SECTION 08 41 13
ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Exterior aluminum-framed storefront.
2. Exterior fixed windows.
3. Exterior and interior swinging aluminum entrance doors.
4. Interior aluminum-framed sliding doors.

B. Related Sections:
1. Section 08 80 00 Glazing, for glass installed in entrances and storefronts.
2. Section 08 71 00 Door Hardware, for hardware installed on entrances.
3. Section 08 71 13 Automatic Door Operators for automatic door operators installed in entrance door systems.
4. Power to electrified components: Electrical work (shown on Drawings).

1.02 PERFORMANCE REQUIREMENTS

A. General: Provide aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:
1. Structural loads.
2. Thermal movements.
3. Failure includes the following:
   a. Deflection exceeding specified limits.
   b. Thermal stresses transferred to building structure.
   c. Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
   d. Noise or vibration created by wind and thermal and structural movements.
   e. Loosening or weakening of fasteners, attachments, and other components.
   f. Sealant failure.
   g. Failure of operating units to function properly.

B. Wind Loads: Provide products capable or resisting the following loads:
1. Wind Loads, for Exterior Applications: 20 lb./sf inward; 25 lb/sf outward.

C. Deflection of Framing Members Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13'-6" and to 1/240 of clear span plus 1/4 inch for spans greater than 13'-6" or an amount that restricts edge deflection of individual glazing lights to 3/4 inch, whichever is less.

D. Structural-Test Performance: Systems tested according to ASTM E 330 as follows:
1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.

3. Test Durations: As required by design wind velocity but not less than 10 seconds.

E. Temperature Change (Range): Exterior wall systems accommodate 120 deg F, ambient; 180 deg F, material surfaces.

F. Air Infiltration: Maximum air leakage through fixed glazing and framing areas of systems of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 6.24 lbf/ sq. ft.

G. Water Penetration Under Static Pressure: Systems do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 10.0 lbf/sq. ft.

H. Average Thermal Conductance (Thermally-Broken Framing System): Fixed glazing and framing areas of systems have average U-factor of not more than 0.58 Btu/sq. ft. x h x deg F when glazed with clear, uncoated insulating glass and tested according to AAMA 1503.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.
1. Include data indicating compliance with structural performance requirements.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
1. For entrances, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.
2. Electrical diagrams for electrified hardware.

C. Samples: For exposed finish on aluminum.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Acceptable to manufacturer and capable of preparation of data for aluminum-framed systems including Shop Drawings based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

1.05 COORDINATION

A. Coordinate electrified hardware, low energy operator, and with Owner-supplied access control system. Provide system with necessary interconnections, voltage as required by Owner’s access control system, and sequence of operation that meets Owner’s requirements.

1.06 WARRANTY

A. Special Assembly Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that deteriorate as defined in this Section within specified warranty period.
1. Failures include, but are not limited to, the following:
a. Structural failures including, but not limited to, excessive deflection.
b. Noise or vibration caused by thermal movements.
c. Deterioration of metal and other materials beyond normal weathering.

d. Water leakage through fixed glazing and framing areas.
2. Warranty Period: Five years from date of Substantial Completion.

B. Special Finish Warranty: Repair or replace components on which finishes fail within specified warranty period; warranty may exclude normal weathering.
1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
1. Sheet and Plate: ASTM B 209.
2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308/B 308M.

2.02 STOREFRONT AND WINDOWS PRODUCTS

A. Exterior Systems, Basis-of-Design Product: Thermally-broken, center-glazed system; subject to compliance with requirements, provide EFCO Corporation; 403I or comparable product by one of the following:
1. Tubelite.
2. Vistawall Architectural Products.

B. Interior Systems, Basis-of-Design Product: Non-thermal, center-glazed system; subject to compliance with requirements, provide EFCO Corporation; 402NT or comparable product by one of the following:
1. Tubelite.
2. Vistawall Architectural Products.

