

## 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 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 Aluminum Entrances, including glass and glazing, door hardware, and components.
- B. Types of Kawneer Aluminum Entrances include:
  - 1. NX-8900 Terrace Doors:
    - a. Dimensions and applications:
      - 1) Frame Depth: 3-1/4" (82.5 mm) or 4-5/8" (117.5 mm)
      - 2) Moderate traffic applications
    - b. NX-8910 Single Door (Outswing):
      - 1) AW-PG50-ATD - Single (Standard Sill)
      - 2) ATD-HC45 - Pair (Standard Sill)
      - 3) ATD-PG45 - Single (Low-profile Sill)
      - 4) 2-3/4" (69.8 mm) depth
    - c. NX-8920 Single Door (Inswing):
      - 1) AW-PG50-ATD - Single (Standard Sill)
      - 2) 2-3/4" (69.8 mm) depth
  - 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. 083213: Sliding Aluminum-Framed Glass Doors
- 4. 084313: Aluminum-Framed Storefronts

5. 084329: Sliding Storefronts
6. 084413: Glazed Aluminum Curtain Walls
7. 085113: Aluminum Windows
8. 086300: Metal-Framed Skylights
9. 087000: Hardware
10. 088000: Glazing
11. 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. Glazed aluminum terrace doors shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Provide aluminum terrace doors of performance indicated that comply with AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS).
- C. Air Leakage:
1. For outswing and inswing doors in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 6.2 psf (300 Pa).
  2. Entrance doors and frame shall not exceed 0.10 cfm/ft<sup>2</sup> (Inswing), 0.10 cfm/ft<sup>2</sup> (Outswing).
- D. Water Resistance:
1. In the closed and locked position, the test specimen shall be tested in accordance with ASTM E 331 and ASTM E 547.
  2. There shall be no uncontrolled leakage as defined in the test method at a static air pressure differential of:
    - a. NX-8910 Terrace Doors (Outswing).
      - 1) AW-PG50-ATD Single (Standard Sill) 10 psf (480 Pa).
      - 2) ATD-HC45 Pair (Standard Sill) 9.2 psf (440 Pa).
      - 3) ATD-HC45 Single (Low-profile Sill) 9.2 psf (440 Pa).
    - b. NX-8920 Terrace Doors (Inswing).
      - 1) AW-PG50-ATD Single (Standard Sill) 10 psf (480 Pa).
- E. Uniform Load Structural:
1. In the closed and locked position, the test specimen shall be tested in accordance with ASTM E 330 at a minimum static air design pressure of:
    - a. NX-8910 Terrace Doors (Outswing).
      - 1) AW-PG50-ATD Single (Standard Sill) 50 psf (2394 Pa) applied in a positive and negative direction.

- 2) ATD-HC45 Pair (Standard Sill) 45 psf (2155 Pa) applied in a positive and negative direction.
    - 3) ATD-HC45 Single (Low-profile Sill) 45 psf (2155 Pa) applied in a positive and negative direction.
  - b. NX-8920 Terrace Doors (Inswing).
    - 1) AW-PG50-ATD Single (Standard Sill) 50 psf (2394 Pa) applied in a positive and negative direction.
- F. Structural-Test Performance:
  - 1. In the closed and locked position, the test specimen shall be tested in accordance with ASTM E 330 at a minimum static air design pressure of:
    - a. NX-8910 Terrace Doors (Outswing).
      - 1) AW-PG50-ATD Single (Standard Sill) 75 psf (3591 Pa) (1.5 x design load) applied in a positive and negative direction.
      - 2) ATD-HC45 Pair (Standard Sill) 67.5 psf (3232 Pa) (1.5 x design load) applied in a positive and negative direction.
      - 3) ATD-HC45 Single (Low-profile Sill) 67.5 psf (3232 Pa) (1.5 x design load) applied in a positive and negative direction.
    - b. NX-8920 Terrace Doors (Inswing).
      - 1) AW-PG50-ATD Single (Standard Sill) 75 psf (3591 Pa) (1.5 x design load) applied in a positive and negative direction.
- G. Energy Efficiency:
  - 1. Thermal transmittance (U-factor):
    - a. Thermal transmittance test results in accordance with AAMA 1503 are based upon 1" (25.4 mm) clear insulating glass, consisting of two (2) lites double strength (average thickness 0.12") tempered glass and one (1) layer of film (measuring 0.003") and two (2) argon-filled spaces created by a steel spacer system. HM 88 Low-E coating applied to glazing surface #3. A Solarban 60 Low-E coating on surface #5.
    - b. When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than 0.42 Btu/(hr/ft<sup>2</sup>·°F).
  - 2. Condensation Resistance Factor (CRF):
    - a. Thermal transmittance test results in accordance with AAMA 1503 are based upon 1" (25.4 mm) clear insulating glass, consisting of two (2) lites double strength (average thickness 0.12") tempered glass and one (1) layer of film (measuring 0.003") and two (2) argon-filled spaces created by a steel spacer system. HM 88 Low-E coating applied to glazing surface #3. A Solarban 60 Low-E coating on surface #5.
    - b. When tested to AAMA Specification 1503, the CRF shall not be less than 60<sub>frame</sub> and 78<sub>glass</sub>.
- H. Forced Entry:
  - 1. Terrace Doors shall conform to ASTM F588, Grade 10.

