

SECTION 08410  
ALUMINUM STOREFRONT SYSTEMS

PART 1 - GENERAL

1.1 Scope:

A. The work under this Section consists of furnishing all labor, materials, equipment and services necessary for the complete and satisfactory installation of aluminum storefront systems as called for herein and/or on the Drawings.

1.2 Related Sections:

- A. Section 07240, Exterior Insulation and Finish System
- B. Section 07650, Flexible Flashing
- C. Section 07900, Sealants and Caulking
- D. Section 08710, Finish Hardware
- E. Section 08800, Glass and Glazing

1.3 Submittals:

A. Shop Drawings: The Contractor shall submit shop drawings, manufacturer's literature and complete installation instructions to the Architect for review prior to beginning installation operations in accordance with the requirements of Section 01300 of these Specifications.

B. Samples: The Contractor shall submit samples of all available finishes to the Architect for color selection. No materials shall be delivered to the job site prior to finish selection.

1.4 Storage and Protection:

A. Delivery: The Contractor shall deliver the aluminum storefront system and all necessary installation accessories to the job site in the manufacturer's original protective packaging. Each package shall be clearly labeled so as to identify manufacturer, brand name, contents, stock number and order number.

B. Storage: Materials shall be stored in original packaging in areas designated for material storage. Materials shall be carefully handled so as to prevent damage.

1.5 Design Requirements:

A. Storefront System:

1. Wind Loads: Completed storefront system shall withstand wind pressure loads normal to wall plane indicated.

a. Exterior Walls:

- 1) Positive Pressure
- 2) Negative Pressure

b. Interior Walls (Pressure acting in either direction).

2. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E330 with allowable stress in accordance with AA Specifications for Aluminum Structures L/175.

3. Thermal Movement: provide for thermal movement caused by 180 degrees F. surface temperature, without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.

4. Air Infiltration: When tested in accordance with ASTM E 283 at differential static pressure of 6.24 PSF completed storefront systems shall have maximum allowable infiltration of 0.06 cfm/ft<sup>2</sup>.

5. Water Infiltration: No uncontrolled water when tested in accordance with ASTM E 331 at test pressure differential of 10 psf.

B. Storefront Doors:

1. Air Infiltration: Air infiltration shall be tested in accordance with ASTM E 283 at static pressure of 1.57 psf. Infiltration shall not exceed 1.0 cfm/ft<sup>2</sup> of total door and frame area.

2. Structural: Door corner structural strength shall be tested per manufacturer's dual moment test procedure and certified by an independent testing laboratory to ensure corner integrity and weld compliance.

3. Uniform Load Test: 60 psf.

4. Forced Entry Resistance: 300 lbs. satisfactory.

C. Quality Assurance: The manufacturer shall provide written certification to the Architect that all materials furnished comply with the specified design requirements.

## PART 2 – PRODUCTS

### 2.1 Acceptable Manufacturers:

A. Aluminum entrance systems shall be equal to YKK-YES45FI for insulating glass / YKK-YES45FS for non-insulating glass.

B: Product information is listed for reference purposes to establish material characteristics, quality, and finish. Alternate manufacturer's products shall meet or exceed the listed products. Other acceptable manufacturers include:

1. Kawneer
2. Vistawall

### 2.2 Metal:

A. All aluminum extrusions shall conform to ASTM B 221, Type 6063-T5 aluminum alloy. Aluminum sheet (painted finish) shall conform to ASTM B209, 3003-H14 aluminum alloy, 0.080" minimum thickness.

### 2.3 Accessories:

A. Manufacturer's Standard Accessories:

1. Fasteners: Zinc plated steel concealed fasteners; hardened aluminum alloys or AISI 300 series stainless steel exposed fasteners.

2. Glazing: Setting blocks, edge blocks, and spacers in accordance with ASTM C 864, shore durometer hardness as recommended by manufacturer; glazing gaskets in accordance with ASTM C 864. Refer to Section 08800.

3. 0.050 Aluminum Sill Flashing End Dams must have 3 point attachment.

#### 2.4 Finish:

A. High Performance Organic Coating Finish: Factory applied two-coat 70% Kynar resin by Arkema or 70% Hylar resin by Solvay Solexis, fluoropolymer based coating system, Polyvinylidene Fluoride (PVF-2), applied in accordance with AAMA 2605 specifications. Color shall be selected by the Architect from the manufacturer's standard finishes.

