

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

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. This Section includes Kawneer Flushline™ Entrances, glass and glazing, and door hardware and components.
 - 1. Types of Kawneer Flushline™ Entrances include:
 - a. Flushline™ Entrance; urethane foam-filled door, flush face design, high traffic and high abuse.

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:

1. 072700 "Air Barriers"
2. 079200 "Joint Sealants"
3. 083213 "Sliding Aluminum-Framed Glass Doors"
4. 084313 "Aluminum-Framed Storefronts"
5. 084329 "Sliding Storefronts"
6. 084413 "Glazed Aluminum Curtain Walls"
7. 084433 "Sloped Glazing Assemblies"
8. 085113 "Aluminum Windows"
9. 086300 "Metal-Framed Skylights"
10. 087000 "Hardware"
11. 088000 "Glazing"
12. 280000 "Electronic Safety and Security"

1.3 Definitions

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

1.4 Performance Requirements

- A. General Performance: Aluminum-framed flush entrance system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Aluminum-Framed Entrance Performance Requirements:

EDITOR NOTE: PROVIDE WIND LOAD DESIGN PRESSURES IN PSF AND INCLUDE APPLICABLE BUILDING CODE AND YEAR EDITION.

1. Wind loads: Provide entrance 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.
3. Uniform Load: The test specimen shall be tested in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a 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.
4. Energy Efficiency:
 - a. Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than:
 - 1) Aluminum-Framed Flush Entrance Doors with glass lites – with Aluminum Panel = 0.82 or Project Specific (____) BTU/hr/ft²/°F per AAMA 507 or (____) BTU/hr/ft²/°F per NFRC 100.
 - 2) Aluminum-Framed Flush Entrance Doors with glass lites – with FRP Panel = 0.66 or Project Specific (____) BTU/hr/ft²/°F per AAMA 507 or (____) BTU/hr/ft²/°F per NFRC 100.

- b. Solar Heat-Gain Coefficient (SHGC): Provide entrances with a SHGC minimum and maximum range of:
 - 1) Aluminum-Framed Flush Entrance Doors with 1/4 Vision Lite – with Aluminum Panel = (0.04 – 0.12) determined according to NFRC 200 procedures.
 - 2) Aluminum-Framed Flush Entrance Doors with 1/2 Vision Lite – with Aluminum Panel = (0.04 – 0.21) determined according to NFRC 200 procedures.
 - 3) Aluminum-Framed Flush Entrance Doors with 1/4 Vision Lite – with FRP Panel = (0.03 – 0.12) determined according to NFRC 200 procedures.
 - 4) Aluminum-Framed Flush Entrance Doors with 1/2 Vision Lite – with FRP Panel = (0.04 – 0.20) determined according to NFRC 200 procedures.
- c. Visible Transmittance (VT): Provide entrances with a VT minimum and maximum range of:
 - 1) Aluminum-Framed Flush Entrance Doors with 1/4 Vision Lite – with Aluminum Panel = (0.01 – 0.09) determined according to NFRC 200 procedures.
 - 2) Aluminum-Framed Flush Entrance Doors with 1/2 Vision Lite – with Aluminum Panel = (0.01 – 0.18) determined according to NFRC 200 procedures.
 - 3) Aluminum-Framed Flush Entrance Doors with 1/4 Vision Lite – with FRP Panel = (0.01 – 0.09) determined in accordance with NFRC 200 procedures.
 - 4) Aluminum-Framed Flush Entrance Doors with 1/2 Vision Lite – with FRP Panel = (0.01 – 0.18) determined in accordance with NFRC 200 procedures.
- 5. Windborne-Debris-Impact Resistance Performance: Shall be tested in accordance with ASTM E1886, information in ASTM E1996, and TAS 201/203.
 - a. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1m) of grade.
- 6. Blast Mitigation Performance: Shall be tested or proven through analysis to meet ASTM F2927, ASTM F1642, GSA-TS01, and UFC 04-010.01 performance criteria.

To meet UFC 04-010-01, B-3.3 Standard 12 for exterior doors and Standard 10 for glazing and frame bite provisions, the following options are available:

 - a. Section B-3.1.1 Dynamic analysis
 - b. Section B-3.1.2 Testing
 - c. Section B-3.1.3 ASTM F2248 Design Approach
- 7. Environmental Product Declarations (EPD): Shall have a Type III Product Specific EPD.
- 8. Forced Entry: Tested in accordance with AAMA 1304.
- C. Environmental Product Declarations (EPD): Shall have a Type III Product-Specific EPD.

