

SECTION 083213 - SLIDING ALUMINUM-FRAMED GLASS DOORS

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 Sliding aluminum-framed glass doors, including factory glazing, operating hardware and accessories designed for exterior applications.
 - 1. Types of sliding aluminum-framed glass doors include:
 - a. Kawneer Series AA®3200M Thermal Sliding Doors.
 - b. 5" (127 mm) frame depth.
 - c. AW-PG45-SD OX, XO, OOX, XOO and OXXO with standard sill.
 - d. AW-PG45-SD OX, XO, OXO with optional low-profile sill.
 - e. AW-PG65-SD OX, XO, OXO with standard sill and heavy interlocks.

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. 084113 "Aluminum-Framed Entrances and Storefronts"
- 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: Sliding aluminum-framed glass door system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Sliding Aluminum-Framed Glass Door Performance Requirements:
 - 1. Performance Requirements: Provide sliding aluminum-framed glass doors of performance indicated that comply with AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS).
 - a. Performance Class and Grade: AW-PG45-SD.
 - b. Performance Class and Grade: AW-PG65-SD.

EDITOR NOTE: AIR AND WATER PERFORMANCE RESULTS ARE BASED UPON ASTM AND AAMA STANDARDS FOR SLIDING ALUMINUM-FRAMED GLASS DOOR SYSTEMS. CONSULT YOUR LOCAL KAWNEER REPRESENTATIVE CONCERNING SPECIFIC PROJECT PERFORMANCE REQUIREMENTS.

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

- 2. Wind Loads: Provide sliding door 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.

3. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. The air infiltration rate shall not exceed 0.30 cfm/ft² (1.5 L/s•m²) at a static air pressure differential of 6.27 psf (300 Pa).
4. Air Exfiltration: The test specimen shall be tested in accordance with ASTM E 283. The air exfiltration rate shall not exceed 0.10 cfm/ft² (0.5 L/s•m²) at a static air pressure differential of 1.57 psf (75 Pa).
5. Water Resistance: The test specimen shall be tested in accordance with ASTM E 547 and ASTM E 331. There shall be no leakage as defined in the test method at a static air pressure differential of:
 - a. 12 psf (580 Pa) with standard sill.
 - b. 8 psf (383 Pa) with optional low-profile sill.
6. Uniform Load: A static air design load of 45 psf (2160 Pa) or 65 psf (3120 Pa) 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 member in excess of 0.2% of the clear spans shall occur.
7. Forced Entry Resistance: Comply with Performance Grade 10 requirements when tested according to ASTM F 842.
8. Operating Force: Tested according to and complying with ASTM E2068.

EDITOR NOTE: THERMAL TRANSMITTANCE AND CONDENSATION RESISTANCE PERFORMANCE RESULTS ARE BASED UPON 1" HIGH PERFORMANCE (HP) INSULATING GLASS (1/4" CLEAR WITH e= 0.035 LOW E COATING ON #2 SURFACE, 1/2" AS WITH WARM EDGE SPACER AND 90% ARGON GAS, 1/4" CLEAR).

9. Energy Efficiency:
 - a. Thermal Transmittance (U-Factor): The thermal transmittance (U-Factor) shall not be more than 0.41 when tested to AAMA 1503.

EDITOR NOTE: SELECT CONDENSATION PERFORMANCE BASED ON U.S STANDARD (CRF) OR CANADIAN STANDARD (I) FROM BELOW.

10. Condensation Resistance Factor (CRF): When tested to AAMA 1503, the Condensation Resistance Factor shall not be less than:
 - a. 48_{frame} and 65_{glass}.
11. The Condensation Index (I): When tested to CSA-A440 shall not be less than:
 - a. 29_{frame} and 63_{glass}.

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").

12. Sound Transmission class (STC) and Outdoor-Indoor Transmission Class (OITC): When tested in accordance with ASTM E90, the STC and OITC rating shall not be less than:
 - a. 37 (STC) and 30 (OITC).
13. Environmental Product Declarations (EPD): Shall have a Type III Product-Specific EPD created from a Product Category Rule.

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, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of sliding aluminum-framed glass door 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.
 2. Environmental Product Declaration (EPD).
 - a. Include a Type III Product-Specific EPD created from a Product Category Rule.
- 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 sliding aluminum-framed glass door and components required.

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.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.
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- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type, class, grade, and size of sliding aluminum-framed glass doors. Test results based on use of downsized test units will not be accepted.
- F. Other Action Submittals:
 - 1. Sliding Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of sliding door hardware, as well as procedures and diagrams. Coordinate final sliding door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of sliding 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 sliding aluminum-framed glass doors that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.
- C. Source Limitations: Obtain sliding aluminum-framed glass door through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of sliding aluminum-framed glass 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 sliding 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 sliding aluminum-framed glass door 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

- A. Basis-of-Design Product:
 - 1. Kawneer Company Inc.
 - 2. Series AA®3200M Thermal Sliding Doors.
 - 3. 5" (127 mm) frame depth.
 - 4. AW-PG45-SD OX, XO, OOX, XOO and OXXO with standard sill.
 - 5. AW-PG45-SD OX, XO, OXO with optional low-profile sill.
 - 6. AW-PG65-SD OX, XO, OXO with standard sill and heavy interlocks.

