

SECTION 084116 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) Project Resource Manual ("Manual of Practice"), including the recommendations for the CSI 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 nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 - GENERAL

1.1 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 Aluminum Entrances, glass and glazing, and door hardware and components.
 - 1. Types of Kawneer Aluminum Entrances include:
 - a. NX-8910 Terrace Doors (Outswing) 2-3/4" (69.8) depth, moderate traffic applications.
 - 1) AW-PG50-ATD – Single (Standard Sill).
 - 2) ATD-HC45 – Pair (Standard Sill).
 - 3) ATD-HC45 – Single (Low-profile Sill).
 - b. NX-8920 Terrace Doors (Inswing) 2-3/4" (69.8) depth, moderate traffic applications.
 - 1) AW-PG50-ATD – Single (Standard Sill).
 - c. 3-1/4" (82.5) or 4-5/8" (117.5) frame depth.

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: Comply with performance requirements specified, as determined by testing of glazed terrace doors representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Terrace Door Entrance Performance Requirements:
 - 1. Provide aluminum terrace doors of performance indicated that comply with AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS).
 - 2. Performance Class and Grade: AW-PG50-ATD.

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

- C. Air Infiltration: Outswing and Inswing Doors: When closed and locked, the test specimen shall be tested in accordance with ASTM E 283 entrance doors and frame shall not exceed 0.10 cfm/ft² (Inswing), 0.40 cfm/ft² (Outswing) at a pressure differential of 6.24 psf (300 Pa).
- D. Water Resistance: When closed and locked, the test specimen shall be tested in accordance with ASTM E 331 and ASTM E 547 there shall be no uncontrolled leakage as defined in the test method at a static air pressure differential of 15 psf (720 Pa) (Outswing - Standard Sill), 12 psf (574 Pa) (Outswing - Low-profile Sill), 12 psf (574 Pa) (Inswing - Standard Sill).
- E. Uniform Design Load Test: When closed and locked, the test specimen shall be tested in accordance with ASTM E 330 at a minimum static air design pressure of:
1. NX-8910 Terrace Doors (Outswing).
 - a. AW-PG50-ATD - Single (Standard Sill) 50 psf (2394 Pa) applied in a positive and negative direction.
 - b. ATD-HC45 - Pair (Standard Sill) 45 psf (2155 Pa) applied in a positive and negative direction.
 - c. ATD-HC45 - Single (Low-profile Sill) 45 psf (2155 Pa) applied in a positive and negative direction..
 2. NX-8920 Terrace Doors (Inswing).
 - a. AW-PG50-ATD - Single (Standard Sill) 50 psf (2394 Pa) applied in a positive and negative direction.
- F. Uniform Load Structural Test: When closed and locked, the test specimen shall be tested in accordance with ASTM E 330 at a minimum static air design pressure of:
1. NX-8910 Terrace Doors (Outswing).
 - a. AW-PG50-ATD - Single (Standard Sill) 75 psf (3591 Pa) (1.5 x design load) applied in a positive and negative direction.
 - b. ATD-HC45 - Pair (Standard Sill) 67.5 psf (3232 Pa) (1.5 x design load) applied in a positive and negative direction.
 - c. ATD-HC45 - Single (Low-profile Sill) 67.5 psf (3232 Pa) (1.5 x design load) applied in a positive and negative direction.
 2. NX-8920 Terrace Doors (Inswing).
 - a. AW-PG50-ATD - Single (Standard Sill) 75 psf (3591 Pa) (1.5 x design load) applied in a positive and negative direction.
- EDITOR NOTE: THERMAL TRANSMITTANCE, CONDENSATION RESISTANCE, AND CONDENSATION INDEX VALUES ARE BASED ON 1" CLEAR INSULATING GLASS (1/8" Low-E GLASS / 3/4" ARGON AIR SPACE / 1/8" Low-E GLASS).**
- G. Thermal Transmittance Test (U-Factor): When tested in accordance with AAMA 1503, the conductive thermal transmittance (U-Factor) shall not be more than 0.42 BTU/hr/ft²/F.
- H. Condensation Resistance Test (CRF): When tested in accordance with AAMA 1503, the condensation resistance factor (CRF) shall not be less than 60_{frame}, 78_{glass}.
- I. Acoustical Performance: When tested to AAMA Specification 1801 and in accordance with ASTM E 1425 the STC (Sound Transmission Class) Rating shall not be less than 36, and the OITC (Outside Inside Transmission Class) shall not be less than 30.
- J. Forced Entry Resistance: Terrace Doors shall conform to ASTM F588, Grade 10.