## 1.5 SUBMITTALS

### A. Product Data:

1. For each type of aluminum-framed entrance door indicated, include:
  - a. Construction details
  - b. Material descriptions
  - c. Fabrication methods
  - d. Dimensions of individual components and profiles
  - e. Hardware
  - f. Finishes
  - g. 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 40% 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 an Aluminum Extrusions EPD.

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 aluminum terrace door and frame system and required components.
- E. Product Test Reports:
  1. Provide test reports for each type of aluminum-framed entrance door used in the project.
  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. Fabrication Sample:
  1. Provide a fabrication sample of a corner, consisting of a door stile and rail and using full-size components that show details of the following:
    - a. Glazing
- G. Terrace Door Hardware Schedule:
  1. Schedule shall be prepared by or under the supervision of supplier.
  2. Schedule shall detail fabrication and assembly of terrace door hardware, including procedures and diagrams.
  3. Coordinate final terrace 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:
  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 aluminum terrace doors and frames 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 aluminum terrace doors and frames through one source from a single manufacturer.
- D. Product Options:
  1. Drawings indicate size, profiles, and dimensional requirements of aluminum terrace doors and frames 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 mockup for the type(s) of terrace door(s) and frame(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 aluminum terrace door and frame 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.
2. NX-8900 Terrace Doors
  - a. NX-8910 Terrace Doors (Outswing)
  - b. NX-8920 Terrace Doors (Inswing)
  - c. Entrance Member Profile: 4-1/8" (104.7 mm) nominal face dimension, 2-3/4" (69.8) depth.
  - d. Moderate traffic applications
  - e. Frame Depth: 3-1/4" (82.5 mm) or 4-5/8" (117.5 mm)

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 terrace door and frame system performance criteria, and (2) has been engaged in the design, manufacture, and fabrication of aluminum terrace doors and frames 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 (Terrace Door and Components):
1. Alloy and temper recommended by manufacturer for type of use and finish indicated.
  2. Complies with Extruded Material Standard ASTM B 221: 6063-T6 alloy and temper.
  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 40% 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. Glazing Gaskets/Setting Blocks:

1. Manufacturer's standard glazing system of black, resilient glazing gaskets, setting blocks, and shims or spacers, fabricated from an elastomer of type and in hardness recommended by system and gasket manufacturer to comply with system performance requirements.
- C. Fasteners:
  1. Where exposed, fasteners shall be 300 series stainless steel.
- D. Weather-stripping:
  1. Hollow black thermoplastic elastomer (TPE) bulb gasket with rigid polypropylene backing.
- E. Thermal Barrier:
  1. Shall be two continuous rows of polyamide glass reinforced 6/6 nylon at door rails, door stiles and frame.

## 2.3 TERRACE DOOR FRAMING SYSTEM

- A. 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.
- B. Perimeter Anchors:
  1. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- C. Packing, Shipping, Handling, and Unloading:
  1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. 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. Glass and Glazing Materials:
  1. Refer to Division 08 Glazing Section for glass units and glazing requirements applicable to glazed aluminum terrace door units.
- B. Glazing System:
  1. Glazing method shall be a type in accordance with manufacturer's standards.
  2. Glazing shall be snap-in type glazing beads with a gasket in accordance with AAMA 702 or ASTM C864.