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: Include construction details, material descriptions, and fabrication methods, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum-framed flush entrance doors indicated.
 - 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.
 - 4) Indicate location of manufacturing facility.
 - 1. Environmental Product Declaration (EPD):
 - a. Include a Type III Product-Specific EPD.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.
- C. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.
- D. Samples for Verification: For aluminum-framed flush entrance doors and components required.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type of aluminum-framed entrance doors.

- F. Fabrication Sample: Corner sample consisting of a door stile and rail, of full-size components and showing details of the following:
 - 1. Joinery, including welds.
 - 2. Flush face panel.
- G. Other Action Submittals:
 - 1. Aluminum-Framed Flush Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.6 Quality Assurance

- A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.
- B. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum-framed flush entrance doors and storefronts that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports and calculations.
- C. Source Limitations: Obtain aluminum-framed flush entrance doors through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum-framed flush entrance doors and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements". Do not modify size and dimensional requirements.
 - 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.
- 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 mockup for type(s) of swing entrance door(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 dimensions of aluminum-framed flush entrance doors openings by field measurements before fabrication and indicate field 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

2.1 Manufacturers

EDITOR NOTE: CHOOSE FACE SHEET TYPE (FRP OR ALUMINUM) BASED ON PROJECT REQUIREMENTS.

- A. Basis-of-Design Product:
 - 1. Kawneer Company Inc.
 - 2. The door stile and rail face dimensions of the Flushline™ Entrance door will be as follows:

Door	Vertical Stile	Top Rail	Bottom Rail
Flushline™	5" (127 mm)	5" (127 mm)	5" (127 mm)
 - 3. The door face sheet shall be () (specify one of the following).
 - a. Pebble textured fiberglass reinforced polyester (FRP) 0.090" (2.3 mm).
 - b. Architectural quality aluminum sheet 0.090" (2.3 mm) thick (specify: embossed or plain unpatterned).
 - 4. Vision lites, if required:
 - a. Aluminum-framed vision lite (AVL)
 - 5. Glass for vision lites to be () (specify 1/4" (6.4 mm), 1" (25.4 mm) insulated clear tempered glass or 1" (25.4 mm) impact glass).
 - 6. Vision lite glazing shall be with foam glazing tape.

EDITOR NOTE: PROVIDE INFORMATION BELOW INDICATING APPROVED ALTERNATIVES TO THE BASIS-OF-DESIGN PRODUCT.

- B. Subject to compliance with requirements, provide a comparable product by the following:
 - 1. Manufacturer: ()
 - 2. Series: ()
 - 3. Profile dimension: ()
 - 4. Performance Grade: ()

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.
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- 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 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 aluminum-framed flush entrance and storefront system performance criteria, and (2) has been engaged in the design, manufacturer and fabrication of aluminum entrances and storefronts 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 aluminum-framed flush door manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.090" (2.3 mm) wall thickness at any location for the main frame and door leaf members.

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*** 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. Aluminum-Framed Flush Entrance Door Core: Shall be urethane foam injected at 5 lb./cu.ft. density and shall have "0" O.D.P. = "Zero" Ozone Depletion Potential and contains no Chlorofluorocarbons (CFC's) or Hydro chlorofluorocarbons (HCFC's).
- C. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum-framed flush entrance door members, trim hardware, anchors, and other components.
- D. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- E. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

2.3 Storefront Framing System

EDITOR NOTE: CHOOSE ENTRANCE FRAMING TYPE BASED ON PROJECT REQUIREMENTS.

- A. Storefront Entrance Framing Non-Thermal (Trifab™ VG 450, Trifab™ VG 451 or Trifab™ 601)
- B. Storefront Entrance Framing Thermal (Trifab™ 451UT or Trifab™ 601T/601UT)
 1. Thermally Broken Entrance Framing - Kawneer IsoLock™ Thermal Break with a 1/4" (6.4 mm) separation consisting of a two-part chemically curing, high-density urethane, which is mechanically and adhesively joined to aluminum storefront sections.
 - a. Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.
- C. Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- D. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.
- E. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- F. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- G. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

2.4 Glazing

- A. Glazing: As specified in Division 08 Section "Glazing".
- B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

