

SECTION 08 44 13.10

EXTERIOR SUN CONTROL DEVICES FOR CURTAIN WALL

Specifier's note: Use this Section when specifying vertical or horizontal Sun Control Devices integrated into Aluminum Curtain Wall systems. Sun Control Devices are fabricated from aluminum extrusions, such as, but not limited to, airfoil blades, rectangular, square, or round extruded aluminum tubes or solid bars.

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Custom fabricated Exterior Sun Control devices integral with Curtain Wall system, based on approved shop drawings.

1.02 RELATED REQUIREMENTS

- A. Division 01 - LEED Documentation.
- B. Section 05 40 00 [05400] - Cold-Formed Metal Framing: Backing Supports, attachment, clips, and blocking to receive sun control devices.
- C. Section 08 44 00 [08900] Curtain Wall and Glazed Assemblies - exterior mounting surface to receive sun control devices

1.03 REFERENCE STANDARDS

- A. AAMA 2605 - High Performance Organic Coatings on Architectural Extrusions and Panels.
- B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum.
- C. AAMA 611 - Voluntary Specifications for anodized architectural aluminum .
- D. American Welding Society- AWS D1.2, Structural Welding Code-Aluminum .
- E. ASTM B 117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
- F. ASTM B 209 - Aluminum and Aluminum-Alloy Sheet and Plate.
- G. ASTM B 221 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- H. National Association of Architectural Metal Manufacturers (NAAMM).
- I. USGBC - Leadership in Energy and Environmental Design (LEED) Green Building Rating Systems.

Specifier's note: Article below includes submittal of relevant data to be furnished by Contractor before, during and after construction. Coordinate this Article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.

1.04

1.05 SUBMITTALS

- A. Product Data:
 - 1. LEED: Completed "LEED Criteria Worksheet," for each product, or assembly
 - a. Credit EA 1: Energy and Atmosphere: Optimize Energy Performance. Achieve increasing levels of energy performance above the baseline in the prerequisite standard

- to reduce environmental and economic impacts associated with excessive energy use.
 - b. Credit EQ 3.1: Indoor Environmental Quality Credit: Construction IAQ Management Plan, During Construction. Reduce indoor air quality resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and building occupants.
 - c. Credit MR 4.1 and Credit MR 4.2, Recycled Content: For products having recycled content, documentation indicating percentages by weight of post-consumer and pre-consumer recycled content. Include a statement indicating costs for each product or assembly having recycled content.
 - d. Credit MR 5.1 and Credit MR 5.2, Local/Regional Materials: Product Data indicating location of material manufacturer and point of extraction for regionally extracted, processed, and manufactured materials.
2. Standard components, sizes, shapes, and hardware description.
 3. Sun Control manufacturer's data sheets on each product to be used, including:
 - a. Finish manufacturer's data sheet showing physical and performance characteristics.
 - b. Storage and handling requirements and recommendations.
 - c. Installation instructions and recommendations.
 - d. Specimen warranty for finish, as specified herein.
 - e. Maintenance instructions.
- B. Shop Drawings representing Designer's intent: Plans, elevations, sections, details with profiles, styles, part numbers, dimensions, materials, finishes, connections, method of anchorage, type of anchors and backing supports.
1. Differentiate between shop fabrication and field installation.
 2. Indicate substrates and adjacent work specified in related sections with which the exterior sun control devices must be coordinated.
 3. Indicate connections to Curtain Wall Framing, and weatherseals.
- C. Samples: Submit samples, as requested, of each component, and fasteners to be utilized in Sun Control assembly with appropriate finish.
- D. Structural calculations. Provide engineering calculations for the Sun Control Devices and mounting brackets, prepared by an engineer registered in the state the project is located.
- E. Warranty: Provide copy of manufacturer's written warranty form.
- F. Certifications: Manufacturer's certification that Sun Control meets design criteria, Drawings and specification requirements.

Specifier's note: Article below to include qualifications, prerequisites, standards, limitations, and criteria to establish the requirements for the level of quality for products and workmanship for the work of this section. Coordinate Article with Division 1 Quality Assurance Section.

1.06 QUALITY ASSURANCE

- A. Field Measurements: Verify actual dimensions by field measurement before fabrication; show recorded measurements on shop drawings.
- B. Exterior Sun Control Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with continuous experience of 5 years.
- C. Installer Qualifications: Experienced in performing work of the type specified in this section.

1. With minimum 3 years of documented experience in installation of exterior Sun Control devices similar to the Work of this Section.
 2. Approved by Sun Control Device manufacturer.
- D. Provide sun control devices from a single source. Sub-contracting of Sun Control assembly is not acceptable.
- E. **Sun Control devices to be fabricated in an ISO 9001:2008 plant to ISO International Standards following strict Operating and Quality procedures as outlined in the ISO 9001:2008 Quality.**
- F. Welding Qualifications: Any welding performed either in the fabrication of the sun control devices or brackets must follow AWS welding standards.

