

SECTION 107113: EXTERIOR SUN CONTROL DEVICES

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI three-part Section Format and the CSI Page Format. Additionally, the development concept and organizational arrangement of the American Institute of Architects (AIA) MasterSpec® Program has been recognized in the preparation of this guide specification. Neither CSI, AIA, USGBC, nor ILFI endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

EDITOR NOTE: Instructions to the editor appear in RED. This style does not exist in the standard CSI template.

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section covers Kawneer Aluminum Sunshade Systems, including accessories, mountings, and shims. Sunshades are anchored directly to the vertical and/or horizontal mullions.
- B. Types of Kawneer Sunshades include:

EDITOR NOTE: Choose Sunshade type based on project requirements. Delete Sunshade types that do not apply to this project.

1. Versoleil® SunShade Horizontal Single Blade System compatible with:
 - a. 1600 Wall System®1 Curtain Wall System
 - b. 1600UT System™1 Curtain Wall System
 - c. 1600 Wall System®2 Curtain Wall System
 - d. 1600 Wall System®5 Curtain Wall System
 - e. 1600 SS Curtain Wall System
 - f. 1600 SS (SSG) Curtain Wall System
 - g. IR 501T/IR 501UT Storefront Framing Systems
 - h. Trifab® VersaGlaze® (Center Glaze) 451/451T/451UT
 - i. Trifab® VersaGlaze® (Center Glaze) 601/601T/601UT
2. Versoleil® SunShade Vertical Single Blade System compatible with:
 - a. 1600 Wall System®1 Curtain Wall System
 - b. 1600UT System™1 Curtain Wall System
 - c. 1600 Wall System®5 Curtain Wall System
 - d. 1600 SS Curtain Wall System

EDITOR NOTE: To view the correlating guide specification for compatible curtain wall and storefront systems please visit www.Kawneer.com.

C. Related Sections:

EDITOR NOTE: The sections listed below are specified elsewhere. However, Kawneer recommends single-source responsibility for all of these sections as described in the Quality Assurance article below.

1. 072700: Air Barriers
2. 079200: Joint Sealants
3. 083213: Sliding Aluminum-Framed Glass Doors
4. 084113: Aluminum-Framed Entrances and Storefronts
5. 084313: Aluminum-Framed Storefronts
6. 084329: Sliding Storefronts
7. 084413: Glazed Aluminum Curtain Walls
8. 084433: Sloped Glazing Assemblies
9. 085113: Aluminum Windows
10. 086300: Metal-Framed Skylights
11. 088000: Glazing
12. 122600: Interior Daylighting Devices

1.3 DEFINITIONS

- A. For fenestration industry standard terminology and definitions, refer to the Fenestration & Glazing Industry Alliance (FGIA) Glossary (AAMA AG-13).

1.4 PERFORMANCE REQUIREMENTS

EDITOR NOTE: Provide wind load, snow load, and ice load design pressures in PSF and include applicable building code and year edition.

A. Structural Performance:

1. Combined load on sunshade configurations to be determined in accordance with ASCE 7 or applicable code requirements. Combined load consists of wind, snow and ice loads.
2. Design sunshade configurations to withstand stresses due to combined load. Stresses resulting from thermal expansion/contraction, shall not cause permanent deformation of sunshade assemblies or disengagement from the glazed system.

EDITOR NOTE: Please refer to the architectural detail manual for structural charts, and blade styles.

3. The assembled sunshade shall be capable of supporting the specified combined load without damage, permanent deformation, or disengagement from the glazed system mullion.
4. Blade deflection shall not exceed L/120 of span length.
5. Submit test reports verifying compliance with each test requirement required by the project.