2.5 Hardware

- A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum; designed to smoothly operate, tightly close, and securely lock aluminum-framed flush entrance doors.
- B. Standard Hardware:
 - 1. Weather-stripping:
 - a. Meeting stiles on pairs of doors shall be equipped with an adjustable astragal utilizing wool pile with polymeric fin.
 - b. The door weathering on a single acting offset pivot or butt hung door and frame (single or pairs) shall be comprised of a thermoplastic elastomer weathering on a tubular shape with a semi-rigid polymeric backing.
 - 2. Sill Sweep Strips: EPDM blade gasket sweep strip in an aluminum extrusion applied to the interior exposed surface of the bottom rail with concealed fasteners (necessary to meet specified performance tests).
 - 3. Threshold: Extruded aluminum, one piece per door opening, with ribbed surface.
 - 4. Offset Pivots: [_____]. (Note: EL Offset Pivot available for access control)
 - 5. Butt Hinge: [_____]. Kawneer Standard is Stainless Steel w/ Powder Coating & Non Removable Pin (NRP) (NOTE: EL Hinge available for access control)
 - 6. Continuous Hinge: [_____].
 - 7. Push/Pull: [_____] style.
 - 8. Exit Device: [_____].
 - 9. Closer: [_____].
 - 10. Security Lock/Dead Lock: Active Leaf [_____]; Inactive Leaf [_____].
 - 11. Latch Handle: [_____].
 - 12. Cylinder(s)/Thumbturn: [_____].
 - 13. Electric Strike/Strike Keeper: [_____].

EDITOR NOTE: BELOW HARDWARE SCHEDULE TO BE USED WHEN SPECIFYING PANELINE™ MEL CONCEALED ROD EXIT DEVICE OR OTHER ELECTRONIC SECURITY ITEMS.

C. Access Control Entrance Hardware

- 1. Stand-alone Key Pad: AC-G43 Key Pad System – Kawneer Standard.
- 2. Stand-alone Key Pad (with Optional Proximity Card Reader): AC-G44 Key Pad/ Reader (Note: Proximity Cards not included).
- 3. Proximity Cards.
- 4. Exit Device: Kawneer Paneline™ MEL.
- 5. Power supply for Exit Device: SP-2000 (One per pair. Max of 2 doors per power supply) **Required for Paneline™ MEL.**
- 6. Power Transfer [_____]. One per EL Exit Device required for access control:
 - e. EPT (Electric Power Transfer) Note: EPT used for continuous geared hinge applications.
 - f. EL Intermediate Pivot.
 - g. EL Butt Hinge.
- 7. Interior push button release.
- 8. Point to Point wiring diagram.

2.6 Fabrication

- A. Fabricate aluminum-framed flush entrance doors in sizes indicated. Include a complete system for assembling components and anchoring doors.
- B. Fabricate aluminum-framed flush entrance doors that are reglazeable, when vision lites are used, without dismantling perimeter framing.
 - 1. Door corner construction shall consist of mechanical clip fastening, SIGMA deep penetration plug welds and 1-1/8" (29 mm) long fillet welds inside and outside of all four corners.
 - 2. Accurately fit and secure joints and corners. Make joints hairline in appearance.
 - 3. Face sheets shall lap and interlock with stile and rails to create a hollow cavity for the froth-in-place urethane core.
 - 4. Prepare components with internal reinforcement for door hardware.
- C. Weather-stripping: Provide weather-stripping locked into extruded grooves in door panels or frames as indicated on manufacturer's drawings and details.

2.7 Aluminum 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, 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 Permazine™ (50% PVDF), AAMA 2604, Fluoropolymer Coating (Color _____).
 - 6. Kawneer Permacoat™ AAMA 2604, Powder Coating (Color _____)
 - 7. Other: Manufacturer _____ Type _____ Color _____.
- C. Face Sheets:
 - 1. Pebble texture (FRP) fiberglass reinforced polyester (Color _____) (select from list)
Beige, Dark Bronze, Light Grey and White.
 - 2. Kawneer Aluminum (select one of the finishes previously stated for exposed aluminum from above).

PART 3 - EXECUTION**3.1 Examination**

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated installation.
 - 1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
 - 2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76.2 mm) of opening.
 - 3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Installation

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum-framed flush entrance doors, hardware, accessories, and other components.
- B. Install aluminum-framed flush entrance doors level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- C. Set sill threshold in bed of sealant, as indicated, for weather tight construction.
- D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 Field Quality Control

- A. Manufacturer's Field Services: Upon Owner's written request, provide periodic site visit by manufacturer's field service representative.

3.4 Adjusting, Cleaning, and Protection

- A. Clean aluminum surfaces immediately after installing aluminum-framed flush entrance doors and storefronts. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.
- 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 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 084113