

SECTION 08520**ALUMINUM WINDOWS****PART 1 - GENERAL**

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and Division 1 Specifications Sections, apply to the work of this Section.

1.02 RELATED WORK

- A. Section 06100 – Rough Carpentry
- B. Section 07900 - Sealants
- C. Section 08800 - Glazing

1.03 REFERENCE STANDARDS

- A. Specifications for Aluminum Windows: AAMA/NWWDA 101/I.S.2-97.
- B. Life Cycle Specifications and Test Methods for Architectural Grade Windows: AAMA 910-93.
- C. Test Methods for Thermal Transmittance and Condensation Resistance: AAMA 1503-98.
- D. Air Infiltration Test: ASTM E283
- E. Water Resistance Test: ASTM E331 and ASTM E547
- F. Uniform Load Deflection Test and Uniform Load Structural Test: ASTM E330.
- G. Care and Handling of Architectural Aluminum: AAMA-10-97
- H. Organic Coatings: AAMA 2605-02
- I. Anodic Coatings: AAMA 611-98

1.04 WORK DESCRIPTION

- A. Provide materials, labor and equipment necessary for complete, in-place and functioning thermally broken, Architectural Grade, projected aluminum windows, complete with mullions, trim, hardware and all accessories as shown on the drawings and specified in this Section.

1.05 QUALITY ASSURANCE

- A. Acceptable Manufacturers: Not less than five (5) years experience in manufacture of aluminum windows of type specified for project.
- B. Erector Qualifications: Not less than five years successful experience in installation of aluminum windows.
- C. Allowable tolerances:
 - 1. Material tolerances:
 - a. Solid extrusions: Minimum nominal metal thickness as required by frame profile and AAMA rating, plus or minus 0.006 inches.
 - b. Hollow extrusions: Minimum nominal metal thickness as required by frame profile and AAMA rating, plus or minus 0.010 inches.
 - 2. Size tolerances: Dimensions within plus or minus 1/16 inches.
- D. Source Quality Control:
 - 1. Window test units shall comply with requirements of AAMA/NWWDA 101/I.S.2-97. Conduct tests to certify compliances with the following performance requirements as specified in AAMA 101-97 and indicated below.
 - 2. Uniform Load Deflection Test
 - a. Conduct in accordance with ASTM E330-90.
 - b. Maximum deflection of frame or sash member shall not exceed 1/175 of the span in any direction when subjected to AAMA specified test pressure, both positive and negative.
 - c. There shall be no damage to fasteners.
 - 3. Uniform Load Structural Test
 - a. With vents closed and locked, test unit in accordance with ASTM 330 at a static air pressure difference of 97.5 PSF, both positive and negative.
 - b. There shall be no glass breakage, damage to fasteners, hardware, support arms, actuating mechanisms, or any other damage that would render the window inoperable.
 - 4. Water Resistance Test:
 - a. At static pressure difference per ASTM E331-86: 12 psf.

- b. No water penetration for 15 minutes when window is subject to rate of flow of 5 gallon/hour/square feet with differential pressure across window unit of 6.24 psf.
- 5. Air Infiltration Test:
 - a. With vents closed and locked, perform in accordance with ASTM E283-91: (50 mph wind):
 - b. Air infiltration shall not exceed the following values (per foot of perimeter crack) at air pressure difference of 6.24 psf:
 - 1) Fixed Units: .06 cubic feet per minute (ft³/min).
 - 2) Operable Units: .10 cubic feet per minute (ft³/min).
- 6. Thermal Transmittance Test:
 - a. With vents closed and locked, test in accordance with AAMA 1503.1.
 - b. Combined Thermal Transmittance: no more than 0.60 BTU/hr/ft²/degree F @ 15 mph wind velocity.
- 7. Condensation Resistance:
 - a. With vents locked and closed, test in accordance with AAMA 1503.1.
 - b. Resistance factor (CRF): not less than 50.
- 8. Life Cycle Testing: Test sample preparation, testing procedures and report content shall comply with AAMA 910-93.
- E. Minimum wall thickness of frame extrusions: .078".

1.06 SUBMITTALS

- A. Samples: Supply required number of each of the following:
 - 1. Two (2) - 12 inch long extrusions.
 - 2. One (1) - Corner assembly of window.
 - 3. Indicate full range of standard finish colors.
- B. Shop Drawings and Manufacturer's Literature:
 - 1. Shop Drawings:

- a. Show construction of all parts, metal thickness, installation and erection details including connections, anchorage, fastening sealing methods, and location. Indicate all trim accessories necessary to frame new and/or existing openings.
 - b. Sections of typical members, dimensioned elevations, frame sizes, spacing of anchors and fasteners and details of accessories.
2. Manufacturer's Recommended Installation and Maintenance Procedures.
- C. Test reports from AAMA accredited laboratories certifying test performances as specified in 1.05, Quality Assurance, for the window type specified in this Section.
 - D. Certificates: Manufacturer's Notice of Product Certification stating that the tested window meets or exceeds the referenced criteria for the appropriate window type per AAMA/NWWDA 101/I.S.2-97.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Handle and protect windows in accordance with AAMA CW-10-97.
- B. Store windows in upright position off ground on dunnage.
- C. Protect from water and damage.
- D. Store in designated areas as close as possible to point of installation.
- E. Protect window units against damage from weather, construction activities or other hazards during and after installation.

