

## SECTION 084413 - GLAZED ALUMINUM CURTAIN WALLS

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 Architectural Aluminum Curtain Wall Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of curtain wall units.
  - 1. Types of Kawneer Curtain Wall and Glazed Assemblies include:
    - a. 1630 SS IR Curtain Wall System: (Hurricane Impact and Blast Mitigation) - 3" x 7-13/16" (76.2 mm x 198.4 mm) or 8-13/16" (76.2 mm x 223.8 mm), outside glazed pressure plate format, with 1-5/16" (33.3 mm) laminated insulating glass.

*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 SOURCE QUALITY CONTROL.*

- B. Related Sections:
  - 1. 072700 "Air Barriers"
  - 2. 079200 "Joint Sealants"
  - 3. 083213 "Sliding Aluminum-Framed Glass Doors"
  - 4. 084113 "Aluminum-Framed Entrances and Storefronts"
  - 5. 084313 "Aluminum-Framed Storefronts"
  - 6. 084329 "Sliding Storefronts"
  - 7. 084433 "Sloped Glazing Assemblies"
  - 8. 085113 "Aluminum Windows"
  - 9. 086300 "Metal-Framed Skylights"
  - 10. 088000 "Glazing"
  - 11. 122600 "Interior Daylighting Devices"

#### 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

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

- A. General Performance: Comply with performance requirements specified, as determined by testing of glazed aluminum curtain walls representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
  - 1. Glazed aluminum curtain walls shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads. Failure also includes the following:
    - a. Thermal stresses transferring to building structure.
    - b. Glass breakage.
    - c. Loosening or weakening of fasteners, attachments, and other components.
    - d. Failure of operating units.
- B. Delegated Design: Design glazed aluminum curtain walls, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

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

- C. Wind loads: Provide Curtain Wall system; include anchorage, capable of withstanding wind load design pressures of (\_\_\_\_) lbs./sq. ft. or (\_\_\_\_)Pa, inward and (\_\_\_\_) lbs./sq. ft. or (\_\_\_\_)Pa, outward. The design pressures are based on the (\_\_\_\_) Building Code; (\_\_\_\_) Edition.

