

## SECTION 08441

### ALUMINUM CURTAIN WALL

#### PART 1 GENERAL

##### 1.01 SUMMARY

###### A. Section Includes: Aluminum Curtain Wall Systems:

1. YKK AP Series YHC 300 OG (Outside Glazed – Insulated) Aluminum Curtain Wall System, Impact Rated.
2. Kawneer 1600 IR Wall System (Outside Glazed – Insulated). Impact Rated.

###### B. Related Sections:

1. Sealants: Dow Corning® 995 Structural Silicone Sealant.
2. Glass and Glazing: Refer to Division 8 Glass and Glazing Section for glass and glazing requirements.
3. Single Source Requirement: All products listed below shall be by the same manufacturer.
  - a. See section 08442 for Exterior Storefront.

##### 1.02 SYSTEM PERFORMANCE DESCRIPTION

###### A. General Description: **Curtain Wall System is required to be impact resistant** and must meet Components and Cladding requirements found on the Structural Drawings.

###### B. Performance Requirements: Provide aluminum anodized aluminum finish curtain wall systems that comply with performance requirements indicated, as demonstrated by testing manufacturer's assemblies in accordance with South Florida Building Code Test Protocols TAS 201, TAS 202 and TAS 203.

1. Wind Loads: Completed curtain wall system shall withstand wind pressure loads normal to wall plane indicated:
  - a. Structural Performance:
    - 1) Positive Pressure: 56.7 psf.(worst case scenario)
    - 2) Negative Pressure: -61.5 psf.(worst case scenario)Note: GC to confirm minimum requirements for components and cladding as stated on structural drawings.
2. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E 330-90 with allowable stress in accordance with AA Specifications for Aluminum Structures:
  - a. Without Horizontals: L/175 or 3/4" (19.1mm) maximum.
  - b. With Horizontals: L/175 or L/240 + 1/4" (6.4mm) for spans greater than 13'-6" (4.1m) but less than 40'-0" (12.2m).

3. Thermal Movement: Provide for thermal movement caused by 180 degrees F. (82.2 degrees C.) surface temperature, without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.
  4. Air Infiltration: Completed curtain wall systems shall have 0.01 CFM/FT<sup>2</sup> (0.18 m<sup>3</sup>/h·m<sup>2</sup>) maximum allowable infiltration when tested in accordance with ASTM E 283-91 at differential static pressure of 6.24 PSF (299 Pa).
  5. Water Infiltration: No uncontrolled water, other than condensation, on indoor face of any component when tested in accordance with ASTM E 331-93 at test pressure differential of 20 PSF (958 Pa). Water test to be performed immediately after design pressure test.
  6. Thermal Performance: When tested in accordance with AAMA 1503.1-88 and NFRC 102:
    - a. Condensation Resistance Factor (CRF): A minimum of 71.
    - b. Thermal Transmittance U Value: 0.41 BTU/HR/FT<sup>2</sup>/°F or less.Note: The CRF for the glazed system as a whole will be affected by the characteristics of the glass specified.

### 1.03 SUBMITTALS

- A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples, and similar submittals are defined in "Conditions of the Contract."
- B. Product Data: Submit product data for each type curtain wall series specified. Include Florida Product Approval Documentation.
- C. Substitutions: Whenever substitute products are to be considered, supporting technical data, samples and test reports must be submitted ten (10) working days prior to the bid date to make a valid comparison.
- D. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
- E. Samples: Submit verification samples for colors on actual aluminum substrates indicating full color range expected in installed system.
- F. Quality Assurance / Control Submittals:
  1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics and physical properties.
  2. Installer Qualification Data: Submit installer qualification data.
- G. Closeout Submittals:
  1. Warranty: Submit warranty documents specified herein.
  2. Project Record Documents: Submit project record documents for installed materials in accordance with Division 1 Project Closeout (Project Record Documents) Section.

### 1.04 QUALITY ASSURANCE

- A. Qualifications:
  1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project. If requested by Owner, submit reference list of completed projects.

2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction process.
- B. Mock-Ups (Field Constructed): Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, and workmanship standard.
  1. Mock-Up Size: +/- 6'-0"x10'-0"
  2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
  3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.
- C. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements

#### 1.05 PROJECT CONDITIONS / SITE CONDITIONS

- A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays

#### 1.06 WARRANTY

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.
  1. Beneficiary: Issue warranty in the legal name of the project Owner.
  2. Warranty Period: 10 years commencing on Date of Substantial Completion.
  3. Warranty Acceptance: Owner is sole authority who will determine acceptability.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
  1. Curtain Wall System: YKK AP YHC 300 OG Curtain Wall System.  
YKK AP America Inc.  
7680 The Bluffs, Suite 100  
Austell, GA 30168  
Telephone: (678) 838-6000;  
Fax: (678) 838-6001
  2. Kawneer Aluminum Curtain Wall: 1600IR Wall System.  
Kawneer Company, Inc.  
555 Guthridge Court,  
Technology Park/Atlanta,  
Norcross, GA 30092  
Telephone: (770) 449-5555  
Fax: (770) 734-1560