Specifier's note: Retain paragraph below if mock-up assemblies; erected either on-site, or off-site, are required. Mock-ups can be used to establish standards of quality for workmanship, review of construction sequence/operation, and coordination of work of related sections. Coordinate with Division 1 Quality Control Section; Mock-up requirements.

- G. Mock-Up: Provide a mock-up for evaluation of fabrication workmanship.
1. Locate on project site [at remote location selected by Owner] as indicated on Drawings.
 2. Provide units finished as specified.
 3. Mock-up may remain as part of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
1. Protect finishes by applying heavy duty removable plastic film during production.
 2. Package for protection against transportation damage.
 3. Provide markings to identify components consistently with drawings.
 4. Exercise care in unloading, storing and installing sun control devices to prevent bending, warping, twisting and surface damage.
- B. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.08 WARRANTY

- A. Curtain wall/Sun Control Warranty: Warrant Curtain wall and Sun Control Devices on a single document for the term of 1 year from the date of invoice against defects in design, materials, and workmanship. Defects include, but are not limited to the following:
1. Deterioration of metals and other materials beyond normal weathering.
- B. See manufacturer for additional information on extended warranty periods for high performance coatings for aluminum Sun Control Devices.
1. Powder coating - Spraylat Newlar - up to a 15 year warranty.
 2. Kynar - Duranar (70% Kynar or Hylar 5000 fluoropolymer resin) - up to a 20 year warranty.
 3. Anodized- Architectural Class-1: Clear film thicker than 0.7 mil.- up to a 5 year warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. C.R. Laurence Co, Inc., 2503 E. Vernon Ave., Los Angeles, CA 90058-3488; Tel: (800) 421-6144 Ext. 7730 or (323) 588-1281 Ext. 7730; Fax: (866) 921-0532 or (323) 584-5258; Email: railings@crlaurence.com.

2.02 EXTERIOR SUN SHADE SYSTEM

- A. Basis of Design: C.R. Laurence Custom Fabricated, pre-finished Aluminum Sun Control Devices; 12 [24] [36] inch projection. (Projections greater than 48 inches are available. Contact CRL technical support for more information).

Specifier's note: Select components that meet design criteria from options below, delete options not used.

- B. Components:
1. Outriggers: 1/4 - 1/2 inch thick aluminum plate; ASTM B 209, 5052-H32 alloy; size: [fill in size to meet design criteria].
 - a. Square configuration
 - b. [Tapered square configuration]
 - c. [Bullnose configuration]
 - d. [Tapered bullnose configuration]
 - e. [Custom _____ configuration]
 2. Mounting bracket options.
 - a. Curtainwall and Storefront brackets
 - 1) Standard Curtainwall bracket (AWSB2CW).
 - 2) Bracket to mount directly to United States Aluminum 3250 CW (AWSB3US).
 - 3) Bracket to mount directly to United States Aluminum Butt Glazed 3150 SSG (AWSB4US).
 - 4) Bracket to mount directly to United States Aluminum Center Glazed 451 Storefront (AWSB5US)
 - b. [Custom _____ bracket]
 3. Fascia: 1/8 inch thick aluminum extrusion; ASTM B 221, 6063-T5 alloy.
 - a. Square tube fascia; [3 inch] [4 inch]
 - b. Channel fascia; [1 x 3] [2 x 4]
 - c. Rectangular tube fascia; [1 x 3],[1 x 4],[1 x 5],[1 x 6]
 - d. Round tube fascia; [3 inch][4 inch]
 - e. Custom bracket, as indicated on Drawings.
 4. Blade options:
 - a. Airfoils; Extruded aluminum airfoil shape; ASTM B 221, 6063-T5 alloy; size: [4] [6] [8] [10] [12] inch [or as indicated on drawings] .
 - b. Flat bars; ASTM B 209, 5052-H32 alloy; size: [3/4] [1] [1-1/4] [1-1/2] [1-3/4] [2] [2-1/4] [2-1/2] [3] [4] [5] [6] inch [or as indicated on drawings].
 - c. Z blades; Extruded aluminum "z" shape; ASTM B 221, 6063-T5 alloy; size: [3] [4] inch.
 - d. Round tubes; Extruded aluminum round shape; ASTM B 221, 6063-T5 alloy; size: [1] [1-1/2] [2] [3] [4] inch diameter [or as indicated on drawings].
 - e. Rectangular tubes; Extruded aluminum rectangular shape; ASTM B 221, 6063-T5 alloy; size: [1 x 2] [1 x 3] [1 x 4] [1 x 6] [2 x 8] inch [or as indicated on drawings].
 - f. Square tubes; ; Extruded aluminum round shape; ASTM B 221, 6063-T5 alloy; size: [1] [2] [3] [4] inch square [or as indicated on drawings].
 - g. Egg crate grid; ASTM B 209, 5052-H32 alloy; 1/8 inch x 2 inch bars in square grid; size grid: [24 inch x 72 inch] [36 inch x 72 inch] [_____]
 - h. Custom Blade profile, as indicated on Drawings.

