

SECTION 085113 – ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes aluminum windows for exterior locations.
- B. Related Sections:
 - 1. Section 061000 – Rough Carpentry.
 - 2. Section 076200 – Sheet Metal Flashing and Trim.
 - 3. Section 079200 – Joint Sealants.
- C. Reference and Industry Standards
 - a. New York City Energy Conservation Code **current** edition:
 - Chapter C4 Commercial Energy Efficiency
 - b. New York City Building Code **current** edition, as amended, inclusive of:
 - Chapter 16 Structural Design
 - Chapter 24 Glass and Glazing
 - c. The current Enterprise Green Communities (EGC) Criteria, and the current New York City Overlay.
 - d. Industry Standards
 - AA (Aluminum Association)
 - AAMA (American Architectural Manufacturers Association)
 - ASTM (American Society for Testing and Materials)
 - NFRC (National Fenestration Rating Council)
 - SMA (Screen Manufacturers Association)
 - WDMA (Window and Door Manufacturers Association)
- D. The current NYC Overlay of the current Enterprise Green Communities Criteria:
 - 1. Mandatory Requirements: See the NYC Overlay of the EGC reference standard for full specifications.
 - a. All projects must achieve compliance with the mandatory criteria measures that are applicable:
 - Criterion 6.4: Healthier Material Selection
 - Criterion 6.9: Managing Moisture: Roofing and Wall Systems
 - Criterion 6.10: Construction Waste Management
 - Criterion 7.7 : Ventilation
 - 2. Optional Project Requirements for Certification Points

- a. Additionally, rehab projects are required to achieve **55** optional points. Criteria with optional points related to this Specification Section include, but may not be limited to:
 - Criterion 6.1: Ingredient Transparency for Material Health
 - Criterion 6.2: Recycled Content and Ingredient Transparency
 - Criterion 6.4: Healthier Material Selection
 - Criterion 6.7: Regional Materials
 - Criterion 6.10: Construction Waste Management
 - Criterion 7.7: Ventilation

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.
- C. Samples: For each exposed product and for each color specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Laboratory test reports indicating compliance with performance requirements.
- C. Documentation for compliance with Enterprise Green Communities Criteria.

1.5 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.
 1. Warranty Period:
 - a. Window: 10 years from date of Substantial Completion.
 - b. Glazing Units: 10 years from date of Substantial Completion.
 - c. Aluminum Finish: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 WINDOW PERFORMANCE REQUIREMENTS

- A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
 - 1. Window Certification: AAMA certified with label attached to each window.
- NOTE: NFRC label is an acceptable alternative to an AAMA label.
- B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:
 - 1. Minimum Performance Class: LC (Light Commercial)
 - 2. Minimum Performance Grade: 30 minimum.
- C. Thermal Transmittance for Operable Windows: NFRC 100 maximum whole-window U-factor of current New York City Energy Code below a height of 95 feet from ground level.
- D. Thermal Transmittance for Fixed Windows: NFRC 100 maximum whole-window U-factor of current New York City Energy Code below a height of 95 feet from ground level.
- E. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of current New York City Energy Code.

2.2 ALUMINUM WINDOWS

- A. Types: AAMA/WDMA/CSA 101/I.S.2/A440 includes requirements for aluminum, thermal breaks, and other materials and window components. If more stringent requirements apply, insert them in this article.
- B. Frames and Sashes: Aluminum extrusions complying with AAMA/WDMA/CSA 101/I.S.2/A440.
 - 1. Thermally Improved Construction: Fabricate frames, sashes, and muntins with an integral, concealed, low-conductance thermal barrier located between exterior materials and window members exposed on interior side in a manner that eliminates direct metal-to-metal contact.
- C. Insulating-Glass Units: ASTM E2190.
 - 1. Overall Thickness: 7/8 inch <Insert value>.
 - 2. Glass: ASTM C1036, Type 1, Class 1, q3.
 - a. Tint: Clear.
 - b. Kind: Fully tempered.
 - 3. Lites: Two at 1/8 inch minimum thickness.
 - 4. Air-Space Thickness: 5/8 inch minimum.
 - 5. Filling: Fill space between glass lites with 90% argon gas.

6. Low-E Coating: Sputtered on third surface.
 - D. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.
 - E. Hardware, General: Provide manufacturer's standard corrosion-resistant hardware sized to accommodate sash weight and dimensions.
 1. Exposed Hardware Color and Finish: As selected by **[Design-Professional-of-Record]** **[Owner]** from manufacturer's full range.
 - F. **[Casement]** **[and]** **[Projected]** Window Hardware:
 1. Gear-Type Rotary Operators: Complying with AAMA 901 when tested according to ASTM E405, Method A. Provide operators that function without requiring the removal of interior screens or using screen wickets.
 - a. Type and Style: Manufacturer's standard .
 2. Hinges: Non-friction type, not less than two per sash.
 3. Lock: Manufacturer's standard.
 4. Limit Devices: Limit clear opening to 4 inches for ventilation; with custodial key release.
 - G. Side-Load Hung Window Hardware:
 1. Counterbalancing Mechanism: AAMA 902.
 2. Locks and Latches: Operated from the inside only.
 - H. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
 - I. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
 1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.
- 2.3 ACCESSORIES
- A. Receptor System: Two-piece, snap-together, thermally broken, extruded-aluminum receptor system that anchors windows in place.
- 2.4 INSECT SCREENS
- A. General: Fabricate insect screens to integrate with window frame. Provide screen for each operable exterior sash. Screen wickets are not permitted.
 1. Type and Location: **[Full, inside for outswing]** **[Full, inside for projected, awning]** **[Full, outside for inswing]** **[Full, outside for projected, hopper]** **[Full, outside for double-hung]** **[Half, outside for double-hung]** sashes.

- a. Double-Hung windows that provide access to fire escapes shall be limited to half-screens.
 - b. Double-Hung windows where unit air-conditioners are to be installed shall be limited to half-screens.
- B. Aluminum Frames: Complying with SMA 1004 or SMA 1201.
- C. Glass-Fiber Mesh Fabric: [**18-by-14 or 18-by-16**] [**20-by-20 or 20-by-30**] <Insert type> mesh of PVC-coated, glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration. Comply with ASTM D3656.
 - 1. Mesh Color: Manufacturer's standard.

2.5 FABRICATION

- A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.
- B. Glaze aluminum windows in the factory.
- C. Weather strip each operable sash to provide weathertight installation.
- D. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.
- E. Provide water-shed members above side-hinged sashes and similar lines of natural water penetration.
- F. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.
- G. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.

2.6 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Baked-Enamel Finish: Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.
 - 1. Color: [**Light bronze**] [**Medium bronze**] [**Dark bronze**] [**Black**] <Insert color>.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.
- B. Install windows 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 to produce weathertight construction.
- C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.
- D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.
- E. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.
- F. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- G. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 085113