

SECTION 10705

EXTERIOR SUN CONTROL DEVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes horizontal fixed, extruded-aluminum sun control assemblies.
- B. Related Sections include the following:
 - 1. Division 5 Section "Structural Steel" for supporting structure.
 - 2. Division 10 Section "Architectural Screens and Grilles" for security screens.

1.03 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide exterior sun control assemblies capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without evidencing permanent deformation of assembly or components including blades, frames, and supports; noise or metal fatigue caused by blade rattle or flutter; or permanent damage to fasteners and anchors:
 - 1. Wind Loads: 28 lbs./sq. ft. at corners and 24 lbs./sq. ft. in field of wall.
- B. Thermal Movements: Provide exterior sun control assemblies that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.04 SUBMITTALS

- A. General: Submit in accordance with Section 01300.
- B. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for exterior sun control assemblies.
- C. Shop Drawings: Include plans, elevations, sections, details showing profiles, angles, and spacing of blades, frames and supports. Show unit dimensions related to supporting and adjoining structures and construction. Indicate anchorage details and locations.
 - 1. Include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Welding certificates.
- E. Qualification Data: For professional engineer.

1.05 QUALITY ASSURANCE

- A. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of kind indicated. Engineering services are defined as those performed for installations of exterior sun control assemblies that are similar to those indicated for this Project in material, design, and extent.

- B. Product Options: Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- C. Welding: Qualify procedures and personnel according to the following:
 - 1. AWS D1.2, "Structural Welding Code--Aluminum."
 - 2. AWS D1.3, "Structural Welding Code--Sheet Steel."
- D. Sheet Metal Fabrication Standards: Comply with SMACNA's "Architectural Sheet Metal Manual" recommendations for fabrication, construction details, and installation procedures.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1.06 PROJECT CONDITIONS

- A. Field Measurements: Verify actual supporting and adjoining construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate construction to ensure that exterior sun control assemblies fit properly to supporting and adjoining construction and coordinate schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturer: Construction Specialties, Inc.; (800) 631-7379.

2.02 MATERIALS

- A. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy 6063-T5 or T52.
- 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. Aluminum Castings: ASTM B 26/B 26M, alloy 319.

2.03 HORIZONTAL FIXED, EXTRUDED ALUMINUM SUN CONTROLS

- A. Horizontal Fixed, Aluminum Sun Control: Provide assemblies complying with the following:
 - 1. Blade: 5-inch elliptical blade, extruded aluminum.
 - 2. Outrigger: Quarter round profile, aluminum, 3/8-inch (9.5 mm) thick, length as indicated.
 - a. Outrigger support tab brackets shall be fabricated of high strength aluminum.
 - 3. Fascia: 2-1/2 inch diameter aluminum tube.
 - 4. Support Method: Cantilevered.

2.04 ACCESSORY MATERIALS

- A. Fasteners and Accessories: Of same basic metal and alloy as fastened metal or 300 series stainless steel, unless otherwise indicated. Do not use metals that are incompatible with adjacent joined materials.
 - 1. Use types and sizes to suite unit installation conditions.
 - 2. Use Phillips flat-head screws for exposed fasteners, finished to match framing system unless otherwise indicated.

3. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
 4. Reinforce members as required to receive fastener threads.
- B. Anchors and Inserts: Of type, size, and material required for loading and installation indicated. Use nonferrous metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as needed for corrosion resistance. Use toothed steel or expansion bolt devices for drilled-in-place anchors.
- C. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

2.05 FABRICATION, GENERAL

- A. Provide fixed horizontal sunscreens and accessories of design, material, size, depth, thickness, and arrangement as indicated and meeting performance requirements. Include supports, anchorage and accessories required for complete assembly.
- B. Form aluminum shapes before finishing.
- C. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- D. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
1. Profiles that are sharp, straight, and free of defects or deformations.
 2. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- E. Shop Assembly: Assemble sun control assemblies in factory to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- F. Sun control assemblies shall be assembled entirely by mechanical fasteners or welding. Components shall be joined with a minimum of two fillet welds each 1-inch (25.4 mm) long produced with the Pulsed Gas Metal Arc Welding (GMAW/MIG) process with minimum 0.125 inch (3.18 mm) throat.
- G. Blade Spacing: Maintain equal blade spacing, including separation between blades and frames to produce uniform appearance. Blades shall be factory assembled to outriggers using stainless steel, type F, thread cutting screws through internal screw slots in blades.
- H. Include supports, anchorages, and accessories required for complete assembly.
- I. Join frame members to one another and to fixed sun control blades with mechanical joints (concealed when possible) bolted connections between frame members only as necessary.

2.06 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish sun control assemblies after assembly.
- D. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.07 ALUMINUM FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- C. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance of work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 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 the Project site.

3.03 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's written instructions.
 - 2. Do not install damaged components.
 - 3. Fit joints to produce hairline joints free of burrs and distortion.
 - 4. Rigidly secure nonmovement joints.
 - 5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
 - 6. Seal joints watertight, unless otherwise indicated.
- B. Metal Protection:
 - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
 - 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Install sun control assemblies level, plumb, and at indicated alignment with adjacent work.
- D. Erection Tolerances:
 - 1. Variation from Level: Plus or minus 1/8 inch maximum in any column bay or 20'-0" runs, non-accumulative.
 - 2. Offsets in End-to-End or Edge-to-Edge Alignment of Consecutive Members: 1/32 inch.
- E. Use concealed anchorages where possible. Provide stainless steel/neoprene washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- F. Form closely fitted joints with exposed connections accurately located and secured.

3.04 REPAIR

- A. Repair finished damaged by cutting, welding soldering, and grinding. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.

3.05 CLEANING AND PROTECTION

- A. Clean exposed surfaces of sun control devices that are not protected by temporary covering to remove fingerprints and soil during construction period.
- B. Clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- C. Protect sun control assemblies from damage during construction. Use temporary protective coverings where needed and approved by the sun control manufacturer.
- D. Clean and 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