5. Back plate: 1/2 inch thick by 8 inch wide aluminum bar; ASTM B 209, 6061-T6 alloy; continuous for full length of unit for mounting to structure.
6. Anchors and Inserts: Use non-Ferrous metal or hot dip galvanized anchors and inserts for installation and elsewhere as required for corrosion resistance. Use stainless steel or lead expansion bolt devices for drill-in place anchors. Furnish inserts, as required, to be set into concrete or masonry work.
7. Fasteners: Fasteners shall be stainless steel bolts, studs, sheet metal screws, and other types of size and spacing as recommended by manufacturer for specific installation conditions and as detailed on approved shop drawings.

2.03 FABRICATION

- A. Provide fixed Sun Control Devices and accessories of design, material, sizes, depth, arrangement, and thickness as indicated on Drawings and as required for optimal performance with respect to strength; durability; and uniform appearance.
- B. Corners: Miter corners as indicated on shop drawings.
- C. Fabrication tolerances: Maximum allowable tolerances.
 1. Bow: + - 1/4 inch.
 2. Dimensional width or length: + - 1/8 inch.
 3. Squareness: + - 1/8 inch.

2.04 FINISHES

- A. High performance powder coating: Spraylat Newlar thermosetting powder coating; exceeds the performance requirements of AAMA 2605. Corrosion protection: Meets 4000 hr. salt spray when tested in accordance with ASTM B117.

Specifier's note: Paragraph above is standard finish. Paragraphs below are optional finishes available from. Select desired finish and delete finishes not used.

- B. [High Performance PVDF coating: Duranar contains 70% Kynar 500 or Hylar 5000 fluoropolymer resin; exceeds the performance requirements of AAMA 2605.]
- C. [Class 1 Anodized Finish- Clear] [Dark Bronze] [Black]
- D. [High Performance PVDF coating: Duranar contains 70% Kynar 500 or Hylar 5000 fluoropolymer resin; exceeds the performance requirements of AAMA 2605.]
- E. [Class 1 Anodized Finish- Clear] [Dark Bronze] [Black]

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrate conditions in areas to receive the work. Verify dimensions, tolerances, and interface with adjacent work. Do not proceed until any unsatisfactory conditions have been corrected.
- B. Upon receipt of Sun Control Devices, thoroughly examine units for damage. Promptly report any observed damage to C.R. Laurence in writing. Include digital photographs of any observed damage as well as a copy of the Bill of Lading disclosing the damage.

3.02 PREPARATION

- A. Prior to fabrication, field verify required dimensions.
- B. Coordinate Sun Control installation with Curtain Wall to ensure proper structural support is provided, attachment of sun control devices is compatible with Curtain Wall manufacturer's

requirements, and weather tightness of exterior envelop is maintained.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's written instructions and recommendations for installation of the work.
- B. Verify dimensions of supporting structure at the site by accurate field measurements so that the work will be accurately designed, fabricated and fitted to the structure.
- C. Anchor Sun Control Devices to Curtain Wall Framing as indicated on approved shop drawings, and as specified.
- D. Separate dissimilar metals; use gasket fasteners, isolation shims, or isolation tape where needed to eliminate possibility of galvanic action between metals.
- E. Do not erect warped, bowed, deformed or otherwise damaged or defaced members. Remove and replace any members damaged in the erection process as directed.
- F. Set units level, plumb and true to line, with uniform joints.
- G. Sun Control Device installation:
 - 1. Layout and verify centerline dimensions prior to setting outriggers [wall brackets].
 - 2. Install the two outer most outriggers [wall brackets] plumb and level to the substrate.
 - 3. Then, shoot a line from outrigger to outrigger to find the depth dimension of the outer line.
 - 4. Proceed with the installation by attaching the middle outrigger, shimming as required.
 - 5. Shims: Non-ferrous, as recommended by manufacturer. Verify centerline dimensions after shims are installed.
- H. Erection Tolerances:
 - 1. Variation from level: $\pm 1/8$ inch [_____] maximum in 20 ft.- 0 inch runs, non-cumulative.
 - a. Maximum Offset From True Alignment Between Adjacent Members Butting or In-Line: $\pm 1/32$ inch [1/16 inch].
- I. Do not field cut or trim units. Cut and trim component parts during erection only with the approval of the manufacturer, and in accordance with his recommendations. Restore finish completely. Remove and replace members where cutting and trimming has impaired the strength or appearance of the assembly as directed.
- J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.04 CLEANING

- A. Remove site cuttings from finish surfaces.
- B. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.
- C. Clean aluminum surfaces in accordance with recommendations found in AAMA 609 and 610. Do not use aggressive alkaline, TSP, acid cleaners, or abrasive cleaners on aluminum surfaces.

END OF SECTION