- D. Air Leakage: Maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq.ft. (0.31 l/s.m<sup>2</sup>) of fixed wall area as determined according to ASTM E 283 and TAS 202 at a minimum static-air-pressure differential of 6.24 psf (300 Pa).
- E. Water Penetration under Static Pressure: No evidence of water penetration through fixed glazing and framing areas when tested according to ASTM E 331 and TAS 202 at 15psf (720 Pa).
- F. Water Penetration under Dynamic Pressure: No evidence of water penetration through fixed glazing and framing areas when tested according to AAMA 501.1 at dynamic pressure equal to 15psf (720 Pa).
1. Maximum Water Leakage: [According to AAMA 501.1] [No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation]. Water leakage does not include water controlled by flashing and gutters that is drained to exterior.
- G. Structural-Test Performance: Test according to ASTM E 330 and TAS 202 as follows:
1. When tested at positive and negative wind load design pressures, assemblies do not evidence deflection exceeding L/180 of clear span.
  2. A static air design load of 130 psf (6224.4 Pa) shall be applied in the positive and negative direction.
    - a. When tested at 150% of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2% percent of clear span.
    - b. Minimum test duration according to TAS 202 is 30 seconds.
- H. Deflection of Framing Members: At design wind pressure, as follows:
1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane not exceeding L/180 of the glass edge length for each individual glazing lite, or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19 mm), whichever is less. Limit deflection of clear span of framing members to L/180 for spans less than or equal to 13'-6" (4.11 meters) and L/240 + 1/4" (6.4 mm) for spans greater than 13'-6" (4.11 meters).
  2. Deflection Parallel to Glazing Plane: Limited to [L/360 of clear span or 1/8" (3.2 mm), whichever is smaller] [amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8" (3.2 mm)].
    - a. Operable Units: Provide a minimum 1/16" (1.6 mm) clearance between framing members and operable units.
  3. Cantilever Deflection: Where framing members overhang an anchor point, limit deflection to two times the length of cantilevered member, divided by 175.
- I. Thermal Movements: Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures:
1. Temperature Change (Range): 0 F (-18 C); 180 F (82 C).
  2. Test Interior Ambient-Air Temperature: [75 F (24 C)].
  3. Test Performance: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5 for a minimum 3 cycles.
- EDITOR NOTE: REFER TO THERMAL TRANSMITTANCE CHARTS IN THE ARCHITECTURAL DETAIL MANUAL IN ACCORDANCE WITH AAMA 507 FOR PROJECT-SPECIFIC U-FACTORS, SOLAR HEAT GAIN COEFFICIENT (SHGC), AND VISIBLE TRANSMITTANCE (VT). REFER TO THERMAL PERFORMANCE MATRIX FOR NFRC VALUES.**
- EDITOR NOTE: THIS DOCUMENT CONTAINS TWO THERMAL TRANSMITTANCE SECTIONS. RETAIN THE ONE THAT APPLIES TO YOUR PROJECT AND DELETE THE OTHER.**
- J. Thermal Transmittance (U-factor), Physical Test:
1. Thermal transmittance test results in accordance with AAMA 1503 or CSA A440 are based upon 1630 SS IR Curtain Wall System 1-5/16" (33.3 mm) low emissivity coated glass.
  2. When tested using AAMA 1503, the thermal transmittance (U-factor) shall not be more than 0.44 Btu/hr/(hr·ft<sup>2</sup>·°F).
- EDITOR NOTE: REFER TO THERMAL TRANSMITTANCE CHARTS IN THE ARCHITECTURAL DETAIL MANUAL IN ACCORDANCE WITH AAMA 507 FOR PROJECT-SPECIFIC U-FACTORS, SOLAR HEAT GAIN COEFFICIENT (SHGC), AND VISIBLE TRANSMITTANCE (VT). REFER TO THERMAL PERFORMANCE MATRIX FOR NFRC VALUES.**
- EDITOR NOTE: THIS DOCUMENT CONTAINS TWO THERMAL TRANSMITTANCE SECTIONS. RETAIN THE ONE THAT APPLIES TO YOUR PROJECT AND DELETE THE OTHER.**
- K. Thermal Transmittance (U-factor), Simulated:
1. Thermal transmittance simulation results using NFRC 100 or AAMA 507 are based on a Center of Glass (COG) U-factor of 0.24 Btu/(hr·ft<sup>2</sup>·°F) and a warm-edge spacer.
  2. When simulated using NFRC 100 or AAMA 507, the U-factor shall not be more than 0.37 Btu/(hr·ft<sup>2</sup>·°F) or project specific (\_\_\_\_) Btu/(hr·ft<sup>2</sup>·°F) per AAMA 507 or (\_\_\_\_) Btu/(hr·ft<sup>2</sup>·°F) per NFRC 100.
- L. Condensation Resistance (CRF) or Temperature Index (TI):
1. Condensation test results in accordance with AAMA 1503 or CSA A440 are based upon 1-5/16" (33.3 mm) low emissivity coated glass.
  2. 1630 SS IR Curtain Wall System using CRF: When tested using AAMA 1503, the CRF<sub>frame</sub> and CRF<sub>glass</sub> shall not be less than 74 and 70 respectively.
  3. 1630 SS IR Curtain Wall System with aluminum pressure plate using TI: When tested to CSA A440-00, the TI<sub>frame</sub> and TI<sub>glass</sub> shall not be less than 67 and 63 respectively.
- M. Solar Heat Gain Coefficient: Glass and framing areas shall have a solar heat gain coefficient of no greater than [0.20] [0.25] [0.30] <Insert value> as determined according to NFRC 200.

- N. Sound Transmission: Provide glazed aluminum curtain walls with fixed glazing and framing areas having the following sound-transmission characteristics:
1. 1630 SS IR:
    - a. (STC = 37) or (OITC = 32) when tested for laboratory sound transmission loss according to AAMA 1801, ASTM E 90 and ASTM E 1425, and based on 1-5/16" (33.3 mm) laminated insulating glass (1/4", 1/2" AS, 1/4").
- O. Windborne-Debris-Impact-Resistance Performance: Shall be tested in accordance with ASTM E 1886 and information in ASTM E 1996 and TAS 201/203.
1. Large – Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade.
  2. Small – Missile Impact: For aluminum-framed systems located above 30 feet (9.1m) of grade.
- P. Blast Mitigation Performance: Shall be tested or proven through analysis to meet ASTM F1642, GSA-TS01, and UFC 04-010.01 performance criteria. To meet UFC 04-010-01, B-3.1 Standard 10 for Windows and Skylights, the following options are available:
1. Section B-3.1.1 Dynamic analysis
  2. Section B-3.1.2 Testing
  3. Section B-3.1.3 ASTM F2248 Design Approach
- Q. Environmental Product Declaration (EPD): Shall have a Type III Product-Specific EPD created from a Product Category Rule.