#### 2.5 Construction:

A. Doors: Doors shall be wide stile-type doors (min. 5" stile) YKK 50M. Corner construction shall consist of both welds and mechanical fasteners. Door frame jambs shall be flush glazed sections with tubular transom bar and header.

B. Framing: All vertical and horizontal members shall have a face dimension of 2" (insulating glass) 1¾" (non-insulating glass) and depth of 4½". Framing members shall be of two-piece construction, consisting of a basic white member and a snap-on front glazing retainer separated by a rigid PVC thermal break insert designed to prevent heat and air transmission through the member.

C. Glazing Retainers: Glazing retainers shall be snap-on type. Retainers on exterior side shall be tamper-proof. No exposed fasteners shall be utilized to secure retainers.

D. Glazing: Glazing shall be lock-in type vinyl. Refer to Section 08800.

E. Weatherstripping: Doors shall have replaceable metal-backed pile cloth on three sides and a concealed pile sweep strip on the bottom rail.

F. Glass, as specified in Section 08800:

1. Glass for exterior storefront doors shall be ¼" tempered glass - exterior.

2. Glass for exterior storefront windows, sidelights, and transoms shall be 1" insulating glass.

3. Glass for interior storefront doors, sidelights, and transoms shall be ¼" tempered glass - interior.

G. Finish Hardware: Furnished under Section 08710.

#### 2.5 Fabrication:

A. Shop Assembly: Fabricate and assemble units with joints only at intersection of aluminum members with uniform hairline joints; rigidly secure, and sealed in accordance with manufacturer's recommendations.

1. Hardware: Drill and cut to template for hardware. Reinforce frames and door stiles to receive hardware in accordance with manufacturer's recommendations.

2. Welding: Conceal welds on aluminum members in accordance with AWS recommendations or methods recommended by manufacturer. Members showing welding bloom or discoloration on finish or material distortion will be rejected.

### PART 3 – EXECUTION

#### 3.1 Preparation:

A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.

1. Aluminum surface Protection: Protect aluminum surfaces from contact with lime, mortar, cement, acids, and other harmful contaminants.

#### 3.2 Installation:

A. General: Install manufacturer's system in accordance with manufacturer's instructions, within specified tolerances.

1. Protect aluminum members in contact with masonry, steel, concrete, or dissimilar materials using nylon pads or bituminous coating.

2. Shim and brace aluminum system before anchoring to structure.

3. Provide sill flashing at exterior storefront systems. Extend extruded flashing continuous with splice joints; set in continuous beads of sealant.

4. Verify storefront system allows water entering system to be collected in gutters and wept to exterior.

5. Locate expansion mullions where indicated on reviewed shop drawings.

6. Seal metal to metal storefront system joints using sealant recommended by system manufacturer.

#### 3.3 Field Quality Control:

A. Provide manufacturer's field service consisting of site visit for inspection of product installation in accordance with manufacturer's instructions.

B. Conduct field test to determine watertightness of storefront system. Conduct test in accordance with AAMA 501.2.

#### 3.4 Adjusting and Cleaning:

A. Adjust swing doors for operation in accordance with manufacturer's recommendations.

B. Clean installed products in accordance with manufacturer's instructions prior to acceptance, and remove construction debris from project site. Legally dispose of debris.

C. Protect the installed product's finish surfaces from damage during construction.

END OF SECTION

SECTION 08580  
TRANSACTION WINDOWS

PART 1 – GENERAL

1.1 Summary:

- A. This section includes transaction windows as shown on drawings.

1.2 Submittals:

- A. Product Data: Submit manufacturer's technical product data.
- B. Shop drawings: Submit for fabrication and installation of windows. Include details, elevations, and installation requirements.

1.3 Delivery, Storage, and Handling:

- A. Deliver windows crated to provide protection during transit and job storage.
- B. Inspect windows upon delivery for damage. Unless minor defects can be made to meet the Architect's specifications and satisfaction, damaged parts should be removed and replaced.
- C. Store windows at building site under cover in dry location.

1.4 Project Conditions:

- A. Field Measurements: Check opening by accurate field measurement before fabrication. Show recorded measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of work.

1.5 Warranty:

- A. All material and workmanship shall be warranted against defects for a period of one (1) year from date of purchase.

