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 three-part Section Format and the CSI Page Format. Additionally, the development concept and organizational arrangement of the American Institute of Architects (AIA) MasterSpec® Program has been recognized in the preparation of this guide specification. Neither CSI, AIA, USGBC, nor ILFI endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the “Conditions of the Contract,” published by the AIA.

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

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section covers Kawneer Sliding Aluminum-Framed Glass Doors, including factory glazing, operating hardware and accessories designed for exterior applications.

B. Types of Kawneer Sliding Aluminum-Framed Glass Doors include:

EDITOR NOTE: Choose Sliding Aluminum-Framed Glass Door type based on project requirements. Delete types that do not apply to this project.

1. AA®3200 Thermal Sliding Glass Doors:
   a. 6-3/4" (171.5 mm) frame depth
   b. AW-PG135-SD

C. Related Sections:

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

1. 072700: Air Barriers
2. 079200: Joint Sealants
3. 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. For fenestration industry standard terminology and definitions, refer to the Fenestration & Glazing Industry Alliance (FGIA) Glossary (AAMA AG-13).

1.4 PERFORMANCE REQUIREMENTS

A. General Performance:
   1. Sliding Aluminum-framed glass doors system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

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.

B. Wind Loads:

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

   1. The sliding glass door system shall include anchorage that is capable of withstanding the following wind load design pressures:
      a. Inward: (_____) psf or (_____) Pa
      b. Outward: (_____) psf or (_____) Pa
   2. The design pressures are based on the (_____) Building Code, (_____) Edition.

C. Air Leakage:
   1. The test specimen shall be tested in accordance with ASTM E 283.
      a. The air leakage rate shall not exceed 0.30 cfm/ft^2 (1.5 l/s · m^2) at a pressure differential of 1.56 psf (75 Pa).

D. Water Resistance:
   1. The test specimen shall be tested in accordance with ASTM E331 and ASTM E547.
      a. There shall be no leakage when tested to a pressure differential of 15 psf (718 Pa).
      b. Optional 4 psf (192 Pa)

E. Uniform Load Deflection:
   1. A static air design load of 40 psf (1915 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330.
   2. There shall be no deflection in excess of L/175 of the span of any framing member at design load.

F. Uniform Load Structural:
   1. 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.

G. Thermal transmittance (U-factor):
   1. Thermal transmittance test results in accordance with AAMA 1503 are based upon 1" (25.4 mm) clear low-emissivity coated glass insulating unit [1/4" (e=0.035, #2), 1/2" warm edge spacer and argon fill gas, 1/4"].
   2. When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than: 0.45 Btu/(hr·ft^{2}·°F) (low-e insulating glass) or project-specific (_____) Btu/(hr·ft^{2}·°F) per AAMA 507 or (_____) Btu/(hr·ft^{2}·°F) per NFRC 100.

H. Condensation Resistance Factor (CRF) or Temperature Index (TI):
   1. Condensation resistance test results in accordance with AAMA 1503 or CSA A440 are based upon 1" (25.4 mm) clear low emissivity coated insulating glass, (1/4" e=0.035, #2), 1/2" warm edge spacer and argon fill gas, 1/4").
   2. If using CRF: When tested using AAMA 1503, the CRF_{frame} and CRF_{glass} shall not be less than 57 and 66 respectively.
   3. If using TI: When tested to CSA A440-00, the TI_{frame} and TI_{glass} shall not be less than 39 and 53 respectively.

I. Sound Transmission Loss:
   1. Sound transmission loss test results in accordance with ASTM E90 are based upon 1" (25.4 mm) clear double laminated insulating glass with PVB interlayer (1/8", 0.030", 1/8", 1/2" AS, 1/8", 0.030", 1/8").
   2. Sound Transmission Class (STC) shall not be less than STC 38.
   3. Outdoor-Indoor Transmission Class (OITC) shall not be less than OITC 33.