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: (_____)

- 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 sliding door 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 sliding door system performance criteria, and (2) has been engaged in the design, manufacturer and fabrication of sliding aluminum-framed glass doors 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 sliding aluminum-framed glass door 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 sash 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. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with sliding aluminum-framed glass door members, trim hardware, anchors, and other components.
- C. 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.
- D. 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.
- E. Sliding-Type Weather Stripping: Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric. Comply with AAMA 701/702.
 - 1. Weather Seals: Provide weather stripping with integral barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 701/702.
- F. Sealant: For sealants required within fabricated sliding door, provide sliding door manufacturer's standard, permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

2.3 Sliding Door

- A. Sliding Aluminum-Framed Glass Doors:
 - 1. AA®3200M Thermal Sliding Doors.
 - 2. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
 - 3. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.
 - 4. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
 - 5. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
 - 6. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle sliding door material and components to avoid damage. Protect sliding door material against damage from elements, construction activities, and other hazards before, during and after sliding door installation.

2.4 Glazing

- A. Glass and Glazing Materials: Refer to Division 08 Section "Glazing" for glass units and glazing requirements applicable to glazed sliding aluminum-framed glass doors units.
- B. Glazing System: Glazing method shall be a wet/dry type in accordance with manufacturer's standards. Exterior glazing shall be silicone back bedding sealant. Interior glazing shall be snap-in type glazing beads with an interior gasket in accordance with AAMA 702 or ASTM C864.

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 sliding aluminum-framed glass doors.
- B. Standard Hardware:
 - 1. One pair of stainless steel tandem rollers per sliding panel.
 - 2. Stainless steel roller track.
 - 3. Hookbolt lock: [1-point Hookbolt lock] or [2-point Hookbolt lock].
 - 4. Pull handle exterior: [CO9 pull / Signature Coastal Pull – required ≤ 4 miles from coast] or [Flush finger pull – Blank] or [Flush finger pull - with Cylinder].
 - 5. Pull handle interior: [CO9 pull / Signature Coastal Pull] or ["D" pull - Blank] or ["D" pull - with Lever].

2.6 Insect Screens

- A. Optional Insect Screens: Extruded aluminum frames, joined at corners: 18 x 16 mesh fiberglass screen cloth; frames finished to match aluminum sliding doors; splines shall be extruded vinyl, removable to permit rescreening. (Not available on OXXO configuration)
- B. Hardware: Manufacturer's standard flush pull, adjustable stainless steel or steel rollers and continuous EPDM closure strip at jamb.

2.7 Fabrication

- A. Fabricate sliding aluminum-framed glass doors in sizes indicated. Include a complete system for assembling components and anchoring doors.
- B. Fabricate sliding aluminum-framed glass doors that are re-glazable without dismantling perimeter framing.
 - 1. Master Frame: Joined together with butt type joints, neatly sealed and assembled by a minimum of 2 stainless steel fasteners per joint anchored into continuous integral screw raceways.
 - 2. Sliding Panels: Shall have coped butt type joinery secured with stainless steel fasteners. Sliding panels shall not be removable when in a locked position.
 - 3. Fixed Panels: Shall have coped butt type joinery secured with stainless steel fasteners.
- C. Weather Stripping: Provide weather stripping locked into extruded grooves in door panels or frames as indicated on manufacturer's drawings and details.
- D. Weep Holes: Provide weep holes and internal drainage passages to conduct infiltrating water to exterior as detailed.
- E. Factory-Glazed Fabrication: Glaze sliding aluminum-framed glass doors in the factory where practical and possible for applications indicated. Comply with requirements in Division 08 Section "Glazing" and with AAMA/WDMA/CSA 101/I.S.2/A440.

2.8 Finishes, General

- A. Comply with AAMA-AFPA "Anodic Finishes/Painted Aluminum" for recommendations for applying and designating finishes.
- B. 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.

2.9 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 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 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, weather tight sliding door 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 sliding doors, hardware, accessories, and other components.
- B. Install sliding 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 members in bed of sealant or with gaskets, as indicated, for weather tight construction.
- D. Install sliding doors and components to drain condensation, water penetrating joints, and moisture migrating within sliding door to the exterior.
- E. Separate aluminum from dissimilar materials to prevent corrosion or electrolytic action at points of contact.

3.3 Field Quality Control

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.
 1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.
- B. Testing Services: Testing and inspecting of installed sliding doors shall take place as follows:
 1. Testing Methodology: Testing Standard shall be per AAMA 502 including reference to ASTM E 783 for Air Infiltration Test and ASTM E 1105 for Water Penetration Test.
 - a. Air Infiltration Test: Conduct in accordance with ASTM E 783. Tests shall be conducted at a minimum uniform static test pressure of 1.57 psf (75 Pa). The maximum allowable rates of air leakage for field testing shall not exceed 1.5 times the project specifications.
 - b. Water Infiltration Test: Water penetration resistance tests shall be conducted at a static test pressure equal to 2/3 of the tested laboratory performance test pressure.
 2. Testing Extent: Architect shall select sliding door units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured and prior to the installation of interior finishes and trim. Conduct tests for air infiltration and water penetration with manufacturer's representative present.
 3. Test Reports: Shall be prepared according to AAMA 502.

3.4 Adjusting, Cleaning, And Protection

- A. Adjust operating door panels, screens, hardware, and accessories for a tight fit at contact points and weather stripping for smooth operation and weather tight closure. Lubricate hardware and moving parts.
- B. Clean aluminum surfaces immediately after installing sliding doors. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- C. Clean factory-glazed glass immediately after installing sliding doors. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.
- D. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.
- E. Protect sliding door surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor sliding door surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, mortar, alkaline deposits, stains, or other contaminants. If contaminating substances do contact sliding door surfaces, remove contaminants immediately according to manufacturer's written recommendations.

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 083213