PART 2 – PRODUCTS

2.1 Acceptable Manufacturers:

- A. Basis of Design: Design is based on transaction windows, as manufactured by C. R. Laurence Co., Inc.

- B. Product information is listed for reference purposes to establish material characteristics, quality, and finish. Alternate manufacturer's products shall meet or exceed the listed products.

2.2 Materials:

A. Transaction Windows:

1. Frame: Aluminum cashier window frame to be 1.390" x 0.625" extruded aluminum; size as shown on the drawings.
2. Finish: All aluminum to be clear anodized.
3. Glazing: 1/4" clear tempered glass.
4. Shelf: Provide a shelf not less than 2" thick with recessed deal tray. The shelf is to be the full width of the window and 18" deep.
5. Voice Transmission: Communication permitted by 834A no draft speak-thru centered in glazing.
6. Ticket Window: Half-round ticket window (12 x 6) to be centered in glazing, and sits atop stainless steel shelf.

PART 3 – EXECUTION

3.1 Installation:

- A. Install frames and glazing in accordance with manufacturer's printed instructions and recommendations.

3.2 Cleaning:

- A. Clean frame and glazing surfaces after installation, complying with requirements contained in the manufacturer's instructions. Remove excess glazing sealant compounds, dirt or other substances.

3.3 Protection:

- A. Institute protective measures required throughout the remainder of the construction period to ensure that all the windows do not incur any damage or deterioration, other than normal weathering, at the time of acceptance.

END OF SECTION

SECTION 08800  
GLASS AND GLAZING

PART 1 - GENERAL

1.1 Quality Assurance:

A. Referenced Publications:

1. American National Standards Institute, Inc. (ANSI)
2. American Society for Testing and Materials (ASTM)
3. Glazing Manual: Flat Glass Marketing Association, 1990 Edition (FGMA)
4. Federal Specifications (FS)

1.2 Related Sections:

- A. Section 06200, Finish Carpentry and Millwork
- B. Section 08410, Aluminum Storefront Systems

1.3 Warranties:

1. Insulating Glass: Manufacturer's written 10 year warranty, guaranteeing that insulating glass units will not develop material obstruction to vision as a result of dust or film formation on the inner glass surfaces caused by failure of the hermetic seal, other than through glass breakage. Guarantee shall commence on date of Architect's Certificate of Substantial Completion. Any units failing to comply with the terms of this contract shall be replaced at no additional cost to Owner within 45 days after receipt of notice of failure from the Owner.

1.4 Submittals:

- A. General: Make submittals in accordance with Section 01300.
- B. Product Data: Manufacturer's data describing product characteristics, installation instructions and recommendations, and maintenance procedures.
- C. Guarantees: Submit specimen copies of guarantees and warranties described hereinbefore.
- D. Samples: 8" x 8" for each glass type described hereinafter.
- E. Submit manufacturer's written certification stating the specified U-factor and SHGC.

1.5 Product Handling:

- A. Delivery: Deliver products of this section in manufacturer's original packaging with label intact and legible.
- B. Storage and Protection: Store products as recommended by their manufacturer to prevent damage to glass edges and to prevent damage due to temperature changes, sunlight and moisture.

1.6 Job Conditions:

A. Temperature: Do no glazing when the ambient temperature is below 40 degrees F.

B. Sequencing: Carefully coordinate and schedule with other trades to insure that glazing operations are done at the appropriate time and in the proper sequence.

PART 2 - PRODUCTS

2.1 Manufacturers:

A. Design is based on products manufactured by P.P.G./Pittsburgh, PA.

B. Product information is listed for reference purposes to establish material characteristics, quality, and finish. Alternate manufacturer's products shall meet or exceed the listed products. Other acceptable manufacturers shall include:

1. Libbey-Owens-Ford
2. Guardian Industries

2.2 Materials:

A. Insulating Glass: "Solarcool (2) Gray and Sungate (3) Clear" Low-E (low emission coating), formed by two pieces of 1/4 inch thick glass, meeting requirements of ASTM C1036 separated by 1/2 inch dehydrated hermetically sealed air space. Glass shall be tempered. Outdoor lite shall be gray performance tinted glass with a second-surface "Solarcool" reflective coating; interior lite shall be clear glass with a third surface "Sungate 500" passive Low-E coating.