J. Windborne-Debris-Impact Resistance Performance:
   1. Performance shall be tested in accordance with ASTM E1886 and information in ASTM E1996:
      a. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade
      b. Small-Missile Impact: For aluminum-framed systems located above 30 feet (9.1 m) of grade

K. Environmental Product Declaration (EPD): Shall have a Type III Product-Specific EPD created from a Product Category Rule.

1.5 SUBMITTALS

A. Product Data:
   1. For each type of sliding aluminum-framed doors indicated, include:
      a. Construction details
      b. Material descriptions
      c. Dimensions of individual components and profiles
      d. Hardware
      e. Finishes
      f. Installation instructions

2. Recycled Content:

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

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

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

3. Environmental Product Declaration (EPD):
   a. Include a Type III Product-Specific EPD created from a Product Category Rule.

B. Shop Drawings:
   1. Plans
   2. Elevations
   3. Sections
   4. Details
   5. Hardware
   6. Attachments to other work
   7. Operational clearances
   8. Installation details

C. Samples for Initial Selection:
   1. Provide samples for units with factory-applied color finishes.
   2. Provide samples of hardware and accessories involving color selection.

D. Samples for Verification:
   1. Provide a verification sample for sliding aluminum-framed glass doors and frame system and required components.

E. Product Test Reports:
   1. Provide test reports for each type, class, grade, and size of sliding aluminum-framed doors used in the project. Test results based on use of downsized test units will not be accepted.
   2. Test reports must be based on evaluation of comprehensive tests performed by a qualified preconstruction testing agency.
   3. Test reports must indicate compliance with performance requirements.

F. Sliding Door Hardware Schedule:
   1. Schedule shall be prepared by or under the supervision of supplier.
   2. Schedule shall detail fabrication and assembly of sliding door hardware, including procedures and diagrams.
   3. 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:
   1. Installer must have successfully installed the same or similar units required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications:
   1. Manufacturer must be capable of fabricating sliding aluminum-framed glass doors that meet or exceed the stated performance requirements.
   2. Manufacturer must document this performance by the inclusion of test reports and calculations.

C. Source Limitations:
   1. Obtain sliding aluminum-framed glass doors through one source from a single manufacturer.

D. Product Options:
   1. Drawings indicate size, profiles, and dimensional requirements of sliding aluminum-framed doors and are based on the specific system indicated. Refer to Division 01 Product Requirements Section. Do not modify size and dimensional requirements.
   2. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Mockups:
   1. Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   2. Build mockups for the type(s) of sliding aluminum-framed door elevation(s) indicated, in location(s) shown on drawings.

F. Pre-installation Conference:
   1. Conduct conference at project site to comply with requirements in Division 01 Project Management and Coordination Section.

1.7 PROJECT CONDITIONS

A. Field Measurements:
   1. Verify actual dimensions of sliding aluminum-framed glass door openings by field measurements before fabrication.
   2. Indicate measurements on shop drawings.

1.8 WARRANTY

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

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

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product:
   1. Kawneer Company, Inc.
      a. AA®3200 Thermal Sliding Glass Doors:
         1) 6-3/4" (171.5 mm) frame depth
         2) AW-PG135-SD

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

EDITOR NOTE: Provide information below indicating approved alternatives to the basis-of-design product.

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

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

D. Substitution Acceptance:
   1. Acceptance will be in written form, either as an addendum or modification.
   2. Acceptance will be documented by a formal change order signed by the owner and contractor.

2.2 MATERIALS

A. Aluminum Extrusions:
   1. Alloy and temper recommended by sliding aluminum-framed glass door manufacturer for strength, corrosion resistance, and application of required finish.
   2. Wall thickness not less than 0.070" (1.8 mm) at any location for the main frame and sash members.
   3. Recycled Content:

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

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

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

B. Fasteners:
   1. Nonmagnetic stainless steel or other materials must be non-corrosive and compatible with aluminum members, trim hardware, anchors, and other components.

