

SECTION 08511 - ALUMINUM REPLACEMENT WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Extruded aluminum window with operating sash.
- B. Factory glazing.
- C. Operating hardware.
- D. Installation: labor, tools, and materials needed to install aluminum windows.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittal procedures, project meetings, progress schedules and documentation, reports, coordination.
- B. Section 01 4000 - Quality Requirements: Procedures for testing, inspection, mock-ups, reports, certificates; use of reference standards.
- C. Section 01 6000 - Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.
- D. Section 01 7000 - Execution Requirements: Examination, preparation, and general installation procedures; preinstallation meetings; cutting and patching; cleaning and protection; starting of systems; demonstration and instruction; closeout procedures except payment procedures; requirements for alterations work.
- E. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance (O&M) data, warranties and bonds.
- F. Section 07 9200 - Joint Sealants: Perimeter sealant and back-up materials.
- G. Section 08 5166 - Heavy vandalism window screens: Window screens.

1.03 REFERENCE STANDARDS

- A. AAMA - American Architectural Manufacturers Association - www.aamanet.org
 - 1. AAMA/NWWDA 101/I.S.2/ A440-05 "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors"
 - 2. AAMA 502-08 "Voluntary Specification for Field Testing of Newly Installed Fenestration Products"
 - 3. AAMA 611-98 "Voluntary Specification for Anodized Architectural Aluminum"
 - 4. AAMA 701/702-04 "Voluntary Specification for Pile Weatherstripping and Replaceable Fenestration Weatherseals"
 - 5. AAMA 800-07 "Voluntary Specifications and Test Methods for Sealants"
 - 6. AAMA 902-07 "Voluntary Specification for Sash Balances"
 - 7. AAMA 1503-98 "Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections"
 - 8. AAMA 2603-02 "Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels"
 - 9. AAMA 2604-05 "Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels"
 - 10. AAMA 2605-05 "Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and

Panels"

11. AAMA CW-10-04 "Care and Handling of Architectural Aluminum from Shop to Site"
- B. ASTM - American Society for Testing and Materials - www.astm.org
 1. ASTM E 283-04 "Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen"
 2. ASTM E 330-02 "Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference"
 3. ASTM E 547-00 "Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Cyclic Static Air Pressure Difference"
 4. ASTM E 2190-02 "Standard Specification for Insulating Glass Unit Performance and Evaluation"
 - C. NFRC - National Fenestration Rating Council - www.nfrc.org : NFRC 100-04 "Procedure for Determining Fenestration Product U Factors"
 - D. IGCC - Insulating Glass Certification Council - www.igcc.org
 - E. SGCC - Safety Glazing Certification Council - www.sgcc.org
 1. ANSI Z97.1-04 "American National Standard for Safety Glazing Materials used in Buildings - Safety Performance Specifications and Methods of Test"
 2. 16 CFR 1201 "Consumer Product Safety Commission Safety Standard for Architectural Glazing Materials - codified at Title 16, Part 1201 of the Code of Federal Regulations"

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct a preinstallation meeting at least one week prior to the start of the work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide Provide component dimensions, information on glass and glazing, descriptions of hardware and accessories, manufacturer's specifications and test reports from an AAMA-accredited laboratory.
- C. Shop Drawings: Indicate opening dimensions, framed opening tolerances, method for achieving air and vapor seal to adjacent construction, anchorage locations, and installation requirements.
- D. Samples: Submit two samples, 12 x 12 inch (300 x 300 mm) in size, illustrating typical corner construction, accessories, and finishes..
- E. Manufacturer's Qualification Statement.
- F. Specimen Warranty.

- G. American Recovery and Reinvestment Act Compliance: Letter on manufacturer's letterhead certify that products comply with the Buy American Act as modified by the American Recovery and Reinvestment Act.
- H. Certificate: Certify that products of this section meet or exceed specified requirements.
- I. Manufacturer's Installation Instructions: Include complete preparation, installation and cleaning requirements.
- J. Project Record Documents: Record actual locations and sizes of installed products.
- K. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Submit manufacturer's product and testing data for prebid approval fifteen (15) days prior to bid opening.
 - 1. Furnish a valid AAMA "Authorization for Product Certification" indicating that the windows for the project conform to AAMA/ WDA 101/I.S.2/ A440.
 - 2. Acceptance of products will be by addendum only as no verbal approvals will be allowed.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- C. Furnish visible, permanent IGCC certification labels indicating conformance to ASTM E2190 on insulating glass units.
- D. Furnish visible, permanent SGCC certification labels indicating conformance to ANSI Z 97.1 and/or 16CFR 1201 on tempered glass lites, if included on the project, and laminated glass lites, if included on the project.
- E. Project Survey: manufacturer and installer to conduct a field survey of conditions one year after date of completion and recommend maintenance procedures.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handle and protect windows and accessories in accordance with AAMA CW-10 until project completion.

1.08 WARRANTY

- A. See Section 01 7800 - 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 for glazing.
- D. Provide manufacturer standard warranty for aluminum finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design Manufacturer: TRACO , Model TR-5400 Single Hung Tilt Thermal Aluminum Window
- B. Other Manufacturers who have demonstrated a successful history of manufacturing for a minimum of three years and who can comply with the with the American Recovery and Reinvestment Act requirements for construction materials.
- C. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SYSTEM DESCRIPTION

- A. AAMA Designation: H-LC55.
- B. Windows: 2-3/4" frame depth; extruded aluminum with integral structural polyurethane thermal break installed by the window manufacturer in the frame and sash members; equal-leg flange frame; finish applied by the window manufacturer; frames and sash assembled by the window manufacturer.
- C. Configuration: single hung; bottom sash tilts in for glass cleaning.
- D. Glazing: exterior 2-part structural silicone; 3/4" insulating glass; interior flexible PVC bulb threaded into aluminum bead; glass description in paragraph 2.06; glazed by the window manufacturer.

