

SECTION 08 51 13

ALUMINUM WINDOWS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Extruded aluminum windows with projecting operating sash and factory installed glass.
- B. Related Sections:
 - 1. Section 07 92 00 - Joint Sealants: Perimeter sealant and back-up materials.

1.02 REFERENCE STANDARDS

- A. American Architectural Manufacturers Association:
 - 1. AAMA 502-02 - Voluntary Specification for Field Testing of Windows and Sliding Glass Doors.
 - 2. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
 - 3. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site.
- B. ASTM International:
 - 1. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 2. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 3. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 - 4. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - 5. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

1.03 PERFORMANCE REQUIREMENTS

- A. Air Infiltration: Limit air infiltration through assembly to 0.3 cu ft/min/sq ft of wall area, measured at a reference differential pressure across assembly of 1.57 psf as measured in accordance with ASTM E283.
- B. Water Leakage: None, when measured in accordance with ASTM E331 with a test pressure difference of 2.86 pounds per square foot.
- C. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly.
- D. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, or migrating moisture occurring within system.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate aluminum window details with details of adjacent work to assure water tightness, proper attachments, sealed joints, tight flashings, and clean junctions.

2. [Coordinate attachment and seal of perimeter air barrier and vapor retarder materials.]
- B. [Preinstallation Meeting:]
- C. [Sequencing:]
- D. [Scheduling:]

1.05 [SUSTAINABLE CHARACTERISTICS]

A. Section 01 35 63 - Sustainability Project Requirements: Requirements for sustainable design compliance.

B. Materials and Resources Characteristics:

1. [Recycled Content Materials: Furnish materials with maximum available recycled content including:

SPEC NOTE *List materials specified in this section required to have recycled content.*

a. [_____.]

2. [Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project site.]

SPEC NOTE *List materials specified in this section required to be regional materials.*

a. [_____.]

1.06 SUBMITTALS

- A. See Section 01 33 00 - Submittal Procedures, for submittal procedures.
- B. Product Data: Provide component dimensions, information on glass and glazing, internal drainage details, and descriptions of hardware and accessories.
- C. Shop Drawings: Indicate opening dimensions, framed opening tolerances, method for achieving air and vapor barrier seal to adjacent construction, anchorage locations,, and installation requirements.
- D. Samples: Submit two samples, 12 by 12 inch in size illustrating typical corner construction, accessories, and finishes.
- E. Submit two samples of operating hardware.
- F. Certificates: Certify that windows meet or exceed specified requirements.
- G. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.

1.07 [SUSTAINABLE DESIGN SUBMITTALS]

A. Section 01 35 63 - Sustainability Project Requirements: Requirements for sustainable design submittals.

B. Manufacturer's Certificate: Certify products meet or exceed specified sustainable design requirements.

1. Materials Resources Certificates:

- a. Certify source and origin for [salvaged] [and] [reused] products.
- b. Certify recycled material content for recycled content products.
- c. Certify source for regional materials and distance from Project site.

- C. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products.
 - 1. Provide cost data for the following products:
 - a. Salvage products.
 - b. Reused products/
 - c. Products with recycled material content.
 - d. Regional products.

1.08 QUALITY ASSURANCE

- A. Manufacturer and Installer: Company specializing in fabrication of residential aluminum windows of types required, with not fewer than three years of experience.

1.09 DELIVERY, STORAGE, AND PROTECTION

- A. Comply with requirements of AAMA CW-10.
- B. Identify type and location of each window prior to site delivery in manner not to damage finish.
- C. Protect finished surfaces with wrapping paper or strippable coating during installation. Do not use adhesive papers or sprayed coatings that bond to substrate when exposed to sunlight or weather.

1.10 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 ALUMINUM WINDOWS

- A. Projected Windows:
 - 1. Description:
 - a. Frames: Thermally broken extruded aluminum.
 - b. Operable units to have double weatherstripping.
 - c. Factory assemble complete with glass.
 - d. Include related flashings, anchorage and attachment devices.
 - 2. Product: Columbia Inc.'s "Series C2050"; or equal.

2.02 COMPONENTS

- A. Aluminum:
 - 1. Extrusions: ASTM B221, Alloy 6063, T6 temper.
 - 2. Sheet: ASTM B209, Alloy 5005.
- B. Fasteners: Stainless steel.

- C. Glass and Glazing Materials: As specified in Section 08 80 00 - Glazing.
- D. Sealant and Backing Materials: As specified in Section 07 92 00 - Joint Sealants.
- E. Sash lock: Lever handle with cam lock.

2.03 FABRICATION

- A. Fabricate components with smallest possible clearances and shim spacing around perimeter of assembly that will enable window installation and dynamic movement of perimeter seal.
- B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- C. Prepare components to receive anchor devices.
- D. Arrange fasteners and attachments to ensure concealment from view.
- E. Prepare components with internal reinforcement for operating hardware.
- F. Provide steel internal reinforcement in mullions as required to meet loading requirements.
- G. Provide internal drainage of glazing spaces to exterior through weep holes.
- H. Glazing:
 - 1. Provide glazing bead as required with rabbet of depth adequate to receive glass and glazing accessories
 - 2. Factory glaze window units. Install glass in accordance with Section 08 80 00 - Glazing,
- I. Do not label exposed portions with trade or manufacturer's name..

2.04 FINISHES

- A. Aluminum.
 - 1. Exposed Aluminum Surfaces:
 - a. Finish: [Color-anodized same as AAMA 611 M21C22A42.
 - b. Color: As selected by University's Representative.
 - 2. Concealed Aluminum Surfaces: Same as exposed aluminum or clear-anodized same as AAMA 611 M12C22A31.
- B. Operator and Exposed Hardware: Enameled to color as selected from manufacturer's standards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that wall openings and adjoining air and vapor seal materials are ready to receive aluminum windows.

3.02 INSTALLATION

- A. Install windows in accordance with manufacturer's instructions.
- B. Attach window frame and shims to perimeter opening to accommodate construction

tolerances and other irregularities.

- C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- D. Install sill and sill end angles.
- E. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- F. Install operating hardware not pre-installed by manufacturer.
- G. Install glass and infill panels in accordance with requirements specified in Section 08800.
- H. Install perimeter sealant in accordance with requirements specified in Section 07900.

3.03 ERECTION TOLERANCES

- A. Maximum Variation from Level or Plumb: 1/16 inches every 3 feet non-cumulative or 1/8 inches per 10 feet, whichever is less.

3.04 FIELD QUALITY CONTROL

- A. Water Penetration Tests: After completion of the installation and nominal curing of sealants, and before installation of interior trim members, test for water leaks in accordance with AAMA 502-02. Test approximately five percent of the total glazed aluminum window area exposed on the indoor side at each floor level. Conduct tests in the presence of University's Representative, who will determine the actual percentage of wall area to be tested based upon any indication of leakage (or lack thereof). Repair or replace any components, including joints and sealants, which leak or are observed to be defective in any way, and retest as directed
 1. If any window fails, test additional windows at Contractor's expense.
- B. Replace windows that have failed field testing and retest until performance is satisfactory.

3.05 ADJUSTING

- A. After completion of glazing and finish painting of surrounding surfaces, [adjust windows and window hardware as required for smooth operation, correct function, and secure weather tight closure;][lubricate or wax hardware and moving parts as required;] and make corrections as required..

3.06 CLEANING

- A. Remove protective material from factory finished aluminum surfaces.
- B. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.

END OF SECTION