- B. Curtain Wall Framing System:
  - 1. Description: Framing System shall be thermally improved. Horizontal and vertical members shall have a nominal face dimension of 3 inches, depth as indicated on the shop drawings. The framing system shall provide a flush glazed appearance on all sides with no protruding glass stops.
  - 2. Glazing: Manufacturer's standard silicone compatible EPDM glazing gaskets to inhibit water infiltration at the exterior and Dow Corning® 995 Structural Silicone Sealant with fixed stops at the interior; interior spacers are to be silicone.

## 2.02 MATERIALS

- A. Extrusions: ASTM B 221 (ASTM B 221M), 6063-T5 Aluminum Alloy.
- B. Aluminum Sheet:
  - 1. Anodized Finish: ASTM B 209 (ASTM B 209M), 5005-H14 Aluminum Alloy, 0.050" (1.27 mm) minimum thickness.
  - 2. Painted Finish: ASTM B 209 (ASTM B 209M), 3003-H14 Aluminum Alloy, 0.080" (1.95 mm) minimum thickness. (Not Used)

## 2.03 ACCESSORIES

- A. Manufacturer's Standard Accessories:
  - 1. Fasteners: Zinc plated steel concealed fasteners; Hardened aluminum alloys or AISI 300 series stainless steel fasteners. Joint fasteners may be concealed.
  - 2. Sealant: Non-skinning type, AAMA 803.3
  - 3. Glazing: Setting blocks, edge blocks, and spacers in accordance with ASTM C 864, shore durometer hardness as recommended by manufacturer; exterior glazing silicone compatible EPDM gaskets, in accordance with ASTM C 864, designed to lock into gasket reglet, interior by means of silicone spacer and structural silicone adhesive.
  - 4. Glazing Adhesive: Dow Corning® 995 Structural Silicone.

## 2.04 RELATED MATERIALS (Specified In Other Sections)

- A. Glass: Refer to Division 8 Glass and Glazing Section for glass materials.

## 2.05 FABRICATION

- A. Shop Assembly: Fabricate and assemble units with joints only at intersection of aluminum members with uniform hairline joints; rigidly secure, and sealed in accordance with manufacturer's recommendations.
  - 1. Hardware: Drill and cut to template for hardware. Reinforce frames and door stiles to receive hardware in accordance with manufacturer's recommendations.
  - 2. Welding: Conceal welds on aluminum members in accordance with AWS recommendations or methods recommended by manufacturer. Members showing welding bloom or discoloration on finish or material distortion will be rejected.

## 2.06 FINISHES AND COLORS

- A. Kynar Finish: Anodized Aluminum Finish.

## PART 3 EXECUTION

### 3.01 MANUFACTURER'S INSTRUCTIONS / RECOMMENDATIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, installation instructions, and product carton instructions.

### 3.02 EXAMINATION

- A. Site Verification of Conditions: Verify conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. The Curtain Wall Contractor shall adjust his system to compensate for adjacent elements (steel, CMU, concrete slabs, aluminum panels, etc.). Proper and professional fit and finish are the Curtain Wall Installer's responsibility.

### 3.03 PREPARATION

- A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.

### 3.04 INSTALLATION

- A. General: Install manufacturer's system in accordance with shop drawings, and within specified tolerances.
  1. Protect aluminum members in contact with masonry, steel, concrete, or dissimilar materials using nylon pads or bituminous coating.
  2. Shim and brace aluminum system before anchoring to structure.
  3. Verify curtain wall system allows water entering system to be collected in gutters and wept to exterior. Verify weep holes are open, and metal joints are sealed in accordance with manufacturers installation instructions.
  4. Seal metal to metal curtain wall system joints using sealant recommended by system manufacturer.
  5. Any continuous joints must be uniform throughout the run.
  6. Any joint greater than 1/8" will be rejected without question.

### 3.05 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Upon request, provide manufacturer's field service consisting of site visit for inspection of product installation in accordance with manufacturer's instructions.
- B. Field Test: Conduct field test to determine watertightness of curtain wall system. Conduct test in accordance with AAMA 501.2-03. Issue a short form written report to Architect as to time, conditions, and results of test.

### 3.06 ADJUSTING AND CLEANING

- A. Adjusting: Adjust swing doors for operation in accordance with manufacturer's recommendations.
- B. Cleaning: The General Contractor shall clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance and remove construction debris from project site. Legally dispose of debris.
- C. Protection: The General Contractor shall protect the installed product's finish surfaces from damage during construction.