1. Section 089100   
   Louvers
   1. PART 1  GENERAL
      1. SECTION INCLUDES
         1. Louvers, frames, and accessories.
      2. REFERENCE STANDARDS
         1. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2017a.
         2. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating 2015.
         3. AMCA 511 - Certified Ratings Program for Air Control Devices 2010.
         4. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2020.
         5. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) 2013.
      3. SUBMITTALS
         1. See Section 013000 - Administrative Requirements, for submittal procedures.
         2. Product Data:  Provide data describing design characteristics, maximum recommended air velocity, design free area, materials and finishes.
         3. Shop Drawings:  Indicate louver layout plan and elevations, opening and clearance dimensions, and tolerances; head, jamb and sill details; blade configuration, screens, blank-off areas required, and frames.
         4. Test Reports:  Independent agency reports showing compliance with specified performance criteria.
         5. Maintenance Data:  Include lubrication schedules, adjustment requirements.
      4. QUALITY ASSURANCE
         1. Manufacturer Qualifications:  Company specializing in manufacturing products of the type specified in this section, with minimum three years of documented experience.
      5. WARRANTY
         1. See Section 017800 - Closeout Submittals, for additional warranty requirements.
         2. Provide ​1​ year manufacturer's warranty against distortion, metal degradation, and connection failures of louver components.
            1. Finish:  Include twenty year coverage against degradation of exterior finish.
   2. PART 2  PRODUCTS
      1. MANUFACTURERS
         1. Louvers:
            1. American Warming and Ventilating​​; LE-53​​:  www.awv.com/#sle.
            2. Substitutions:  See Section 016000 - Product Requirements.
      2. LOUVERS
         1. Louvers:  Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified in accordance with AMCA 511.
            1. Wind Load Resistance:  Design to resist positive and negative wind load of 25 psf (of 1.2 kPa) without damage or permanent deformation.
            2. Intake Louvers:  Design to allow maximum of 0.01 oz/sq ft (3.1 g/sq m) water penetration at calculated intake design velocity based on design air flow and actual free area, when tested in accordance with AMCA 500-L.
            3. Drainable Blades:  Continuous rain stop at front or rear of blade aligned with vertical gutter recessed into both jambs of frame.
         2. ​​LE-53  ​​Louvers​​, Drainable Wind-Driven Rain Blade​​:  ​​Aluminum​​ outer frames, ​​louver perimeter frame, non-thermally broken​​, ​​air​​ ventilator with overlapping louvers.
            1. Free Area:  ​​​7.08 sq ft – 44.3%​​​, minimum.
            2. Pressure Drop:  ​​0.31 inches of water gauge (76.8 Pa)​​ maximum per ​​square foot (square meter)​​ of free area at velocity of ​​1250 fpm (6.35 m/s)​​, when tested in accordance with AMCA 500-L, test unit size ​​48 inch by 48 inch (1.22 m by 1.22 m)​​.
            3. Wind-Driven Rain Performance:

Not less than 99.0% effectiveness when subjected to a rainfall of 3 inches (76 mm) per hour and a wind speed of 29 mph (13 m/s) at a core-area intake velocity of 583 fpm (3.0 m/s).

Not less than 95.7% effectiveness when subjected to a rainfall of 8 inches (203 mm) per hour and a wind speed of 50 mph (22 m/s) at a core-area intake velocity of 673 fpm (3.5 m/s).

* + - * 1. Blades:  ​​Horizontal Sight proof, Wind-driven rain.
        2. Frame:  5 inch (127.0 mm)​​ deep, extruded aluminum.
        3. Aluminum Thickness:  Frame ​​12 gauge, 0.0808 inch (2.05 mm)​​ minimum; blades ​​14 gauge, 0.060 inch (1.5 mm)​​ minimum.
    1. MATERIALS
       1. Extruded Aluminum:  ASTM B221 (ASTM B221M)​, 6063 alloy, T5 temper​.
    2. FINISHES
       1. Superior Performing Organic Coatings System:  Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch (0.030 mm).
       2. Primer:  Zinc chromate, alkyd type.
    3. ACCESSORIES
       1. Screens:  Frame of same material as louver, with reinforced corners; removable, screw attached; installed on inside face of louver frame.
       2. Bird Screen:  1/2" x 0.051" Flattened expanded aluminum
       3. Sealant for Setting Sills and Sill Flashing:  Non-curing butyl type.
  1. PART 3  EXECUTION
     1. EXAMINATION
        1. Verify that prepared openings and flashings are ready to receive this work and opening dimensions are as indicated on shop drawings.
        2. Verify that field measurements are as indicated.
     2. INSTALLATION
        1. Install louver assembly in accordance with manufacturer's instructions.
        2. Coordinate with installation of flashings by others.
        3. Install louvers level and plumb.
        4. Set sill members and sill flashing in continuous bead of sealant.
        5. Align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.
        6. Secure louver frames in openings with concealed fasteners.

1. END OF SECTION