 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design louvered screen wall, including comprehensive engineering analysis by a qualified professional engineer, using structural and seismic performance requirements and design criteria indicated.
- B. Design Requirements: Design and size components of louver system to withstand dead and live loads, and loads caused by positive and negative wind pressure acting normal to plane of wall as calculated in accordance with SEI/ASCE 7 to establish wind pressure based on the following criteria:
- C. Structural Performance: Louvers shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver-blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act normal to the face of the building.
1. Wind Loads: Determine loads based on pressures as indicated on Drawings.
  2. Comply with all Performance Requirements for SPRI Wind Design as indicated in Section 07 71 00 Roof Specialties.
  3. In the event of conflict, the more stringent requirements shall prevail.
- D. Seismic Performance: Louvers, including attachments to other construction, shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. Design earthquake spectral response acceleration, short period (Sds) for Project is as indicated on the Drawings.
  2. Component Importance Factor: 1.5.
- E. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.
- F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
1. Temperature Change (Range): 120 degrees F (67 degrees C), ambient; 180 degrees F (100 degrees C), material surfaces].
- G. Louver acoustical performance shall be determined per ASTM E90-02. Louver aerodynamic performance shall be determined per AMCA Standard 500-L-99. Manufacturer shall submit certified data substantiating both the specified acoustic and aerodynamic performance.
- H. SMACNA Standard: Comply with recommendations in SMACNA Architectural Sheet Metal Manual for fabrication, construction details, and installation procedures.

## 2.2 MATERIALS

- A. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T5, T-52, or T6.
- B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), Alloy 3003 or 5005, with temper as required for forming, or as otherwise recommended by metal producer for required finish.
- C. Fasteners: Use types and sizes to suit unit installation conditions.
1. Use tamper resistant screws for exposed fasteners unless otherwise indicated.
  2. For fastening aluminum, use aluminum or 300 series stainless steel fasteners.
  3. For color finished louvers, use fasteners with heads that match color of louvers.
- D. Postinstalled Fasteners for Concrete and Masonry: Torque controlled expansion anchors, fabricated from stainless steel components, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing according to ASTM E 488/E 488M conducted by a qualified testing agency.

## 2.3 ACOUSTICAL ALUMINUM LOUVERS

- A. Horizontal, acoustical louvers for acoustic wall fencing as indicated on the Drawings:
- B. Basis of Design : Provide Model A12360 Acoustic Louver Airfoil Blade Louvers by Construction Specialties. Subject to compliance with requirements, and Architect's determination of aesthetic equivalent products by one of the following may also be acceptable:
- a. Airolite Company, LLC (The).
  - b. Greenheck Fan Corporation.
  - c. Nystrom, Inc.
  - d. Ruskin Company.

2. Louver Depth: 12 inches
  3. Frame and Blade Nominal Thickness: Not less than 0.081 inch for blades and 0.081 inch for frames.
  4. Louver Performance Ratings:
    - a. Free Area: Not less than 3.89 sq. ft for a 4 foot by 4 foot unit.
    - b. Free area velocity at the point of beginning water penetration: 83 FPM
    - c. Intake pressure drop at 637 FPM free area velocity: 0.04 in H<sub>2</sub>O.
    - d. Exhaust pressure drop at 1750 FPM free area velocity: 0.37 in H<sub>2</sub>O.
    - e. Octave Band Transmission Loss: Not less than 12 dB at 500 hz as determined by ASTM E90.
  5. Acoustical fill shall be fiberglass insulation.
  6. AMCA Seal: Mark units with AMCA Certified Ratings Seal.
- C. Miscellaneous Wall Materials:
1. Cross bars Required to meet Performance Requirements: 1/2 inch by 1/8 inch (13 mm by 3 mm) flat bars welded perpendicular to back side of louver bars and spaced at 18 inches (457 mm).
  2. Corrosion protection tape: Pressure sensitive PVC tape of sufficient width to be applied between dissimilar metals to prevent galvanic action corrosion. For use between aluminum and ferrous metals regardless of coatings and finishes to either metal, meeting the following:
    - a. Adhesion Strength: 20 oz / inch
    - b. Adhesive material: Pressure sensitive rubber adhesive, rubber resin.
    - c. Carrier material: Vinyl.
    - d. Electrolytic Corrosion Factor: 0.9
    - e. Elongation at break: 2,200 percent.
    - f. High temperature rating: 176 degrees F.
    - g. Overall Thickness: 10 mils.
    - h. Color: Black.
    - i. Basis of Design: Vinyl Corrosion Protection Tape 50 by 3M.
  3. Louver Screens: Provide fixed louver screens for all acoustical louvers and where indicated on the Drawings. All screens shall be Bird Screen Type finished to match the acoustical louvers.
  4. Miscellaneous Metal Framing, Sub-Framing and Furring: Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T5, T-52, or T6. Provide all sections as necessary for support, alignment of acoustical louvers and support and anchorage to screen wall support framing.
    - a. Finish: High Performance Organic Finish for all units.

## 2.4 LOUVER SCREENS

- A. Provide screen at each exterior louver.
  1. Screen Location for Fixed Louvers: Interior face.
  2. Screening Type: Bird screening.
- B. Secure screen frames to louver frames with stainless steel machine screws, spaced a maximum of 6 inches (150 mm) from each corner and at 12 inches (300 mm) o.c.

