

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 3 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.

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. Section includes: Kawneer Aluminum Sunshade Systems, including accessories, mountings, and shims. Sunshades are anchored directly to the vertical and/or horizontal mullions.
 - 1. Types of Kawneer Sunshades include:
 - a. Versoleil™ Horizontal Single Blade SunShade compatible with:
 - 1) 1600 Wall System™1 Curtain Wall
 - 2) 1600UT System™1 Curtain Wall
 - 3) 1600 Wall System™2 Curtain Wall
 - 4) 1600 Wall System™5 Curtain Wall
 - 5) 1600 SS™ Curtain Wall System
 - 6) 1600 SS™ (SSG) Curtain Wall System
 - 7) IR 501T/IR 501UT Storefront Framing Systems
 - 8) Trifab™ VG (Center Glaze) 451/451T/451UT
 - 9) Trifab™ (Center Glaze) 601/601T/601UT
 - b. Versoleil™ Vertical Single Blade SunShade compatible with:
 - 1) 1600 Wall System™1Curtain Wall
 - 2) 1600UT System™1 Curtain Wall
 - 3) 1600 Wall System™5 Curtain Wall
 - 4) 1600 SS™ Curtain Wall System

EDITOR NOTE: TO VIEW THE CORRELATING GUIDE SPECIFICATION FOR COMPATIBLE CURTAIN WALL AND STOREFRONT SYSTEMS PLEASE VISIT KAWNEER.COM

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSEWHERE HOWEVER KAWNEER RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN PART 1.6 QUALITY ASSURANCE.

B. Related Sections:

- 2. 072700 "Air Barriers"
- 3. 079200 "Joint Sealants"
- 4. 083213 "Sliding Aluminum-Framed Glass Doors"
- 5. 084113 "Aluminum-Framed Entrances and Storefronts"
- 6. 084313 "Aluminum-Framed Storefronts"
- 7. 084329 "Sliding Storefronts"
- 8. 084413 "Glazed Aluminum Curtain Walls"
- 9. 084433 "Sloped Glazing Assemblies"
- 10. 085113 "Aluminum Windows"
- 11. 086300 "Metal-Framed Skylights"
- 12. 088000 "Glazing"
- 13. 122600 "Interior Daylighting Devices"

1.3 Definitions

- A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

Laws and building and safety codes governing the design and use of 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.

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

© Kawneer Company, Inc., 2011

1.4 Performance Requirements

EDITOR NOTE: PROVIDE WIND LOAD, SNOW LOAD, & 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.
 - 3. Test horizontal and vertical sunshade configurations to meet a minimum load of 65 psf with a factor of safety of 2 times the design load for the horizontal blade and a factor of safety of 1.5 times the design load for the vertical blade.
 - 4. The assembled sunshade shall be capable of supporting a uniformly distributed load of ___ psf without damage, permanent deformation, or disengagement from the glazed system mullion.
 - 5. Blade deflection shall not exceed L/120 of span length.
 - 6. Submit test reports verifying compliance with each test requirement required by the project.

EDITOR NOTE: PLEASE REFER TO THE ARCHITECTURAL DETAIL MANUAL FOR STRUCTURAL CHARTS, AND BLADE STYLES.

- 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°.
 - b. 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 Declarations (EPD): Shall have a Type III Product-Specific EPD.

EDITOR NOTE: CHOOSE BLAST MITIGATION PERFORMANCE IF REQUIRED TO MEET PROJECT REQUIREMENTS.

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

1.5 Submittals

EDITOR NOTE: ADD RECYCLED CONTENT SECTION IF REQUIRED TO MEET PROJECT REQUIREMENTS AND/OR GREEN BUILDING CERTIFICATIONS SUCH AS LEED, LIVING BUILDING CHALLENGE (LBC), ETC. ARE REQUIRED.

** IF RECYCLED CONTENT REQUIREMENTS ARE NOT SPECIFIED - PRIME (ZERO RECYCLED CONTENT) ALUMINUM COULD BE SUPPLIED.*

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Recycled Content:
 - a. Provide documentation that aluminum has a minimum of 50% mixed pre- and post-consumer recycled content with a sample document illustrating project specific information that will be provided after product shipment.
 - b. Once product has shipped, provide project specific recycled content information, including:
 - 1) Indicate recycled content; indicate percentage of pre- and post-consumer recycled content per unit of product.
 - 2) Indicate relative dollar value of recycled content product to total dollar value of product included in project.
 - 3) Indicate location recovery of recycled content.
 - c. Indicate location of manufacturing facility.
 - 2. Environmental Product Declaration (EPD):
 - a. Include a Type III Product-Specific EPD.

EDITOR NOTE: MATERIAL INGREDIENT REPORTING ONLY FOR ANODIZED PRODUCTS

- 3. Material Ingredient Reporting:
 - a. Include documentation for material reporting that has a complete list of chemical ingredients to at least 100ppm (0.01%) that covers 100% of the product.

Laws and building and safety codes governing the design and use of 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.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.
© Kawneer Company, Inc., 2011

- B. Shop Drawings: For aluminum exterior sunshades. Include plans, elevations, sections, blade angles, blade spacing and attachments to compatible systems.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Samples for Verification: 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: Installer who has had successful experience with installation of the same or similar systems required for the project and other projects of similar size and scope.
- B. Manufacturer Qualifications: A manufacturer capable of fabricating exterior sunshades, and glazed aluminum curtain wall and storefront systems, that meet or exceed performance requirements.
- C. Source Limitations: Obtain aluminum exterior sunshades and glazed aluminum curtain walls and storefront systems through one source from a single manufacturer.
- D. Product Options: 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.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If revisions are proposed, submit comprehensive explanatory data to Architect for review.
- E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockups for type(s) of sunshade elevation(s) indicated, in location(s) shown on Drawings.
- F. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination".