1. Invisible Light Transmission: 15%
2. Outdoor Visible Light Reflectance: 11%
3. U-Value:
  - a. Winter - 0.35
  - b. Summer - 0.35
4. Shading Coefficient - 0.3
5. Solar Heat Gain Coefficient (SHGC) - 0.26
6. Light to Solar Gain Ratio: 0.56

B. 1/4" Tempered Glass - Exterior: Color to match insulating glass meeting ANSI Z97-1 and ASTM C-1048.

C. 1/4" Tempered Glass - Interior: Tempered safety glass, 1/4" thick, heavy, select glazing meeting ANSI Z97.1 and ASTM C-1048.

D. Glazing Compound: Conform to FS TT-G-410.

E. Flexible Vinyl Gasket Channels: Conform to ASTM D2287.

F. Glazing Tape: 100% solid Polyisobutylene Butyl, 1/8" thick, reinforced with removable paper back.



G. Glazing Blocks: Neoprene, EPDM or silicone.

1. Setting Blocks: 30 to 90 shore a hardness.
2. Spacers: As required to provide face and edge clearances recommended by

FGMA.

H. Backer Rod: Flexible, non-absorbent, compressible polyurethane foam, either open-cell or non-gassing closed-cell, unless otherwise restricted by the sealant manufacturer; performed to size and shape required.

I. Sealant: One part silicone construction sealant meeting FS TT-S-00230C (COM-NBS) Type II, Class A.

### 2.3 Fabrication:

A. General: Fabrication glass to sizes and designs shown on the drawings with bite edge clearance dimensions, including tolerances, as recommended by glass manufacturer and FGMA.

## PART 3 - EXECUTION

### 3.1 Installation:

A. Preliminary Requirements:

1. Check frames prior to glazing. Openings shall be square, plumb, and with uniform face and edge clearances. Maintain 1/8" minimum bed clearance between glass and frame on both sides, unless otherwise required by glass manufacturer.
2. Clean surfaces to be glazed. Any defects affecting satisfactory installation of glass shall be corrected before start of glazing.
3. Steel surfaces and frames shall be sealed or primed before glazing. Do not set glass in steel frames until paint is dry.

B. Glazing:

1. Apply structural glazing compound, glazing sealant and glazing tape uniformly with formed corners and bevels. Use only recommended thinners, cleaners, and solvents. Do not cut or dilute glazing compounds or sealants without approval of Architect. Make continuous contact with glass and frame when glazing and facing off.
2. Remove excess compound and sealant from glass and adjoining surfaces as work progresses.
3. Place setting blocks at quarter points of sills, buttered with compound or sealant and allow to set before installing glass.
4. Except for aluminum doors and frames, install glass in doors and frames with glazing tape and sealant, retained by the removable stops specified to be furnished with the doors and frames.
  - a. Cut tape to length and apply first to entire width of stops at head and sill. Set vertical strips at jambs butted to head and sill pieces. Do not over lap tapes. Remove paper from tape and crimp butt joints with the aid of glazing knife to insure welded corners.

b. Place setting blocks on the sill at quarter points, and place spacer shims around perimeter of glass spaced not over 24" apart.

c. Set glass on setting blocks, align edges, and press into tape.

d. Apply a heel bead of glazing sealant around perimeter of glass, maintaining a 3/16" minimum bite to the glass and a positive bond to the frame. The void around the glass shall be sealed. Bead sealant must be large enough so that some of it will partially fill the channel between the glass and removable stops when they are set.

5. Secure stops in place. The entire glazing rabbet shall be filled with glazing sealant to sight line. Strip excess sealant from glass and frame.

6. Insulating units shall not have edges or corners ground, nipped, cut or fitted after leaving the factory; shall not be subject to springing, forcing, or twisting during setting; and shall be handled so as not to strike setting frames or other objects.

7. Set glass in aluminum frames and doors without compound and with neoprene glazing gaskets and stops.

C. Glazing Schedule: Refer to drawings and referenced specification sections for locations and types of openings and glazing.

### 3.2 Field Quality Control:

A. Protection: Protect glass from damage during subsequent construction operations.

B. Replacement: Replace damaged glass at no additional cost to Owner.

C. Cleaning:

1. Remove dirt, contaminants, staining agents and other deposits promptly, using manufacturer's recommended procedures.

2. Remove excess sealant as work progresses, using methods that will not damage glass.

3. Wash both sides of glass, using manufacturer's recommended procedures, not more than two (2) days before final inspection.

END OF SECTION