

SECTION 08900 ALUMINUM CURTAIN WALL

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 have been recognized in the preparation of this guide specification. Neither CSI nor AIA 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

1.01 Summary

A. Section Includes: Kawneer Architectural Aluminum Curtain Wall Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of curtain wall framing.

1. Types of Kawneer Aluminum Curtain Wall include:

- a. 2500 PG Wall® – 2–1/2" x 7–1/2" (63.5 x 190.5) nominal dimension, Pre-fabricated, Pre-assembled and Pre-glazed, unitized construction, Four-side captured glazing, optional: two or four-side structural silicone glazed.

ED NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSEWHERE, HOWEVER KAWNEER RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07 SOURCE QUALITY CONTROL.

B. Related Sections:

1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
2. Division 7 Section "Fire Stopping"
3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront systems
4. Division 8 Section "Aluminum Terrace Doors and Frames"
5. Division 8 Section "Sliding Doors"
6. Division 8 Section "Aluminum Entrances and Storefronts"
7. Division 8 Section "Automatic Entrance Doors"
8. Division 8 Section "Sliding Aluminum Storefronts"
9. Division 8 Section "Aluminum Windows"
10. Division 8 Section "Finish Hardware"
11. Division 8 Section "Glass and Glazing"
12. Division 8 Section "Glazed Aluminum Curtain Walls"
13. Division 8 Section "Slope Glazing"

1.02 System Description (Industry Standards)

ED NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.03 System Description

EDITOR NOTE: AIR AND WATER PERFORMANCE RESULTS ARE BASED UPON ASTM AND AAMA STANDARDS. PERFORMANCE RESULTS HAVE BEEN CERTIFIED AND TEST REPORTS ARE AVAILABLE. CONSULT YOUR LOCAL KAWNEER REPRESENTATIVE CONCERNING SPECIFIC PROJECT PERFORMANCE REQUIREMENTS.

A. Curtain Wall System Performance Requirements:

EDITOR NOTE: PROVIDE WINDLOAD DESIGN PRESSURES IN PSF AND INCLUDE APPLICABLE BUILDING CODE AND YEAR EDITION

1. Wind loads: Provide Curtain Wall system; include anchorage, capable of withstanding wind load design pressures of (____) lbs./sq. ft. inward and (____) lbs./sq. ft. outward. The design pressures are based on the (____) Building Code; (____) Edition
2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a static air pressure differential of 6.24 psf.
3. Water Resistance, (static): The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a static air pressure differential of 15 psf as defined in AAMA 501.
4. Water Resistance, (dynamic): The test specimen shall be tested in accordance with AAMA 501.1. There shall be no leakage at an air pressure differential of 15 psf as defined in AAMA 501.
5. Uniform Load: A static air design load of 40 psf shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member at design load. At structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

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ED NOTE: THERMAL TRANSMITTANCE AND CONDENSATION RESISTANCE TEST RESULTS ARE BASED UPON 1" CLEAR INSULATING GLASS. (1/4", 1/2" AS, 1/4") OR REFER TO THERMAL TRANSMITTANCE (U-FACTOR) CHARTS FOR PROJECT SPECIFIC U-FACTORS.

6. Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than: 0.65 (clear) or Project Specific (____) BTU/hr/ft² /°F. per AAMA 507.
7. Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than 69_{frame} and 58_{glass} (clear),
or
Condensation Index (I): when tested to CSA-A440-00, the condensation index shall not be less than 58.0_{frame} and 43.6_{glass} (clear).
8. Seismic: When tested to AAMA 501.4, system must meet design displacement of 0.010 x the story height and ultimate displacement of 1.5 x the design displacement.

EDITOR NOTE: SOUND TRANSMISSION CLASS (STC) AND OUTDOOR-INDOOR TRANSMISSION CLASS (OITC) TEST RESULTS ARE BASED UPON 1" CLEAR DOUBLE LAMINATED INSULATING GLASS WITH PVB INTERLAYER (1/8", .030", 1/8", 1/2" AS, 1/8", .030", 1/8").

9. Sound Transmission Class (STC) and Outdoor-Indoor Transmission Class (OITC): When tested to AAMA Specification 1801 and in accordance with ASTM E1425 and ASTM E90, the STC and OITC Rating shall not be less than 35 (STC) and 28 (OITC).

1.04 Submittals

- A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples, and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for curtain wall system as follows:
 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 Kawneer.

1.06 Quality Assurance

- A. Qualifications:
 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- B. Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle curtain wall material and components to avoid damage. Protect curtain wall material against damage from elements, construction activities, and other hazards before, during and after curtain wall installation.

PART 2 – PRODUCTS

ED 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."