C. Anchors, Clips, and Accessories:
   1. 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.
   2. Anchors, clips, and accessories shall provide sufficient strength to withstand the design pressure indicated.

D. Reinforcing Members:
   1. 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.
   2. Reinforcing members must provide sufficient strength to withstand the design pressure indicated.

E. Slide-In-Type Weather-Stripping:
   1. Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric.
   2. Provide weather stripping with integral barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material.
   3. Comply with AAMA 701/702.

F. Sealant:
   1. 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 ALUMINUM FRAMED GLASS DOOR SYSTEM

A. Brackets and Reinforcements:
   1. Manufacturer's standard high-strength aluminum with non-staining, non-ferrous shims for aligning system components.

B. Fasteners and Accessories:
   1. Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories must be compatible with adjacent materials.
   2. Where exposed, fasteners and accessories shall be stainless steel.

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

D. Packing, Shipping, Handling, and Unloading:
   1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

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

2.4 GLAZING

A. Glazing shall comply with requirements in Division 08 Glazing Section.

B. Glazing System:
   1. Glazing method shall be a wet/dry type in accordance with manufacturer's standards.
   2. Exterior glazing shall be silicone back bedding sealant.
   3. Interior glazing shall be snap-in type glazing beads with an interior gasket in accordance with AAMA 702 or ASTM C 864.

2.5 HARDWARE

A. General Hardware Requirements:
   1. Provide manufacturer's standard hardware.
   2. Hardware shall be fabricated from aluminum, stainless steel, or other corrosion-resistant material that is compatible with aluminum.
   3. Hardware shall be designed to smoothly operate, tightly close, and securely lock sliding aluminum-framed glass doors.

B. Standard Operating Panel Hardware:
   1. One pair of stainless steel tandem rollers per sliding panel.
   2. Stainless steel roller track cover.
   3. Hookbolt lock: 1-point hookbolt lock or 2-point hookbolt lock.
   4. Pull handle exterior: standard pull (Satin Nickel PVD finish required ≤ 4 miles from coast) or standard pull – with cylinder (Satin Nickel PVD finish required ≤ 4 miles from coast).
   5. Pull handle interior: standard pull or standard pull with lever.

2.6 INSECT SCREENS

A. Optional Screens:
   1. Extruded aluminum frames finished to match sliding aluminum-framed doors.
   2. Adjustable stainless-steel or steel rollers.
   3. Corners: mitered, gusset reinforced, and crimped.
   4. Interior and exterior pull handles and latch.
   5. 18 x 16 dark fiberglass mesh secured with extruded vinyl spline.
   6. Continuous EPDM closure strip at jamb.

2.7 FABRICATION

A. Fabricate sliding aluminum-framed glass doors in sizes indicated.

B. Include a complete system for assembling components and anchoring doors.

C. Fabrication requirements:
   1. Thermally broken sliding aluminum-framed glass doors shall be reglazable without dismantling perimeter framing.
   2. Sliding Door construction:
      a. Master Frame shall be 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.
      b. Sliding panels shall have coped butt type joinery with stainless-steel fasteners and shall not be removable when in locked position.
      c. Fixed panels shall have coped butt type joinery with stainless-steel fasteners.

D. Weather-stripping:
   1. Provide weather-stripping locked into extruded grooves in door panels or frames as indicated on manufacturer's drawings and details.

E. Weep Holes:
   1. Provide weep holes and internal drainage passages to conduct infiltrating water to exterior as detailed.

F. Factory-Glazed Fabrication:
   1. Comply with requirements in Division 08 Section "Glazing" and with AAMA/WDMA/CSA 101/I.S./A440.
   2. Glaze sliding aluminum-framed glass doors in the factory where practical for applications indicated.

2.8 ALUMINUM FINISHES

EDITOR NOTE: Choose the appropriate finish below based on project requirements.