1.7 Project Conditions

- A. Field Measurements: Verify actual locations of structural supports for sunshades by field measurements before fabrication and indicate measurements on Shop Drawings.

1.8 Warranty

- A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

PART 2 - PRODUCTS

EDITOR'S NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS, AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. 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."

2.1 Manufacturers

- A. Basis-of-Design Product:
 - 1. Versoleil™ Single Blade Horizontal Sunshade, Versoleil™ Single Blade Vertical Sunshade by Kawneer Company Inc.

EDITOR'S NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (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: (_____)

Laws and building and safety codes governing the design and use of 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.

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

© Kawneer Company, Inc., 2011

- C. Substitutions: Refer to Substitutions Section for procedures and submission requirements.
1. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 2. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid sunshade installation and construction delays.
 3. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 4. Certificates: Submit certificate(s) certifying substitute manufacturer (1) attesting to adherence to specification requirements for sunshade performance criteria, and (2) has been engaged in the design, manufacturer and fabrication of aluminum curtain walls, storefront systems, and sunshades for a period of not less than ten (10) years. (Company Name).
 5. Test Reports: Submit test reports verifying compliance with each test requirement required by the project.
 6. Samples: Provide samples of typical product sections and finish samples in manufacturer's standard sizes.
- D. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.2 Materials

- A. Aluminum Extrusions: Alloy and temper recommended by glazed aluminum curtain wall and storefront system manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" (1.8 mm) wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6, 6105-T5, or 6061-T6 alloy and temper.

EDITOR NOTE: ADD RECYCLED CONTENT SECTION IF REQUIRED TO MEET PROJECT REQUIREMENTS AND/OR GREEN BUILDING CERTIFICATIONS SUCH AS LEED, LIVING BUILDING CHALLENGE (LBC), ETC. ARE REQUIRED.

*** IF RECYCLED CONTENT REQUIREMENTS ARE NOT SPECIFIED - PRIME (ZERO RECYCLED CONTENT) ALUMINUM COULD BE SUPPLIED.**

1. Recycled Content: Shall have a minimum of 50% mixed pre- and post-consumer recycled content.
 - a. Indicate recycled content; indicate percentage of pre-consumer and post-consumer recycled content per unit of product.
 - b. Indicate relative dollar value of recycled content product to total dollar value of product included in project.
 - c. Indicate location recovery of recycled content.
 - d. Indicate location of manufacturing facility.
- B. Thermal Barrier: When applied on a thermally broken compatible system, sunshade shall be thermally isolated from the interior aluminum mullions by a nominal 0.25" (6.3 mm) thick low conductance material.
- C. Aluminum sheet alloy: Shall meet the requirements of ASTM B209.
- D. Sealant: 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: Reference 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.

EDITOR NOTE: MATERIAL INGREDIENT REPORTING ONLY FOR ANODIZED PRODUCTS

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

2.3 Sunshades

- A. Sunshade Members: Manufacturer's standard extruded or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
- B. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.
- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- E. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle sunshade materials and components to avoid damage. Protect sunshade materials against damage from elements, construction activities, and other hazards before, during and after installation.

2.4 Accessory Materials

- A. 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.

2.5 Fabrication

- A. Form or extrude aluminum shapes before finishing.
- B. Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are straight, and free of defects or deformations.
 - 2. Accurately fitted joints with ends coped or mitered.
 - 3. Physical and thermal isolation of glazing from framing members.
 - 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - 5. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- C. Sunshade: Fabricate components for assembly following approved shop drawings and/or manufacturer's standard installation instructions.
- D. After fabrication, clearly mark components to identify their locations in Project according to approved shop drawings.

2.6 Aluminum Finishes

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM KAWNEER'S STANDARD COLORS. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM THE KAWNEER COMPANY. OTHER PIGMENTED ORGANIC COATINGS CONFORMING TO AAMA 2603 ARE AVAILABLE. CONSULT WITH YOUR KAWNEER REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Factory Finishing:
 - 1. Kawneer Permanodic™ AA-M10C21A44 / AA-M45C22A44, AAMA 611, Architectural Class I Color Anodic Coating (Color _____).
 - 2. Kawneer Permanodic™ AA-M10C21A41 / AA-M45C22A41, 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. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

3.2 Installation

- A. General:
 - 1. Comply with manufacturer's written instructions. Refer to installation instructions of the compatible curtain wall or storefront system.
 - 2. Please note that the installation instructions can differ from one compatible system to another one.
 - 3. Do not install damaged components.
 - 4. Fit joints to produce hairline joints free of burrs and distortion.
 - 5. Rigidly secure non-movement joints.
 - 6. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
 - 7. Weld components in concealed locations to minimize distortion or discoloration of finish. Protect glazing surfaces from welding.
 - 8. 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.
- E. Install glazing as specified in Division 08 Section "Glazing."

3.3 Adjusting, Cleaning and Protection

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum sunshade system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.
- C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

DISCLAIMER STATEMENT

This guide specification is intended to be used by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm, and the particular requirements of a specific construction project.

END OF SECTION 107113

Laws and building and safety codes governing the design and use of 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.

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

© Kawneer Company, Inc., 2011