2.01 Manufacturers (Acceptable Manufacturers/Products)

A. Acceptable Manufacturers:

- | | | | |
|---------------|--------------------------|----|--------------------------------|
| 1. Address: | Kawneer Company, Inc. | or | Kawneer Company Canada Limited |
| | 555 Guthridge Court, | | 1051 Ellesmere Road |
| | Technology Park/Atlanta, | | Scarborough, Ontario M1P 2X1 |
| | Norcross, GA 30092 | | |
| a. Telephone: | 770 449 5555 | | 416 755 7751 |
| b. Fax: | 770 734 1560 | | 416 755 1829 |

2. Proprietary Product(s)/System(s): Kawneer Aluminum Curtain Wall
 - a. Series: 2500 PG Wall®
 - b. Finish/Color: (See 2.06 Finishes)

ED 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. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 1. Base Bid/Contract Manufacturer/Product: Kawneer Company, Inc.
 - a. Product: Kawneer Aluminum Curtain Wall
 - b. Series: 2500 PG Wall®
 - c. Framing Member Profile: 2-1/2" x 7-1/2" (63.5 x 190.5) nominal dimension, Pre-fabricated, Pre-assembled and Pre-glazed, unitized construction, four-side captured glazing, optional: two or four-side structural silicone glazed
 2. Alternate # ____ Manufacturer/Product:
 - a. Product:
 - b. Series:
 - c. Framing Member Profile:
 3. Alternate # ____ Manufacturer/Product:
 - a. Product:
 - b. Series:
 - c. Framing Member Profile:
- C. Substitutions:
 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid curtain wall installation and construction delays.
 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer (1) attesting to adherence to specification requirements for curtain wall system performance criteria, and (2) has been engaged in the design, manufacturer and fabrication of aluminum curtain wall for a period of not less than ten (10) years. (Company Name)
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for curtain wall required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of curtain wall for the project, with specified finish and color.
 3. 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.

2.02 Materials

- A. Aluminum (Curtain Wall and Components):
 1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of curtain wall members are nominal and in compliance with AA Aluminum Standards and Data.

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of a silicone compatible EPDM rubber that provides for silicone adhesion.
- C. Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Thermal Barrier: Thermal separator shall be extruded of a silicone compatible elastomer that provides for silicone adhesion.

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.

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B. Glass: Refer to Glass and Glazing Section for additional infill specification. Glass shall be preinstalled into curtain wall units prior to erection of curtain wall. Glazing shall take place in a controlled environment to maintain the highest quality standards.

2.05 Fabrication

A. General:

1. Fabricate Curtain wall components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
2. Frame units shall be fabricated and sequenced for pre-assembled, unitized construction.
3. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
4. Prepare components to receive anchor devices. Fabricate anchors.
5. Arrange fasteners and attachments to conceal from view.

2.06 Finishes

ED 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. Shop Finishing:

1. Kawneer Permanodic® AA-M12C22A44, AAMA 611, Architectural Class I Color Anodic Coating (Color _____).
2. Kawneer Permanodic® AA-M12C22A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear) (Optional).
3. Kawneer Permanodic® AA-M12C22A31, AAMA 611, Architectural Class II Clear Anodic Coating (Color #17 Clear) (Standard).
4. Fluropon® (70% PVDF), AAMA 2605, Fluoropolymer Coating (Color _____).
5. Kawneer Permadize® (50% PVDF), AAMA 2604, Fluoropolymer Coating (Color _____).
6. Interpon® D2000, AAMA 2604, Powder Coating (Color _____).
7. Duracron®, AAMA 2603, Acrylic Enamel Coating (Color _____).
8. Duranar®, Duranar XL® (70% PVDF), AAMA 2605, Fluoropolymer Coating (Color _____).
9. Other: Manufacturer _____ Type _____ (Color _____).

2.07 Source Quality Control

A. Source Quality: Provide aluminum curtain walls specified herein from a single source.

1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, storefront framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive curtain wall system and sill plate is level in accordance with manufacturer's acceptable tolerances.

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

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

3.02 Installation

A. General: Install curtain wall systems plumb, level, and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.

1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
2. Glazing: All glazing infill shall be preinstalled into pre-assembled curtain wall units using structural silicone. Glazing shall take place in a controlled environment to maintain the highest quality standards. Units with captured option shall also be retained with extruded aluminum pressure plates anchored to the horizontal members using stainless steel fasteners spaced no greater than 9" on center.
3. Water Drainage: Each light of glass shall be compartmentalized using joint plugs and silicone sealant, to divert water to the horizontal weep locations. Weep holes for captured glazing option shall be located in the horizontal pressure plates and covers to divert water to the exterior of the building.

B. Related Products Installation Requirements:

1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual

3.03 Field Quality Control

- A. Field Tests: Architect shall select curtain wall units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.
1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division 1 Testing Section for payment of testing and testing requirements.
- a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft^2 , which ever is greater.
- b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.24 psf.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum curtain wall 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.

DISCLAIMER STATEMENT

This guide specification is intended for use 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 08900

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