**EDITOR NOTE: MATERIAL INGREDIENT REPORTING IF REQUIRED TO MEET PROJECT REQUIREMENTS AND ON ANY GREEN BUILDING CERTIFICATIONS SUCH AS LEED OR LBC.**

**EDITOR NOTE: MATERIAL INGREDIENT REPORTING ONLY FOR ANODIZED PRODUCTS.**

- R. Material Ingredient Reporting: Shall have a complete list of chemical ingredients to at least 100ppm (0.01%) that covers 100% of the product, acceptable documentation includes:
1. Manufacturer's inventory with Chemical Abstract Service Registration Number (CASRN or CAS#).
  - a. Kawneer's Material Transparency Summary (MTS).

## 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: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
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.

**EDITOR NOTE: MATERIAL INGREDIENT REPORTING ONLY FOR ANODIZED PRODUCTS.**

3. Material Ingredient Reporting:
    - a. Include documentation for material reporting that has a complete list of chemical ingredients to at least 100ppm (0.01%) that covers 100% of the product.
- B. Shop Drawings: For glazed aluminum curtain walls. Include plans, elevations, sections, full-size details, and attachments to other work.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified preconstruction testing agency, for glazed aluminum curtain walls, indicating compliance with performance requirements.
- F. Fabrication Sample: Of each vertical-to-horizontal intersection of aluminum-framed curtain wall systems, made from 12" (300 mm) lengths of full-size components and showing details of the following:
1. Joinery
  2. Glazing

**1.6 Quality Assurance**

- A. Installer Qualifications: Installer who has had successful experience with installation of the same or similar systems required for the project and other projects of similar size and scope.
- B. Manufacturer Qualifications: A manufacturer capable of fabricating glazed aluminum curtain walls that meet or exceed performance requirements.
- C. Source Limitations: Obtain aluminum curtain wall system through one source from a single manufacturer.
- D. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
  - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If revisions 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 mockups for type(s) of curtain wall elevation(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 locations of structural supports for glazed aluminum curtain walls by field measurements before fabrication and indicate 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**

*EDITOR'S NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS, AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAUSES AMBIGUITY IN THE SPECIFICATIONS BECAUSE OF THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY, AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."*

**2.1 Manufacturers**

- A. Basis-of-Design Product:
  - 1. Kawneer Company Inc.
  - 2. 1630 SS IR Curtain Wall System: 3" (76.2 mm) sightline.
  - 3. Frame depth options:
    - a. Hurricane Impact and Blast Mitigation: 7-13/16" (198.4 mm) and 8-13/16" (223.8 mm) with 1-5/16" (33.3 mm) Laminated Insulating Glass.
  - 4. Tested to AAMA 501-05 and ASTM E 1886, E 1996 and TAS 201, 202, 203.

*EDITOR'S NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY), AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH KAWNEER COMPANY FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. KAWNEER RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL MUST SUBMIT THEIR REQUEST IN WRITING (10) DAYS PRIOR TO CLOSE OF BIDDING.*

- B. Subject to compliance with requirements, provide a comparable product by the following:
  - 1. Manufacturer: ( )
  - 2. Series: ( )
  - 3. Profile dimension: ( )
- 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 curtain wall 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 curtain wall system performance criteria, and (2) has been engaged in the design, manufacturer and fabrication of aluminum curtain walls 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.

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.  
© 2013, Kawneer Company, Inc.

## 2.2 Materials

- A. Aluminum Extrusions: Alloy and temper recommended by glazed aluminum curtain wall 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 complying with ASTM B 221: 6063-T6 alloy and temper.

**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.**

1. Recycled Content: Shall have a minimum of 50% mixed pre- and post-consumer recycled content.
  - a. Indicate recycled content; indicate percentage of pre-consumer and post-consumer recycled content per unit of product.
  - b. Indicate relative dollar value of recycled content product to total dollar value of product included in project.
  - c. Indicate location recovery of recycled content.
  - d. Indicate location of manufacturing facility.
- B. Aluminum sheet alloy: Shall meet the requirements of ASTM B209.
- C. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum window members, trim hardware, anchors, and other components.
- D. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- E. Pressure Plate: Pressure plate shall be aluminum and fastened to the mullion with stainless steel screws.
- F. 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.
- G. Sealant: For sealants required within fabricated curtain wall system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.
- H. Thermal Barrier: Thermal barrier consists of 9/16" (14.25 mm) separation between the interior and exterior metal members in a typical condition.
- I. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of glazed curtain wall members are nominal and in compliance with AA Aluminum Standards and Data.

**EDITOR NOTE: RED LIST FREE ONLY FOR ANODIZED PRODUCTS.**

- J. Red List Free: All parts and materials comply with the Living Building Challenge/DECLARE Red List and the Cradle-to-Cradle (C2C) Banned List.
  1. PVC free.
  2. Neoprene free.OR
- K. Red List Free: Product does not contain PVC or Neoprene.