A. Finish designations that are prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Factory Finishing:
   1. Kawneer Permanodic® AA-M10C21A44, AAMA 611, Architectural Class I Color Anodic Coating (Color _____)
   2. Kawneer Permanodic® AA-M10C21A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear) (Optional)
   3. Kawneer Permanodic® AA-M10C21A31, AAMA 611, Architectural Class II Clear Anodic Coating (Color #17 Clear) (Standard)
   4. Kawneer Permafluor™ (70% PVDF), AAMA 2605, Fluoropolymer Coating (Color _____)
   5. Kawneer Permadize® (50% PVDF), AAMA 2604, Fluoropolymer Coating (Color _____)
   6. Kawneer Permacoat™ AAMA 2604, Powder Coating (Color _____)
   7. Other: Manufacturer_____ Type _____ (Color _____)

PART 3 EXECUTION

3.1 EXAMINATION

A. With installer present, examine openings, substrates, structural support, anchorage, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work:
   1. Verify rough opening dimensions.
   2. Verify levelness of sill plate.
   3. Verify operational clearances.
   4. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components for proper water management.

5. Masonry Surfaces:
   a. Masonry surfaces must be visibly dry and free of excess mortar, sand, and other construction debris.
6. Wood Frame Walls:
   a. Wood frame walls must be dry, clean, sound, well nailed, free of voids, and without offsets at joints.
   b. Ensure that nail heads are driven flush with surfaces in opening and within 3" (76.2 mm) of opening.
7. Metal Surfaces:
   a. Metal surfaces must be dry and clean (free of grease, oil, dirt, rust, corrosion, and welding slag).
   b. Ensure that metal surfaces are without sharp edges or offsets at joints.

B. Proceed with installation only after correcting unsatisfactory conditions.

3.2 INSTALLATION

A. Comply with drawings, shop drawings, and manufacturer's written instructions for installing sliding aluminum-framed glass doors, hardware, accessories, and other components.

B. Install sliding aluminum-framed glass doors so that the doors:
1. Are level, plumb, square, and true to line
2. Are without distortion and do not impede thermal movement
3. Are anchored securely in place to structural support
4. Are 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 and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 FIELD QUALITY CONTROL

A. Field Tests:
1. Architect shall select sliding aluminum framed glass door units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured.
2. Conduct tests for air infiltration and water penetration with manufacturer’s representative present.
3. Tests that do not meet the specified performance requirements and units that have deficiencies shall be corrected as part of the contract amount.
4. Testing shall be performed per AAMA 502 by a qualified independent testing agency. Refer to Testing Section for payment of testing and testing requirements.

5. Air Infiltration Tests:
   a. Conduct tests in accordance with ASTM E 783.
   b. AW rating: Test shall be conducted at a minimum uniform static pressure of 6.2 psf (300 Pa). The maximum allowable rates of air infiltration for field testing shall not exceed 1.5 times the project specifications
6. Water Infiltration Tests:
   a. Conduct tests in accordance with ASTM E 1105.
   b. No uncontrolled water infiltration is permitted when tested at a static test pressure equal to two-thirds of the tested laboratory performance test pressure.

B. Manufacturer's Field Services:
   1. Upon owner’s written request, provide periodic site visit by manufacturer’s field service representative.

PART 4 ADJUSTING, CLEANING, AND PROTECTION

A. Adjusting:
   1. Adjust operating door panels, screens, hardware, and accessories for tight fit at contact points and weather stripping for smooth operation and weather tight closure.
   2. Lubricate hardware and moving parts.

B. Cleaning:
   1. Avoid damaging protective coatings and finishes.
   2. Clean glass and aluminum surfaces of product immediately after installation.
   3. Comply with glass manufacturer's written recommendations for final cleaning and maintenance.
   4. Remove non-permanent labels and clean surfaces.
   5. Remove excess sealants, glazing materials, dirt, and other substances.
   6. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.
   7. Remove construction debris from project site and legally dispose of debris.

C. Protection:
   1. Protect installed product’s finish surfaces from damage during construction.

END OF SECTION 083213

NOTES AND DISCLAIMERS

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

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

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