B. Shading Performance:

1. Design shall allow for one-time adjustment of the aerofoil blade angle and size to optimize the shading performance based on project location, latitude, altitude, building orientation, surrounding conditions, and aesthetic requirements.
 - a. Blades shall be capable of orientations of:

- 1) Horizontal sunshade configurations: Clockwise is positive and anti-clockwise negative 0°, -5°, -10°, -15°, -20°, -25°, -30°, and -35°.
 - 2) Vertical Sunshade configurations: Clockwise is positive and anti-clockwise negative -35°, -30°, -25°, -20°, -15°, -10°, -5°, 0°, 5°, 10°, 15°, 20°, 25°, 30°, 35°.
2. Following blade sizes are available [Width in inches (in mm)]: 6" (152), 8" (203), 10" (254), 12" (305), 14" (356).
- C. Thermal Movements: Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures.
1. Temperature Change (Range): 120 deg F (49 deg C), ambient; 180 deg F (82 deg C), material surfaces.
- D. Environmental Product Declaration (EPD): Shall have a Type III Product-Specific EPD.
- E. Material Ingredient Reporting:

EDITOR NOTE: Include Material Ingredient Reporting if this section is necessary to meet project requirements or for any project that includes Green Building Certifications such as LEED, Living Building Challenge (LBC), and so on.

EDITOR NOTE: Material Ingredient Reporting applies only for anodized products.

1. Shall have a complete list of chemical ingredients to at least 100 ppm (0.01%) that covers 100% of the product.
2. Acceptable documentation includes:
 - a. Manufacturer's inventory with Chemical Abstract Service Registration Number (CASRN or CAS#):
 - 1) Kawneer's Material Transparency Summary (MTS)
 - b. Cradle to Cradle certification; either document listed below is acceptable for this option:
 - 1) Cradle to Cradle Certified™ with Material Health section Silver or higher
 - 2) Silver Level or higher Material Health Certificate
 - c. Red List Free DECLARE label

1.5 SUBMITTALS

- A. Product Data:
1. For each type of product indicated, include:
 - a. Construction details
 - b. Material descriptions
 - c. Dimensions of individual components and profiles
 - d. Finishes
 2. Recycled Content:

EDITOR NOTE: Include these Recycled Content specifications if needed to meet project requirements or for a project that includes Green Building Certifications such as LEED, Living Building Challenge (LBC), etc.

EDITOR NOTE: If Recycled Content requirements are not specified, prime (zero recycled content) aluminum could be supplied.

- a. Provide documentation that aluminum has a minimum of 50% mixed pre- and post-consumer recycled content.
- b. Provide a sample document illustrating project-specific information that will be provided after product shipment.
- c. After product has shipped, provide project-specific recycled content information:
 - 1) Indicate recycled content, including the percentage of pre- and post-consumer recycled content per unit of product.
 - 2) Indicate the relative dollar value of recycled content product to the total dollar value of product included in the project.
 - 3) Indicate the location for recovery of recycled content.
 - 4) Indicate the location of the manufacturing facility.
3. Environmental Product Declaration (EPD):
 - a. Include a Type III Product-Specific EPD.
4. Material Ingredient Reporting:

EDITOR NOTE: Include the Material Ingredient Reporting section only for anodized products.

- a. Include documentation for material reporting that has a complete list of chemical ingredients to at least 100 ppm (0.01%) that covers 100% of the product.
- B. Shop Drawings:
1. Plans
 2. Elevations
 3. Sections
 4. Blade angles
 5. Blade spacing
 6. Attachments to other compatible systems work
- C. Samples for Initial Selection:
1. Provide samples for units with factory-applied color finishes.
 2. Provide samples of hardware and accessories involving color selection.
- D. Samples for Verification:
1. Provide a verification sample for each type of exposed finish required, in manufacturer's standard sizes.
- E. LEED Submittals:
1. Materials and Resources: Provide product information and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content.
 2. Optimize Energy Performance: Provide information confirming that products contribute to increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.
 3. Daylighting 75 percent of Spaces: Provide information confirming that products provide the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer must have successfully installed the same or similar systems required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications:

C. Source Limitations:

1. Obtain aluminum exterior sunshades and glazed aluminum curtain walls and storefront system through one source from a single manufacturer.

D. Product Options:

1. Information on drawings and in specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. 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.
2. 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.

E. Mockups:

1. Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

F. Pre-installation Conference:

1. Conduct conference at project site to comply with requirements in Division 01 Project Management and Coordination Section.

1.7 PROJECT CONDITIONS

A. Field Measurements:

1. Verify actual locations of structural supports for sunshades by field measurements before fabrication.
2. Indicate measurements on shop drawings.