## 2.3 Curtain Wall Framing

- A. Framing Members: Manufacturer's standard extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
  1. Glazing System: 4 sided captured.
  2. Glazing Plane: Front.
- B. Glass: 1-5/16" (33.3 mm) laminated insulating glass for vision and Spandrel applications.
- C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- D. Framing Sealants: Shall be suitable for glazed aluminum curtain wall as recommended by sealant manufacturer.
- E. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.
- F. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- G. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- H. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle curtain wall material and components to avoid damage. Protect curtain wall material against damage from elements, construction activities, and other hazards before, during and after installation.

**2.4 Glazing**

- A. Glazing: Comply with Division 08 Section "Glazing". Following glazing options are available.
  - 1. 1630 SS IR Curtain Wall: Outside glazed pressure plate format with 1-5/16" (33.3 mm) laminated insulating glass.
  - 2. 1630 SS IR Curtain Wall Blast Mitigation: Outside glazed pressure plate format with 1" (25.4 mm) laminated insulating glass.
- B. Glazing Gaskets: Gaskets to meet the requirements of ASTM C864.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
- D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.
- E. Glazing Sealants: As recommended by manufacturer for joint type.

**2.5 Operable Units**

- A. Doors: Comply with Division 08 Section "Aluminum-Framed Entrances and Storefronts".
- B. Windows: Comply with Division 08 Section "Aluminum Windows".

**2.6 Accessory Materials**

- A. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil (0.762 mm) thickness per coat.
- B. Versoleil® SunShade: An aluminum sunshade (consisting of outriggers, louvers, and fascia which may be selected from standard configurations, modified configurations, or customized) that is anchored directly to the vertical curtain wall mullions. Anchors shall be painted (Select from Kawneer's standard paints and colors. Custom colors are available upon request.). Louvers and fascia shall be painted or anodized (Select from Kawneer's standard paints and colors, custom colors are available upon request, or Kawneer's anodized finishes.).

**2.7 Fabrication**

- A. Form or extrude aluminum shapes before finishing.
- B. Fabricate components that, when assembled, have the following characteristics:
  - 1. Profiles that are sharp, straight, and free of defects or deformations.
  - 2. Accurately fitted joints.
  - 3. Physical and thermal isolation of glazing from framing members.
  - 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
  - 5. Provisions for field replacement of glazing from exterior.
  - 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
  - 7. Internal weeping system or other means to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.
- C. Curtain Wall Framing: Fabricate components for assembly using screw spline system following manufacturer's standard installation instructions.
- D. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

**2.8 Aluminum Finishes**

**EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM KAWNEER'S STANDARD COLORS. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM THE KAWNEER COMPANY. OTHER PIGMENTED ORGANIC COATINGS CONFORMING TO AAMA 2603 ARE AVAILABLE. CONSULT WITH YOUR KAWNEER REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND 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 \_\_\_\_\_).

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.  
© 2013, Kawneer Company, Inc.

## **PART 3 - EXECUTION**

### **3.1 Examination**

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

*EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.*

### **3.2 Installation**

- A. General:
  - 1. Comply with manufacturer's written instructions.
  - 2. Do not install damaged components.
  - 3. Fit joints to produce hairline joints free of burrs and distortion.
  - 4. Rigidly secure non-movement joints.
  - 5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
  - 6. Weld components in concealed locations to minimize distortion or discoloration of finish. Protect glazing surfaces from welding.
  - 7. Seal joints watertight unless otherwise indicated.
- B. Metal Protection:
  - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
  - 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.
- D. Install components plumb and true in alignment with established lines and grades.
- E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.
- F. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.
- G. Install glazing as specified in Division 08 Section "Glazing."

### **3.3 Field Quality Control**

- A. Field Tests: Architect shall select curtain wall units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.
  - 1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Testing Section for payment of testing and testing requirements.
    - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft<sup>2</sup>, whichever is greater.
    - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 10 psf (479 Pa).
- B. 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. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum curtain wall system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.
- C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

## **END OF SECTION 084413**

**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.

Information contained herein or related hereto is intended only for evaluation by technically skilled persons, with any use thereof to be at their independent discretion and risk. Such information is believed to be reliable, but Kawneer shall have no responsibility or liability for results obtained or damages resulting from such use.

This guide specification is intended to be used by a qualified construction specifier. The guide specification is not intended to be used verbatim as a 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.

Kawneer grants no license under, and shall have no responsibility or liability for infringement of, any patent or other proprietary right. Nothing in this document should be construed as a warranty or guarantee by Kawneer, and the only applicable warranties will be those set forth in Kawneer acknowledgment or in any printed warranty documents issued by Kawneer. The foregoing may be waived or modified only in writing by a Kawneer officer.

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.  
© 2013, Kawneer Company, Inc.