

SECTION 08 41 13 ALUMINUM – FRAMED ENTRANCES and STOREFRONTS

System 403 Thermal Flush-Glazed Screw Spline Storefront

PART 1 GENERAL**1.01 Work Included**

- A. Furnish and install aluminum architectural storefront system complete with hardware and related components as shown on drawings and specified in this section.
- B. All storefront systems shall be EFCO® System 403 Thermal Flush-Glazed Screw Spline Storefront. Other manufacturers requesting approval to bid their product as an equal must submit the following information fifteen days prior to close of bidding.
 - 1. A sample storefront system (size and configuration) as per requirements of architect.
 - 2. Test reports documenting compliance with requirements of Section 1.05.
- C. Glass
 - 1. Reference Section 08 81 00 for Glass and Glazing.
- D. Single Source Requirement
 - 1. All products shall be by the same manufacturer.

1.05 Laboratory Testing and Performance Requirements

- A. Provision for Thermal Movements
 - 1. Storefront framing systems shall be designed to provide for thermal movement of all component materials resulting from surface temperatures ranging from 180 degrees F to -30 degrees F without causing buckling, stresses on glass, failure of joint seals, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or other detrimental effects. Operating windows and doors shall function normally over this temperature range.
- B. Test Procedures and Performance
 - 1. Air Infiltration Test
 - a. Test unit in accordance with ASTM E 283 at a static air pressure difference of 6.24 psf (299 Pa).
 - b. Air infiltration shall not exceed .06 cfm/SF (.30 l/s•m²) of unit.
 - 2. Water Resistance Test
 - a. Test unit in accordance with ASTM E 331.
 - b. There shall be no uncontrolled water leakage at a static test pressure of 12.0 psf (575 Pa).
 - 3. Uniform Load Deflection Test
 - a. Test in accordance with ASTM E 330.
 - b. Deflection under design load shall not exceed L/175 of the clear span.
 - 4. Uniform Load Structural Test
 - a. Test in accordance with ASTM E 330 at a pressure 1.5 times the design wind pressure in 1.05.B.3.b.
 - b. At conclusion of the test, there shall be no glass breakage, permanent damage to fasteners, storefront parts, or any other damage that would cause the storefront to be defective.
 - 5. Condensation Resistance Test (CRF)

- a. Test unit in accordance with ASTM 1503.1.
 - b. Condensation Resistance Factor (CRF) shall not be less than 57 (frame) and 70 (glass) when glazed with 1" (25 mm) insulated – 1/4" (6 mm) clear low emissivity, 1/2" (12 mm) air, 1/4" (6 mm) clear glass.
6. Thermal Transmittance Test (Conductive U-Value)
- a. Test in accordance with ASTM 1503.1.
 - b. Conductive thermal transmittance (U-Value) shall not be more than 0.44 BTU/hr•ft²•°F (2.49 W/m²•K) when glazed with 1" (25 mm) insulated – 1/4" (6 mm) clear low emissivity, 1/2" (12 mm) air, 1/4" (6 mm) clear glass.
7. Thermal Transmittance Test (Conductive U-Value)
- a. Test in accordance with NFRC-102.
 - b. Conductive thermal transmittance (U-Value) shall not be more than 0.58 BTU/hr•ft²•°F (3.29 W/m²•K) when glazed with 1" (25 mm) insulated – 1/4" (6 mm) clear low emissivity, 1/2" (12 mm) air, 1/4" (6 mm) clear glass.

C. Project Wind Loads

1. The system shall be designed to withstand the following loads normal to the plane of the wall:
 - a. Positive pressure of psf (Pa) at non-corner zones.
 - b. Negative pressure of psf (Pa) at non-corner zones.
 - c. Negative pressure of psf (Pa) at corner zones.

1.06 Field Testing and Performance Requirements

- A. Test in accordance with AAMA 501.2 for spray test only or AAMA 503.92 for pressurized test.

1.07 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05.
- B. Test reports shall be accompanied by the storefront manufacturer's letter of certification stating that the tested storefront meets or exceeds the referenced criteria for the appropriate storefront type.