1.8 WARRANTY

A. Submit manufacturer's standard warranty for owner's acceptance.

B. Warranty Period:

1. Two years from Date of Substantial Completion of the project provided however that in no event shall the Limited Warranty begin later than six months from date of shipment by manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

EDITOR NOTE: Retain this article for proprietary method specification; add product attributes, performance characteristics, material standards, and descriptions as applicable. DO NOT USE the phrases "OR EQUAL," "OR APPROVED EQUAL," or similar. Use of such phrases causes ambiguity in the specifications because of the different interpretations among the divergent parties of the construction process and readers of the specifications. Such phrases require extensive and complete requirements (procedural, legal, regulatory, and responsibility) for determining "OR EQUAL."

A. Basis-of-Design Product:

1. Kawneer Company, Inc.
 - a. Versoleil® Single Blade Horizontal Sunshade
 - b. Versoleil® Single Blade Vertical Sunshade

EDITOR NOTE: Retain below for alternate manufacturers/products as specified in the contract documents. Coordinate below with bid document (if any), and division 1 alternates section. Consult with Kawneer Company for recommendations on alternate manufacturers and products meeting the design criteria and project requirements. Kawneer recommends other manufacturers requesting approval to bid their product as an equal must submit their request in writing (10) days prior to close of bidding.

B. Subject to compliance with requirements, provide a comparable product by the following:

1. Manufacturer: (_____)
2. Series: (_____)
3. Profile Dimension: (_____)

C. Substitutions:

1. Refer to Division 01 Substitutions Section for procedures and submission requirements.
2. Pre-Contract (Bidding Period) Substitutions:
 - a. Submit written requests ten (10) days prior to bid date.
3. Post-Contract (Construction Period) Substitutions:
 - a. Submit written request in order to avoid installation and construction delays.
4. Product Literature and Drawings:
 - a. Submit product literature and drawings modified to suit specific project requirements and job conditions.
5. Certificates:
 - a. Submit certificate(s) certifying that the substitute manufacturer (1) attests to adherence to specification requirements for sunshade performance criteria, and (2) has been engaged in the design, manufacture, and fabrication of sunshades for a period of not less than ten (10) years. (*Company Name*)
6. Test Reports:
 - a. Submit test reports verifying compliance with each test requirement required by the project.
7. Samples:

- a. Provide samples of typical product sections and finish samples in manufacturer's standard sizes.
- D. Substitution Acceptance:
1. Acceptance will be in written form, either as an addendum or modification.
 2. Acceptance will be documented by a formal change order signed by the owner and contractor.

2.2 MATERIALS

A. Aluminum Extrusions:

1. Alloy and temper recommended by glazed aluminum curtain wall and storefront manufacturer for strength, corrosion resistance, and application of required finish
2. Not less than 0.070" (1.8 mm) wall thickness at any location for the main frame
3. Complying with ASTM B221: 6063-T6 alloy and temper
4. Recycled Content:

EDITOR NOTE: Include these Recycled Content specifications if needed to meet project requirements or for a project that includes Green Building Certifications such as LEED, Living Building Challenge (LBC), etc.

EDITOR NOTE: If Recycled Content requirements are not specified, prime (zero recycled content) aluminum could be supplied.

- a. Shall have a minimum of 50% mixed pre- and post-consumer recycled content.
- b. Indicate recycled content, including the percentage of pre- and post-consumer recycled content per unit of product.
- c. Indicate the relative dollar value of recycled content product to the total dollar value of product included in the project.
- d. Indicate the location for recovery of recycled content.
- e. Indicate the location of the manufacturing facility.

B. Thermal Barrier:

1. When applied on a thermally broken captured system, sunshade shall be thermally isolated from the interior aluminum mullions by a nominal 0.25" (6.3) thick low conductance material.

C. Aluminum Sheet Alloy:

1. Shall meet the requirements of ASTM B209.

D. Sealant:

1. For sealants required within fabricated sunshade system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

E. Tolerances:

1. References to tolerances for wall thickness and other cross-sectional dimensions of glazed curtain wall and storefront members are nominal and in compliance with AA Aluminum Standards and Data.

F. Red List Free:

EDITOR NOTE: Red List Free applies only for anodized products.

EDITOR NOTE: Retain the appropriate paragraph below; delete the other paragraph (and its sub-paragraphs, if applicable).