1.5 Submittals

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum terrace door and frame system indicated.
- 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 terrace door and frame system and components required.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type, of aluminum terrace door and frame.
- F. Fabrication Sample: Corner sample consisting of a door stile and rail, of full-size components and showing details of the following:
1. Joinery, showing mitered, clip and stake joint construction.
 2. Glazing.
- G. Other Action Submittals:
1. Terrace Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of terrace door hardware, as well as procedures and diagrams. Coordinate final terrace door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of terrace 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 terrace doors and frames that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.
- C. **Source Limitations:** Obtain aluminum terrace doors and frames through one source from a single manufacturer.
- D. **Product Options:** 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 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 terrace door(s) and frame(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 terrace door and frame 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. NX-8910 Terrace Doors – Outswing.
 - 3. NX-8920 Terrace Door – Inswing.
 - 4. Entrance Member Profile: 4.125" (104.7) nominal face dimension, 2-3/4" (69.8) depth, moderate traffic applications.
 - 5. 3-1/4" (82.5) or 4-5/8" (117.5) frame depth.

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 terrace door and frame 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 terrace door and frame system performance criteria, and (2) has been engaged in the design, manufacturer and fabrication of aluminum terrace doors and frames 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 (Terrace Door and Components): Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with the requirements of standards indicated below.
 - 1. Extruded Material Standard: ASTM B 221, 6063-T6 alloy and temper.
- B. Glazing Gaskets / Setting Blocks: 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: Where exposed, shall be 300 Series, Stainless Steel.
- D. Weather Stripping: Hollow black thermoplastic elastomer (TPE) bulb gasket with rigid polypropylene backing.
- E. Thermal Barrier: 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: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.
- B. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- C. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle terrace door and frame material, and components to avoid damage. Protect terrace door and frame material against damage from elements, construction activities, and other hazards before, during and after terrace door and frame installation.

2.4 Glazing

- A. Glass and Glazing Materials: Refer to Division 08 Section "Glazing" for glass units and glazing requirements applicable to glazed aluminum window units.
- B. Glazing System: Glazing method shall be a wet/dry type in accordance with manufacturer's standards. Glazing shall be silicone back bedding sealant and snap-in type glazing beads with a 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 secure aluminum terrace doors and frames.
- B. Standard Entrance Hardware: Provide heavy-duty hardware units indicated in sizes, number and type recommended by manufacturer for entrances indicated. Finish exposed parts to match door finish, unless otherwise indicated.
- C. Hinges:
 - 1. Butt Hinges: Provide manufacturer's standard mortised, top, bottom and intermediate aluminum 3-way adjustable butt hinges.

EDITOR NOTE: SELECT FROM BELOW IF REQUIRED.

- D. Door Control:
 - 1. Overhead Door Stop: Shall be stainless steel with rubber bumper door check mounted in the top rail of the door leaf.
- E. Standard Locking Hardware:
 - 1. Singles (Outswing or Inswing):
 - Active Leaf: Stainless steel multipoint locking gearbox consisting of roundbolts, latch lock, and dead bolt activated by a lever handle.
 - a. Optional: Stainless steel 5-point locking gearbox consisting of roundbolts, latch lock, dead bolt, and shootbolts activated by a lever handle.
 - 2. Pairs (Outswing or Inswing):
 - Active Leaf: Stainless steel multipoint locking gearbox consisting of roundbolts, latch lock and dead bolt activated by a lever handle.
 - Inactive Leaf: Dummy handle with manual flushbolts into aluminum flushbolt keepers.

EDITOR NOTE: SELECT FROM BELOW.

- F. Trim Sets:
 - 1. Hoppe solid brass lever handle with escutcheon.
 - a. Rodos Style

- b. Verona Style
- c. Munchen Style
- d. New Orleans Style
- e. Toronto Style
- 2. Keyed cylinder and thumbturn included:
 - a. Singles: Key exterior / thumbturn interior.
 - b. Pairs: Active leaf - key exterior / thumbturn interior, or
Active leaf - blank exterior / thumbturn interior.
Inactive leaf - blank exterior / thumbturn interior.

EDITOR NOTE: SELECT FROM BELOW.

- G. Trim Set Finish:
 - 1. Polished Brass.
 - 2. Satin Nickle
 - 3. Antique Brass
 - 4. Oil-Rubbed Brass
 - 5. Matte Black
 - 6. Polished Chrome
 - 7. Pure White
- H. Thresholds: Provide manufacturer's standard thermally broken threshold, cutouts coordinated for operating hardware, and anchors in the following material.
 - 1. Material: Aluminum, finish to match door and frame.

2.6 Fabrication

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

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 / AA-M45C22A44, AAMA 611, Architectural Class I Color Anodic Coating (Color _____).
 - 2. Kawneer Permanodic™ AA-M10C21A41 / AA-M45C22A41, 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 terrace door and frame 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 terrace doors and frames, hardware, accessories, and other components.

- B. Install aluminum terrace doors and frames 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 terrace doors and frames. 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