## 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 secure aluminum terrace doors and frames.

### B. Standard Hardware:

**EDITOR NOTE:** Revise below for specific hardware for each specific entrance type. To ensure single source responsibility and timely coordination, the Kawneer Company recommends that you include finish hardware requirements in this section. If these requirements must be furnished under the "Finish Hardware" section of the specifications, the following statement should be included: "The finish hardware supplier shall be responsible for furnishing physical hardware to the entrance manufacturer prior to fabrication, and for coordinating hardware delivery requirements with the hardware manufacturer, the general contractor and the entrance manufacturer to ensure the building project is not delayed".

1. Provide heavy-duty hardware units indicated in sizes, number and type recommended by manufacturer for indicated entrances.
2. Finish exposed parts to match door finish, unless otherwise indicated.
3. Threshold:
  - a. Aluminum. Finish to match door and frame.
  - b. Optional, thermal low-profile sill.
4. Butt Hinge:
  - a. Provide manufacturer's standard mortised, top, bottom and intermediate aluminum 3-way adjustable butt hinges.
5. Door Control:
  - a. Comply with manufacturer's recommendations for closer size depending on door size, exposure to weather, anticipated frequency of use, and accessibility requirements.
  - b. Overhead door stop shall be stainless steel with rubber bumper door check mounted in the top rail of the door leaf.
6. Locking Hardware:
  - a. Singles (Outswing or Inswing):
    - 1) Active Leaf: Stainless steel multipoint locking gearbox consisting of roundbolts, latch lock, and dead bolt activated by a lever handle.
    - 2) Active Leaf: Optional Stainless steel 5-point locking gearbox consisting of roundbolts, latch lock, dead bolt, and shootbolts activated by a lever handle.
  - b. Pairs (Outswing or Inswing):
    - 1) Active Leaf: Stainless steel multipoint locking gearbox consisting of roundbolts, latch lock, and dead bolt activated by a lever handle.
    - 2) Inactive Leaf: Dummy handle with manual flushbolts into aluminum flushbolt keeper.
7. Trim Sets:
  - a. Hoppe solid brass lever handle with escutcheon.
    - 1) Rodos Style

- 2) Verona Style
  - 3) Munchen Style
  - 4) New Orleans Style
  - 5) Toronto Style
- b. Keyed cylinder and thumbturn included.
  - 1) Singles:
    - a) Key exterior / thumbturn interior.
  - 2) Pairs:
    - a) Active Leaf: Key exterior / thumbturn interior
    - b) Active Leaf: Blank exterior / thumbturn interior
    - c) Inactive leaf: Blank exterior / thumbturn interior
8. Trim Set Finish:
  - a. Polished Brass
  - b. Satin Nickle
  - c. Antique Brass
  - d. Oil-Rubbed Brass
  - e. Matte Black
  - f. Polished Chrome
  - g. Pure White

## 2.6 FABRICATION

- A. Entrance system fabrication requirements:
  1. Door corner construction shall be neatly mitered and reinforced with heavy-duty aluminum corner blocks forming a rigid watertight joint.
  2. Corners shall be crimped.
  3. Accurately fit and secure joints and corners.
  4. Make joints hairline in appearance.
  5. Arrange fasteners and attachments to conceal from view.

## 2.7 ALUMINUM FINISHES

- 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 Permادize® (50% PVDF), AAMA 2604, Fluoropolymer Coating (Color \_\_\_\_\_)
6. 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 aluminum terrace doors and frames, hardware, accessories, and other components.
- B. Install aluminum terrace doors and frames so that the doors and frames:
  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 the sill threshold in a bed of sealant, as indicated, for weathertight 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. Field Tests:

1. Architect shall select aluminum-framed terrace 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. Shall meet a minimum uniform static test pressure of 1.6 psf (75 Pa).
  - c. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements.
6. Water Infiltration Tests:
  - a. Conduct tests in accordance with ASTM E 1105.
  - b. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure.

#### B. Manufacturer's Field Services:

1. Upon owner's written request, provide periodic site visit by manufacturer's field service representative.

### 3.4 ADJUSTING, CLEANING, AND PROTECTION

#### A. Adjusting: Not applicable.

#### 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 084113

## 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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