1. All parts and materials comply with the Living Building Challenge/DECLARE Red List and the Cradle-to-Cradle (C2C) Banned List:
 - a. PVC-free
 - b. Neoprene-free
2. Product does not contain PVC or Neoprene.

2.3 SUNSHADES

A. Sunshade Members:

1. Manufacturer's standard extruded or formed-aluminum framing members of thickness and reinforced as required to support imposed loads.

B. Fasteners and Accessories:

1. Nonmagnetic stainless steel to be non-corrosive and compatible with aluminum members, anchors, and other components.

C. Perimeter Anchors:

1. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

D. Packing, Shipping, Handling, and Unloading:

1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

E. Storage and Protection:

1. Store materials so that they are protected from exposure to harmful weather conditions.
2. Handle material and components to avoid damage.
3. Protect material against damage from elements, construction activities, and other hazards before, during, and after installation.

2.4 ACCESSORY MATERIALS

A. Bituminous Paint:

1. Cold-applied asphalt-mastic paint
2. Complies with SSPC-Paint 12 requirements except containing no asbestos
3. Formulated for 30-mil (0.762 mm) thickness per coat

2.5 FABRICATION

A. Extrude or form aluminum shapes before finishing.

B. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations
2. Accurately fitted joints that are flush, hairline, and weatherproof

3. Physical and thermal isolation of glazing from framing members
 4. Accommodations for thermal and mechanical movements of glazing and framing that maintain required glazing edge clearances
 5. Fasteners, anchors, and connection devices that are concealed from view to the greatest extent possible
- C. Sunshade:
1. Fabricate components for assembly using manufacturer's standard installation instructions.
- D. After fabrication, clearly mark components to identify their locations in project according to shop drawings.

2.6 ALUMINUM FINISHES

EDITOR NOTE: Select the appropriate finish and color from Kawneer's standard colors listed below. Custom colors are available upon request from Kawneer. Other pigmented organic coatings conforming to AAMA 2603 are available. Consult with your Kawneer representative for other surface treatments and finishes.

- A. Finish designations that are prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Factory Finishing:
1. Kawneer Permanodic® AA-M10C21A44, AAMA 611, Architectural Class I Color Anodic Coating (Color _____)
 2. Kawneer Permanodic® AA-M10C21A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear) (Optional)
 3. Kawneer Permanodic® AA-M10C21A31, AAMA 611, Architectural Class II Clear Anodic Coating (Color #17 Clear) (Standard)
 4. Kawneer Permafluor™ (70% PVDF), AAMA 2605, Fluoropolymer Coating (Color _____)
 5. Kawneer Permادize® (50% PVDF), AAMA 2604, Fluoropolymer Coating (Color _____)
 6. Kawneer Permacoat™ AAMA 2604, Powder Coating (Color _____)
 7. Other: Manufacturer _____ Type _____ (Color _____)

PART 3 EXECUTION

3.1 EXAMINATION

- A. With installer present, examine areas for compliance with requirements for installation tolerances and other conditions affecting performance of the work.
- B. Proceed with installation only after correcting unsatisfactory conditions.

3.2 INSTALLATION

- A. General:
1. Comply with manufacturer's written instructions. Refer to installation instructions of the compatible curtain wall or storefront system.

EDITOR NOTE: The installation instructions can differ from one compatible system to another one.

2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure non-movement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Weld components in concealed locations to minimize distortion or discoloration of finish. Protect glazing surfaces from welding.
7. Seal joints watertight where shown on approved shop drawings and/or manufacturer's standard installation instructions.

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 components plumb and true in alignment with established lines and grades.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. Adjusting: Not applicable.

B. Protection:

1. Protect installed product's finish surfaces from damage during construction.
2. Protect aluminum sunshade system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants

C. Cleaning:

1. Repair or replace damaged installed products.
2. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance.
3. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.
4. Remove construction debris from project site and legally dispose of debris.

END OF SECTION 107113

NOTES AND DISCLAIMERS

Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and curtain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor. It is the responsibility of the owner, the specifier, the architect, the general contractor, and the installer and the fabricator/transformer, consistent with their roles, to determine the appropriate materials for a project in strict conformity to all applicable national, regional and local building codes and regulations.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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