1.08 WARRANTY

- A. Warranty windows and glazing against failure of materials or workmanship to include water leakage or air infiltration, deflections, faulty operation of sash, deterioration of finish or metal in excess of normal weathering and defects in hardware and weather stripping.
- B. Warranty Period: Unit integrity: Minimum of 5 years; Finish: Minimum 15 year warranty covering chipping, peeling, cracking and blistering.

PART 2 - PRODUCTS

2.01 WINDOWS

- A. Thermally Broken, Aluminum Projected Windows: AAMA AP-AW40 minimum with out-swinging hopper vent(s) with screens, as detailed on the Drawings.

- B. Approved Manufacturers and Window Products:
1. Traco TR-3500 AP-HC80 Architectural Thermal Aluminum window design standard.
 2. EFCO Corporation Series 810 Thermal AP-AW75 Grade Projected window,
 3. Custom Window Company Series 8260 AW 80 Projected Window.
 4. YKK AP America, Inc.
 5. Kawneer Company Inc, Norcross, GA.
 6. Pre-bid approved manufacturer and window product in accordance with Section 01300.
- C. Aluminum: Extruded, 6063-T5 or T6 alloy and tempered.
- D. Thermal Break Construction: Window units fabricated with an integrally concealed thermal barrier, located in a manner which eliminates metal to metal contact, and provides a continuous break around the entire perimeter of frame and sash. Reinforcing members and fasteners shall comply with Section 1 of AAMA 101-97.
- E. Provide heavy duty locking cam type window hardware made of Nickel - Bronze Alloy with US25D finish for operable units. Operating hardware shall be 4-bar stainless steel arms.
- F. Finish: All exposed surfaces shall be free of scratches and other blemishes:
1. Organic Coating: 70% fluoropolymer paint finish complying with AAMA 2605 and AA-M12-C42-R1X.
- G. Provide flat type screen mounted on exterior side of frame of operating units. Screen frame shall be extruded aluminum, tubular construction designed to interlock into frame and be removable.
- H. Provide means of drainage for water and condensation by use of weep holes.
- I. Replacement Trim:
1. Casing covers, panning trim: one piece, aluminum extrusions designed to lock around entire frame, to provide weathertight connection, but allowing expansion and contraction. Thickness: no less than .062 inches.

2. Interior trim: Extruded aluminum, not less than .062 inches thick, with no exposed screws.
- J. Stops: Provide factory installed limit stops at operable vents to control the extension of vent so that the vent shall not project beyond the face of the wall; coordinate with details on the Drawings.
- K. Accent trim covers: Snap on aluminum extrusion accent trim covers. Horizontal trim cover profile and configuration as indicated on the drawings. Profile width shall match the dimension of window member(s).
- L. Interior trim: Extruded aluminum, not less than .062 inches thick, with no exposed screws, snap in, provided at all window locations.
- M. Provide all necessary trim and accessories such as panning, expanders, bent metal closure pieces or other installation hardware specifically required for new openings and retrofit of existing openings.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that openings are dimensionally within allowable tolerances, are plumb, level, clean, provide a solid anchoring service, and are in accordance with the Drawings and approved final shop drawings.
- B. Notify the Architect and Owner's Representative of any deficiencies or deviations from the Drawings that would impede the proper installation and operation of window assemblies. Do not proceed until such conditions have been corrected.

3.02 INSTALLATION

- A. Use only skilled tradesmen, with work done in accordance with manufacturer's written instructions and the approved shop drawings.
- B. Plumb and align window faces in a single plane for each wall plane; erect windows and accessories square and true.
- C. Anchor windows to maintain permanent positions when subjected to normal thermal movement, building movement and design wind load.
- D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections, and at opening perimeter. Wedge compressible insulation between replacement unit frames and existing construction; wipe off excess sealant and leave all exposed surfaces and joints clean and smooth.

- E. Cover all openings at the end of the working day, where work has not been completed, to minimize exposure to weather, and to prevent unauthorized entry into premises.
 - 1. Secure exposed openings with plywood panels. Use of plastic sheeting is not acceptable.
 - 2. Unsealed perimeter frames shall be protected temporarily by using backing rods or similar accessories.

3.02 ADJUSTMENTS

- A. Adjust operating vents and hardware for tight fit at contact points and weather stripping, to ensure smooth operation of operable vents, and to provide weathertight seal.

3.03 CLEAN-UP

- A. Leave windows and adjacent surfaces clean and free of excess sealant, foreign materials and other debris. Use only those cleaning agents that are recommended by window manufacturer.
- B. Remove all debris, packaging, banding, and surplus materials from the job site and dispose of legally.

END OF SECTION