2.03 STOREFRONT AND WINDOW FRAMING SYSTEMS

A. Framing Members, General: Manufacturer's standard extruded-aluminum framing members of profile indicated and of thickness required, reinforced as required to support imposed loads. Furnish systems designed to be glazed from the interior.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with non-staining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.
1. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
2. Reinforce members as required to receive fastener threads.
3. Avoid exposed fasteners; however, if they are necessary, use fasteners with countersunk Phillips screw heads.

D. Concrete Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/A 153M requirements.

E. Flashing: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding flashing compatible with adjacent materials. Form exposed flashing from sheet aluminum finished to match framing and of sufficient thickness to maintain flat appearance without visible deflection.

F. Framing System Gaskets and Sealants: Manufacturer's standard for joint type.

2.04 GLAZING SYSTEMS

A. Glazing: As specified in Section 08 80 00 Glazing.

B. Glazing Gaskets: Manufacturer's standard compression types, replaceable, molded or extruded, that maintain uniform pressure and watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric types.

2.05 SWINGING ENTRANCE DOORS

A. Entrance Doors: Manufacturer's standard 2-inch thick thermally-broken glazed doors, for manual swing operation.
1. Basis-of-Design: EFCO; D302 Thermastile.
2. Door Design: Medium stile; 3-1/2-inch nominal width, with 10 inch high bottom rail to meet accessibility requirements.
3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets. Provide non-removable glazing stops on outside of door.

B. Door Hardware: As specified in Section 08 71 00 Door Hardware.

2.06 SLIDING ENTRANCE DOORS

A. Sliding Entrance Doors: Non-thermally broken aluminum-framed, monolithically-glazed, sliding and stacking door system suspended from above.
1. Product: Nana Wall; VSW35.
2. Configuration: Provide two panels of equal width to secure opening.

B. Door Hardware:
1. Sliding Hardware Assembly: Manufacturer’s standard track and suspension trolley system. Design track to store two panels within storage pocket. Where space permits, store door panels without stacking to minimize depth.
2. Locks and Bolts: Manufacturer’s standard locking system to secure panels in place.
3. Cylinder: As specified in Section 08 71 00 Door Hardware.

2.07 ACCESSORY MATERIALS

A. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil thickness per coat.

2.08 FABRICATION

A. Form aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
1. Sharp, straight profiles, free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Weep system; means to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Concealed fasteners, anchors, and connection devices.

D. Glazed Framing Members: Fabricate for flush glazing (without projecting stops).

E. Door Frames: Reinforce as required to support loads imposed by door operation and for installing hardware.
1. At exterior doors, provide compression weather stripping at fixed stops.

F. Doors: Reinforce doors as required for installing hardware.
1. At exterior doors, provide weather sweeps applied to door bottoms.

G. Hardware Installation: Factory install hardware to the greatest extent possible. Cut, drill, and tap for factory-installed hardware before applying finishes.

H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.09 ALUMINUM FINISHES

A. General: Comply with the NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.

B. Doors, Frames, and Windows: AAMA 611, Class I, clear anodized.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General:
1. Fit joints to produce hairline joints free of burrs and distortion.
2. Rigidly secure nonmovement joints.

3. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
4. Seal joints watertight, unless otherwise indicated.

B. Metal Protection:
1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Section 07 92 00, Joint Sealants and to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, without warp or rack.

F. Aluminum Doors: Install to produce smooth operation and tight fit at contact points.
1. Exterior Entrances: In addition, install to produce tight fit at weather stripping and weathertight closure.
2. Field-Installed Hardware: Install surface-mounted hardware according to hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

G. Install glazing as specified in Section 08 80 00 Glazing.

H. Install perimeter joint sealants as specified in Section 07 92 00 Joint Sealants and to produce weathertight installation.

I. Erection Tolerances: Install aluminum-framed systems to comply with the following maximum tolerances:
1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet; 1/4 inch over total length.
2. Alignment:
   a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch.
   b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
3. Diagonal Measurements: Limit difference between diagonal measurement to 1/8 inch.

END OF SECTION 08 41 13