2.03 PERFORMANCE REQUIREMENTS

- A. Conformance to H-LC55 specifications in AAMA/WDMA/CSA 101/I.S.2/A4404-05 when tests are performed on the prescribed 48" x 75" minimum test size with the following test results:
 - 1. Air Infiltration: meet AAMA 101 standard of maximum .3 cfm/square foot when tested per ASTM E 283-04 at a static air pressure difference of 1.57 psf.
 - 2. Water Penetration: no uncontrolled water leakage when tested per ASTM E 547 at a static air pressure difference of 5.25 psf.
 - 3. Uniform Structural: window to be operable, and maximum .3% permanent deformation per member when tested per ASTM E 330 at a static air pressure difference of 52.5 psf.
- B. Thermal testing per AAMA 1503, at the prescribed 48" x 72" test size glazed with 3/4" insulating glass made with exterior 1/8" clear glass, plain air in airspace, and interior 1/8" soft coat low E glass, with the following test results:
 - 1. Condensation Resistance Factor: minimum 50 frame and 61 glass CRF.
 - 2. Thermal Transmittance: maximum .47 BTU/HR/SQ.FT/°F U value.
- C. Thermal computer simulation testing per NFRC 100, at the prescribed 48" x 72" Non-Residential Size, glazed with 3/4" insulating glass made with exterior 1/8" clear glass, krypton gas, and interior 1/8" soft coat low E glass: Thermal Transmittance to be maximum .43 BTU/HR/SQ.FT/°F U value.

2.04 MATERIALS

- A. Aluminum extrusions: extruded by the window manufacturer from commercial quality 6063-T5 alloy; free from defects impairing strength and durability.
- B. Hardware: zinc meeting rail lock - one per window under 32", two on wider windows; (aluminum automatic sill lock;) plated steel pivot bars, one spring-loaded for sash removal without tools; finger button tilt latches, spring-loaded for automatic jamb engagement when sash is in vertical position.
- C. Weatherstrip: secured in extruded ports; double rows on sash perimeters: pile conforming to AAMA 701/702 with polypropylene center fin.
- D. Balances: constant force conforming to AAMA 902-07 with capacity to hold sash stationary and permit it to operate freely; nylon balance shoes which lock when tilted to prevent sash travel.

2.05 FABRICATION

- A. Frame: head and sill coped and fastened to jambs with two stainless steel screws per corner; sill contains weep slots for drainage; tubular jambs; corners sealed by window manufacturer with sealant conforming to AAMA 800.
- B. Sash: tubular horizontal sash rails coped and fastened to vertical sash stiles with a telescope-design joint secured with one stainless steel screw per corner; corners sealed by window manufacturer with sealant conforming to AAMA 800.
- C. Sash design: continuous extruded lift rail on bottom sash interior; mechanical meeting rail interlock; weep holes for drainage.

2.06 INSULATING GLASS UNITS

- A. Materials
 1. Spacer: extruded thermoplastic butyl with integrated desiccant.
 2. Spacer color: black.
 3. Secondary seal: silicone.
 4. Airspace fill: argon.
- B. Performance
 1. Dual-seal durability: conformance to ASTM E 2190; visible, permanent IGCC certification label on air spacer.
- C. Exterior glass lite
 1. Thickness: 1/8".
 2. Tint: clear.
 3. Type: annealed or tempered as scheduled.
 4. Coating: soft coat low E on #2 surface.
- D. Interior glass lite
 1. Thickness: 1/8".
 2. Tint: clear.
 3. Type: annealed or tempered as scheduled.

2.07 FINISH ON ALUMINUM EXTRUSIONS

- A. Application: on clean extrusions free from serious surface blemishes; on exposed surfaces

visible when installed product's operating sash are closed.

- B. Coating: color anodized.
- C. Quality standard: conforming to AAMA 611.
- D. Thickness: AAM10C22A44 Class I - 0.7 mils.
- E. Color: #313 dark bronze.

2.08 INSTALLATION ACCESSORIES

- A. Material: extruded aluminum; nominal .062" wall; with exposed surfaces finished to match window color and finish performance; concealed fasteners; required weatherseals; designed for unrestricted expansion and contraction.
- B. Exterior: two-piece head and jamb receptor with thermal break; subsill with thermal break and end dams sealed by the window manufacturer.
- C. Interior: two-piece snap trim.

PART 3 EXECUTION

3.01 PREPARATION

- A. Field verify existing conditions.
- B. Prepare openings to be in tolerance, plumb and level; provide for secure anchoring.

3.02 INSTALLATION

- A. Install windows in accordance with manufacturer's recommendations and approved shop drawings.
- B. Provide required support and securely fasten and set windows plumb, square, and level without twist or bow.
- C. Apply sealant per sealant manufacturer's recommendations at joints, wipe off excess, and leave exposed sealant surfaces clean and smooth.

3.03 ADJUSTING AND CLEANING

- A. Adjust windows as necessary for smooth and weathertight operation.
- B. Clean windows to remove dust, dirt and other foreign materials.

3.04 SCHEDULE

- A. Glazing less than 18-inches above floors or walking surfaces shall be tempered as required by the Building Code.
- B. Glazing adjacent to doors shall be tempered as required by the Building Code.

END OF SECTION