

SECTION 08 91 19

FIXED LOUVERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fixed extruded aluminum louvers.
 - 2. Blank off panels for louvers

1.2 DEFINITIONS

- A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.
- B. Horizontal Louver: Louver with horizontal blades (i.e., the axis of the blades are horizontal).
- C. Vertical Louver: Louver with vertical blades (i.e., the axis of the blades are vertical).
- D. Drainable Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.
- E. Wind Driven Rain Resistant Louver: Louver that provides specified wind driven rain performance, as determined by testing according to AMCA 500-L.
- F. Windborne Debris Impact Resistant Louver: Louver that provides specified windborne debris impact resistance, as determined by testing according to AMCA 540.

1.3 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. Show frame profiles and blade profiles, angles, and spacing.
 - 1. Show weep paths, gaskets, flashings, sealants, and other means of preventing water intrusion.
 - 2. Show mullion profiles and locations.
- C. Samples: Submit for each type of metal finish required.

- D. 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.

1.4 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.

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.2/D1.2M.
 - 2. AWS D1.3/D1.3M.
 - 3. AWS D1.6/D1.6M.
- B. 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.

1.6 FIELD CONDITIONS

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

1.7 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.
 - 1. 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 louvers, including comprehensive engineering analysis by a qualified professional engineer, using structural performance requirements and design criteria indicated.
 - 1. 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:
- B. 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.
 - a. Determine wind loads at corners and within 10 feet by calculation.
- C. Windborne Debris Impact Resistance: Louvers located within 30 feet (9.1 m) of grade shall pass basic protection, when tested according to AMCA 540.
 - 1. Louver Performance Data:
 - a. Test Size: 48 inch by 48 inch (1220 mm x 1200 mm) size unit in accordance with AMCA 500.
 - b. Free Area: 57 percent, nominal.
 - c. Free Area Size: 9.08 square feet (0.84 m²).
 - d. Maximum Recommended Air Flow Thru Free Area: 1023 feet per minute (312 m/min).
 - e. Air Flow: 9289 cubic feet per minute (263 m³/min).
 - f. Maximum Pressure Drop: 0.15 inches w.g. (0.04 kPa).
 - g. Water Penetration: Maximum of 0.01 ounces per square foot (3.1 g/m²) of free area at an air flow of 1,023 feet per minute (312 m/min) free area velocity when tested for 15 minutes.
- D. Seismic Performance: Indicated on drawings.
- 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. SMACNA Standard: Comply with recommendations in SMACNA Architectural Sheet Metal Manual for fabrication, construction details, and installation procedures.

H. Louver Performance Data:

1. Based on testing 48 inch x 48 inch (1,219 mm x 1,219 mm) size unit in accordance with AMCA 500.
2. Free Area: 57 percent, nominal.
3. Free Area Size: 9.08 square feet (0.84 m²).
4. Maximum Recommended Air Flow Thru Free Area: 1,023 feet per minute (312 m/min).
5. Air Flow: 9,289 cubic feet per minute (263 m³/min).
6. Maximum Pressure Drop: 0.15 inches w.g. (0.04 kPa).
7. Water Penetration: Maximum of 0.01 ounces per square foot (3.1 g/m²) of free area at an air flow of 1,023 feet per minute (312 m/min) free area velocity when tested for 15 minutes.
8. Other Design Loads: Indicated on Drawings.
 - a. Allowable Free Air: 50 percent minimum according to AMCA Standard 500.
 - b. Thermal Movement: Over a temperature range of 125 degrees F.
 - 1) Comply with SMACNA Architectural Sheet Metal Manual recommendations for fabrications, 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 fastening galvanized steel, use hot dip galvanized steel or 300 series stainless steel fasteners.
 4. For fastening stainless steel, use 300 series stainless steel fasteners.
 5. 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.
- E. Bituminous Paint: Cold applied asphalt emulsion complying with ASTM D 1187/ D 1187M.

2.3 FIXED EXTRUDED ALUMINUM LOUVERS

- A. Horizontal, Wind Driven Rain Resistant Louver:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Airolite Company, LLC (The).
 - b. Arrow United Industries.
 - c. Construction Specialties, Inc.
 - d. Greenheck Fan Corporation.
 - e. Nystrom, Inc.
 - f. Reliable Products, Inc.
 - g. Ruskin Company.
 - h. Safe Air - Dowco Products.
2. Louver Depth: 5 inches (127 mm).
3. Frame and Blade Nominal Thickness: Not less than 0.060 inch (1.52 mm) for blades and 0.080 inch (2.03 mm) for frames.
4. Louver Performance Ratings:
 - a. Free Area: Not less than 6.0 sq. ft. (0.56 sq. m) for 48 inch (1220 mm) wide by 48 inch (1220 mm) high louver.
 - b. Air Performance: Not more than 0.10 inch wg (25-Pa) static pressure drop at 700 fpm (3.6 m/s) free-area exhaust or intake velocity.
 - c. Wind-Driven Rain Performance: Not less than 99 percent effectiveness when subjected to a rainfall rate of 3 inches (75 mm) per hour and a wind speed of 29 mph (13 m/s) at a core-area intake velocity of 400 fpm (2.0 m/s).
5. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

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.
 2. Bird Screening: Stainless steel, 1/2 inch (13 mm) square mesh, 0.047 inch (1.19 mm) wire.
 3. Bird Screening: Flattened, expanded aluminum, 3/4 by 0.050 inch (19 by 1.27 mm) thick.

4. Insect Screening: Aluminum, 18 by 16 (1.4 mm by 1.6 mm) mesh, 0.012 inch (0.30 mm) wire.
5. Insect Screening: Stainless steel, 18 by 18 (1.4 mm by 1.4 mm) mesh, 0.009 inch (0.23 mm) wire.

E. Louver Screening for Galvanized Steel Louvers:

1. Bird Screening: Galvanized steel, 1/2 inch (13 mm) square mesh, 0.041 inch (1.04 mm) wire.
2. Bird Screening: Stainless steel, 1/2 inch (13 mm) square mesh, 0.047 inch (1.19 mm) wire.
3. Insect Screening: Galvanized steel, 18 by 14 (1.4 mm by 1.8 mm) mesh, 0.011 inch (0.28 mm) wire.
4. Insect Screening: Stainless steel, 18 by 18 (1.4 mm by 1.4 mm) mesh, 0.009 inch (0.23 mm) wire.

F. 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. Stainless steel sheet for stainless steel louvers, not less than 0.050 inch (1.27 mm) nominal thickness, No. 4 finish with grain running in same direction as grain of louver blades.

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) unless otherwise indicated.
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 stainless steel 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.
- 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: Channel unless otherwise 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 semirecessed mullions at corners unless otherwise indicated.
- G. Provide drainable subsills made of same material as louvers for recessed louvers.
- H. Join frame members to each other and to fixed louver blades with fillet welds concealed from view 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. Provide brushed No. 4 directional finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and openings for compliance with requirements for installation tolerances and conditions affecting performance of the work.
- B. 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.

3.3 INSTALLATION

- A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- C. Form closely fitted joints with exposed connections accurately located and secured.
- D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- E. 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.
- F. 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 louver 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 louvers 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.
 - 1. 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

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