- C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.
  - 1. Metal: Same type and form of metal indicated for louver to which screens are attached. Reinforce extruded aluminum screen frames at corners with clips.
  - 2. Finish: Same finish as louver frames to which louver screens are attached.
  - 3. Type: Nonrewirable, U shaped frames.
- D. Louver Screening for Aluminum Louvers:
  - 1. Bird Screening: Aluminum, 1/2 inch (13 mm) square mesh, 0.063 inch (1.60 mm) wire.
- E. [Louver Screening for Stainless Steel Louvers:
  - 1. Bird Screening: Stainless steel, 1/2 inch (13 mm) square mesh, 0.047 inch (1.19 mm) wire.
  - 2. Insect Screening: Stainless steel, 18 by 18 (1.4 by 1.4 mm) mesh, 0.009 inch (0.23 mm) wire.]

## 2.5 BLANK OFF PANELS

- A. Uninsulated Blank Off Panels: Metal sheet attached to back of louver.
  - 1. Aluminum sheet for aluminum louvers, not less than 0.050 inch (1.27 mm) nominal thickness.
  - 2. Panel Finish: Same finish applied to louvers.
- B. Insulated Blank Off Panels: Laminated panels consisting of an insulating core surfaced on back and front with metal sheets and attached to back of louver.
  - 1. Thickness: 1 inch (25 mm).
  - 2. Metal Facing Sheets: Aluminum sheet, not less than 0.032 inch (0.81 mm) nominal thickness.
  - 3. Insulating Core: extruded polystyrene foam.
  - 4. Edge Treatment: Trim perimeter edges of blank off panels with extruded aluminum channel frames, not less than 0.080 inch (2.03 mm) nominal thickness, with corners mitered and with same finish as panels.
  - 5. Seal perimeter joints between panel faces and louver frames with gaskets or sealant.
  - 6. Panel Finish: Same finish applied to louvers.
  - 7. Attach blank off panels with clips and sheet metal screws.

## 2.6 FABRICATION

- A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

- B. Vertical Assemblies: Where height of louver units exceeds fabrication and handling limitations, fabricate units to permit field bolted assembly with close fitting joints in jambs and mullions, reinforced with splice plates.
  - 1. Continuous Vertical Assemblies: Fabricate units without interrupting blade spacing pattern unless horizontal mullions are indicated.
  - 2. Horizontal Mullions: Provide horizontal mullions at joints unless continuous vertical assemblies are indicated.
- C. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.
- D. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
  - 1. Frame Type: As indicated
- E. Include supports, anchorages, and accessories required for complete assembly.
- F. Provide vertical mullions of type and at spacings indicated, but not more than is recommended by manufacturer, or 72 inches (1830 mm) o.c., whichever is less.
  - 1. Fully Recessed Mullions: Where indicated, provide mullions fully recessed behind louver blades. Where length of louver exceeds fabrication and handling limitations, fabricate with close fitting blade splices designed to permit expansion and contraction.
  - 2. Semirecessed Mullions: Where indicated, provide mullions partly recessed behind louver blades, so louver blades appear continuous. Where length of louver exceeds fabrication and handling limitations, fabricate with interlocking split mullions and close fitting blade splices designed to permit expansion and contraction.
  - 3. Exposed Mullions: Where indicated, provide units with exposed mullions of same width and depth as louver frame. Where length of louver exceeds fabrication and handling limitations, provide interlocking split mullions designed to permit expansion and contraction.
  - 4. Exterior Corners: Prefabricated corner units with mitered and welded blades and with mullions at corners as indicated.
- G. Provide subsills made of same material as louvers or extended sills for recessed louvers.
- H. Join frame members to each other and to fixed louver blades with fillet welds concealed from view, threaded fasteners, or both, recommended by louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

## 2.7 FINISHES

- A. Aluminum Finishes: Finish louvers after assembly
- B. High Performance Organic Finish: Three coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in both color

coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

1. Color and Gloss: Selected by Architect.

C. Stainless Steel Sheet Finishes:

1. Repair sheet finish by grinding and polishing irregularities, weld spatter, scratches, and forming marks to match surrounding finish.

2.8 MISCELLANEOUS MATERIALS

- A. Coordinate the Work of this Section with the structural components as indicated in the Contract Documents. Provide all additional materials, accessories and components as required to meet the Delegated Design and Performance Requirements of the Contract Documents to provide a complete installation of the Acoustic Louver Screen wall and all integrated fenestration and other components.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions for compliance with requirements for site clearing, earthwork, pavement work, construction layout, support component installations and other conditions affecting performance of the work.
- B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- C. Proceed with installation after correcting unsatisfactory conditions.

3.2 PREPARATION

- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to site.
- B. Layout locations of acoustic louvered screen wall lines, supports fenestration and integrated items. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments to be avoided.

3.3 INSTALLATION

- A. Install acoustic louvered screen wall according to manufacturer's written instructions by utilizing main supports as indicated and fastening rails, additional supports and infill panels. Peen threads of all bolts after assembly to prevent removal.
- B. Verify that supports are set plumb, aligned, and at correct height and spacing, and hold in position during placement with mechanical devices.

- C. Locate and place acoustic louvered screen wall components level, plumb, and at indicated alignment with adjacent Work.
- D. Use concealed anchorages where possible. Provide stainless steel washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- E. Form closely fitted joints with exposed connections accurately located and secured.
- F. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- G. Protect unpainted galvanized- and nonferrous-metal surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.
- H. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 07 92 00 for sealants applied during louver installation.

#### 3.4 ADJUSTING AND CLEANING

- A. Clean exposed acoustic louvered screen wall surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.
- B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- C. Restore acoustic louvered screen wall components damaged during installation and construction, so no evidence remains of corrective Work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
- D. Touch up minor abrasions in finishes with air dried coating that matches color and gloss of, and is compatible with, factory applied finish coating.

END OF SECTION