1.08 References

1.09 Submittals

- A. Contractor shall submit 4 copies of all shop drawings to the architect for approval. Drawings shall show scale elevations and sections. Full size sections shall be shown only when needed for clarity. Drawings shall show construction of all parts of the work, including metal and glass thickness, methods of joining, details of all field connections and anchorage, fastening and sealing methods, metal finishes and all pertinent information. Relationship to other work should be clearly indicated. No work shall be fabricated until shop drawings for that work have been finally approved for fabrication.
- B. Contractor shall submit finish samples, test reports, and warranties.
 1. Samples of materials as may be requested without cost to owner, i.e., metal, glass, fasteners, anchors, frame sections, mullion section, corner section, etc.

1.10 Warranties

- A. Total Storefront System
 - 1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total storefront installation. This includes the glass (including insulated units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water and structural adequacy as called for in the specifications and approved shop drawings.
 - 2. Any deficiencies due to such elements not meeting the specifications shall be corrected by the responsible contractor at his expense during the warranty period.

PART 2 PRODUCTS

2.01 Materials

- A. Aluminum
 - 1. Extruded aluminum shall be 6063-T6 alloy and temper.
- B. Glass

Follow local building codes regarding tempered glass.

- 1. Insulated glass shall be 1" (25 mm) consisting of () exterior, () air spacer, and () interior.
- C. Dissimilar Metals
 - 1. All dissimilar metals must be properly insulated to prevent galvanic action.
- D. Fasteners
 - 1. All exposed fasteners shall be aluminum or stainless steel.
- E. Thermal Barrier
 - 1. Barrier material shall be poured in place, two-part polyurethane. A nonstructural thermal barrier is unacceptable.

2.02 Fabrication

- A. General
 - 1. All aluminum frame extrusions shall have a minimum wall thickness of .080" (2 mm).
 - 2. All exposed work shall be carefully matched to produce continuity of line and design with all joints. System design shall be such that raw edges will not be visible at joints.
- B. Frame
 - 1. Depth of frame shall not be less than 4 1/2" (114 mm).
 - 2. Face dimension shall not be less than 2" (50 mm).
 - 3. Frame components shall be screw spline construction.
- C. Glazing
 - 1. All units shall be "dry glazed" with recyclable EPDM gasket on both exterior and interior.
- D. Finish
 - 1. Organic
 - a. Finish all exposed areas of aluminum windows and components with (). Color shall be ().

| AA Description | Description | AAMA Guide Spec. |
|-----------------------|---------------------|-------------------------|
| AA-M12-C42-R1X | 70% PVDF Ultrapon™ | 2605-98 |
| AA-M12-C42-R1X | 50% PVDF Ultraflur™ | 2604-98 |

PART 3 EXECUTION

3.01 Inspection

- A. Job Conditions
 - 1. All openings shall be prepared by others to the proper size and shall be plumb, level and in the proper location and alignment as shown on the architect's drawings.

3.02 Installation

- A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.
- B. Storefront system shall be erected plumb and true, in proper alignment and relation to established lines and grades.
- C. Entrance doors shall be securely anchored in place to a straight, plumb and level condition, without distortion. Weather stripping contact and hardware movement shall be checked and final adjustments made for proper operation and performance of units.
- D. Furnish and apply sealing materials to provide a weather tight installation at all joints and intersections and at opening perimeters.
- E. Sealing materials specified shall be used in strict accordance with the manufacturer's printed instructions, and shall be applied only by mechanics specially trained or experienced in their use. All surfaces must be clean and free of foreign matter before applying sealing materials. Sealing compounds shall be tooled to fill the joint and provide a smooth finished surface.

3.03 Anchorage

- A. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.

3.04 Protection and Cleaning

- A. The general contractor shall protect the aluminum materials and finish against damage from construction activities and harmful substances. The general contractor shall remove any protective coatings as directed by the architect, and shall clean the aluminum surfaces as recommended for the type of finish applied.