**SECTION 08 42 13**

**ALL GLASS ENTRANCES
(Insulating Glass Entrance System)**

1. **GENERAL**
	1. **Summary**
		1. Section Includes
			1. Insulated Glass Entrance Door and Frame Components
			2. Accessories
		2. Products Installed But Not Supplied Under This Section
			1. Tempered Glass: [Section 08 80 00] [Section 08 88 00]
			2. Door Hardware: Section 08 71 00
		3. Related Requirements
			1. Section 01 25 00 – Substitution Procedures
			2. Section 01 33 00 – Submittal Procedures
			3. Section 01 45 33 – Code-Required Testing and Special Inspections
			4. Section 01 70 00 – Execution and Closeout Requirements
			5. Section 08 71 00 – Door Hardware
			6. Section 08 80 10 – Glazing
			7. Section 08 88 00 – Special Function Glazing
	2. Reference
		1. Abbreviations and Acronyms

|  |  |
| --- | --- |
| * + - 1. °F
 | Degrees Fahrenheit |
| * + - 1. AHJ
 | Authorities Having Jurisdiction |
| * + - 1. ANSI/BHMA
 | Standards and publication developed by Builders Hardware Manufacturers Association in conjunction with American National Standards Institute. |
| * + - 1. Btu
 | British thermal unit |
| * + - 1. cf/min./sf
 | Cubic feet per minute per square foot |
| * + - 1. L/s/m2
 | Liters per second per square meter |
| * + - 1. Pa
 | Pascal |
| * + - 1. psf
 | Pounds per square foot |

* + 1. Reference Standards
			1. American Architectural Manufacturers Association (AAMA) Publications:

|  |  |
| --- | --- |
| * + - * 1. CW-10 - 15
 | Care and Handling of Architectural Aluminum from Shop to Site |
| * + - * 1. 501.2 – 15
 | Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems |
| * + - * 1. 1503 - 09
 | Voluntary Test Method for Thermal Transmittance and Condensation Resistance Of Windows, Doors and Glazed Wall Sections |

* + - 1. ASTM International (ASTM) Publications:

|  |  |
| --- | --- |
| * + - * 1. B221 – 21
 | Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes  |
| * + - * 1. E283/E283M - 19
 | Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen |
| * + - * 1. E527 – 16
 | Standard Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS) |
| * + - * 1. E330/E330M – 14 (2021)
 | Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference |
| * + - * 1. E331 – 00 (2016)
 | Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference |

* + - 1. International Building Code (IBC) Publications:

|  |  |
| --- | --- |
| * + - * 1. IBC
 | Latest Edition adopted by AHJ |

* 1. **Submittals**
		1. Section 01 33 00
	2. **Action Submittals**
		1. Product Data
			1. Manufacturer’s technical product data for insulating glass entrance systems, including:
				1. [Door hardware,] [automatic in-ground operators,] components, and accessories.
				2. Standard details and fabrication method.

Include fabrication details, material description, dimensions of individual components and profiles, and finishes.

* + - * 1. Test data: Fabricated door.
		1. Test Reports:
			1. Provide test reports showing system meets:
				1. AAMA 501.2 and 1503; and
				2. ASTM E527, E330/E330M and E331.
		2. Shop Drawings
			1. Dimensioned drawings of insulated glass entrance doors indicating:
				1. Plans, elevations, and sections.

Elevation-Scale: ¼ inch per foot

* + - * 1. Details and Isometric Drawings: Fittings, rails, framing, and glazing.
				2. Door Hardware: Locations, mounting heights, quantities, and installation requirements.
				3. Anchorage and reinforcement.
		1. Samples
			1. Manufacturer’s finishes on exposed areas for each color and type finish:
				1. Metal Fittings and Components: 6-inch long sections.
				2. Provide 3 samples of each.
		2. Entrance Door Hardware Schedule
			1. Prepared by Supplier:
				1. Detail fabrication and assembly of hardware.
				2. Detail procedures and diagrams.
			2. Coordinate and verify:
				1. Components, assemblies and related work.
				2. Proper size, thickness, hand, function and finish.
		3. Manufacturers’ Written Instructions
			1. Site Storage
			2. Installation
			3. Cleaning
	1. **Closeout Submittals**
		1. Warranty Documentation
			1. Manufacturer’s Product Warranty
		2. Record Documentation
		3. Section 01 70 00
	2. **Quality Assurance**
		1. Certifications
			1. Supervisor and Installers:
				1. Evidence of completed installations of insulating glass entrances similar in design and extent to those required for this project.
				2. Installation work has a record of successful in-service performance.
		2. Mock-ups
			1. Prepare mock-up for approval by Architect.
			2. Mock-up will serve as a standard for installation.
		3. Components and Fittings
			1. Provide from a single-source manufacturer.
			2. Door rail systems: Comply with ANSI/BHMA Grade 1.
	3. **Delivery, Storage and Handling**
		1. Delivery and Acceptance Requirements
			1. Protect materials and components against damage during transit.
			2. Deliver in Manufacturer’s original, unopened, undamaged containers with identification labels intact.
			3. Upon delivery, inspect for damage.
				1. Repair of minor defects and damage subject to Architect’s approval.
				2. Remove damaged and unacceptable parts and replace with new.
		2. Storage and Protection
			1. Store materials to protect from exposure to harmful weather conditions and damage from elements, construction activities, and hazards before, during and after installation.
			2. Do not use adhesive papers or sprayed coatings that become firmly bonded when exposed to sunlight or high temperatures. Do not leave coating residue on surfaces.
		3. Handling
			1. Avoid damaging materials and components during handling.
			2. Handle products in accordance with AAMA CW-10.
	4. **Site Conditions**
		1. Field Measurements
			1. Take field measurements before fabrication.
				1. Verify actual measurements or openings, and record measurements on shop drawings.
				2. Coordinate fabrication tolerances to insure proper fit.
			2. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.
	5. **Warranty**
		1. Manufacturer Warranty: 2 years
			1. Repair or replace components of insulating glass entrances that fail in materials or workmanship within the specified warranty period.
		2. Section 01 70 00
1. **PRODUCTS**
	1. **Manufacturers**
		1. Acceptable Manufacturer
			1. FHC- Frameless Hardware Company
		2. Contact: Jesse Dorado
		3. Phone: 888-295-4531
		4. Fax: 323-336-8307
		5. Email: architectural@fhc-usa.com
		6. Website: [www.fhc-usa.com](http://www.fhc-usa.com)
			1. Substitutions: Not permitted.
	2. **Performance/Design Criteria**
		1. System
			1. Aspire™ Insulating Glass Entrance Systems
				1. Door Frame Components
				2. Door Components
		2. Basis of Design
			1. Frameless Hardware Company LLC (FHC) Aspire™ Insulating Glass Entrance Systems
			2. Insulating Glass Entrance System used for establishing quality, performance, appearance, including layout, material, attachment method and ease of installation.
				1. Sizes, profiles and dimensions are based on specific types and models, support and express the design concept. For minor deviations in dimensions and profiles, submit a Substitution Request. (Section 01 25 00)
		3. Performance Criteria
			1. Components:
				1. Loading: Withstand loading requirements without damage or permanent set when tested. (ASTM E330)
				2. Member Deflection: Restrict to flexure limit of glass in any direction with full recovery of glazing.
				3. Movement: Accommodate movement between storefront and perimeter framing, and deflection of lintel without damage to components or deterioration of seals.
				4. Expansion and Contraction: Accommodate expansion and contraction within system components without causing detrimental effect to system components, anchorages, and other building elements.
			2. Minimum Requirements:
				1. Expansion and Contraction:

Cycling temperature range: 170° F over a 12-hour period.

* + - * 1. Design Wind Loads:

1.5 times required by IBC.

Duration: 10 seconds at maximum load.

* + - * 1. Air Infiltration through Assembly:

0.06 cf/min./sf wall area, maximum.

Measure: Reference differential pressure across assembly of 6.24 psf (ASTM E283/E283M).

* + - * 1. Condensation Resistance Factor (CRF) of Exterior Frames:

57, minimum (AAMA 1503.1)

* + - * 1. Thermal Resistance (U value) of Exterior Framing:

0.38 Btu/hour/foot2/°F (AAMA 1503.1).

* + - * 1. Water Leakage:

None with test pressure difference of 12 psf (ASTM E331).

* + - * 1. System Internal Drainage:

Weep drainage network.

 Drain water entering joints, condensation occurring in glazing channel, and migrating moisture to exterior.

* + - 1. Insulated glass unit: OITC 25, minimum.
			2. Doors:
				1. Air leakage: 1.5 L/s/m2 at 300 Pa, maximum.
				2. Water infiltration: ASTM E527 and ASTM E331 at 440 Pa.
			3. Door and Sidelight System
				1. Wind and design loads: ASTM E330/E330M.
	1. **System Components**
		1. Door Frame
			1. Door Wall Jamb
				1. Size: 1-3/16 inches by 2-7/16 inches
			2. [Header (with Floor Closers)
				1. Size: 3/8 inch by 2-3/8 inches]

***\*\*\*\*\*[OR]\*\*\*\*\****

* + - 1. [Header (with Overhead Closers)
				1. Size: 1-3/4 inches by 4-1/2 inches
				2. Strike Attachment
			2. Threshold (ADA Compliant)
				1. Width: [5 inches] [7 inches]
				2. Rise: ½-inch;
				3. Slope: 1:2
		1. Door
			1. Top Door Rail
				1. Size: 4 inches by 2-3/8 inches
			2. Bottom Door Rail
				1. [Size: 4 inches] ***\*\*\*\*\*[OR]\*\*\*\*\**** [Size: 4 inches by 2-3/8 inches]
				2. [Size: 10 inches] ***\*\*\*\*\*[OR]\*\*\*\*\**** [Size: 10 inches by 2-3/8 inches]
			3. Vertical Door Stile
				1. Size: 2-1/16 inches by 13/16 inch
			4. Material:
				1. Extruded Aluminum: ASTM B221
			5. Finish (Cladding):
				1. [Brushed Stainless Steel (304 Alloy)]
				2. [Polished Stainless Steel (304 Alloy)]
				3. [Matte Black]
				4. [Polished Brass]
				5. [Satin Brass]
				6. [Oil Rubbed Bronze]
		2. Tempered Glass
			1. Insulated
				1. Thickness: 1-inch
			2. Refer to [Section 08 80 10] [Section 08 88 00].
		3. Accessories
			1. Door Hardware
				1. Section 08 71 00
	1. **Fabrication**
		1. Fabricate doors, components, hardware and accessories to accommodate required fittings, anchors, and reinforcement.
		2. Shop assemble doors, components, hardware and accessories to greatest extent possible.
			1. Continuity: Maintain accurate relation of planes and angles with fit of contacting members.
		3. Ship completely assembled units ready for installation.
			1. Disassemble minimum number of items necessary to accommodate shipping and installation.
1. **EXECUTION**
	1. **Examination**
		1. Verification of Conditions
			1. Examine substrates and supports for compliance with installation tolerances and conditions required for proper installation of doors and frames, and identify conditions detrimental to work.
			2. Proceed with installation after unsatisfactory conditions have been corrected.
	2. **Preparation**
		1. Protection of In-Place Conditions
			1. Exercise care in using equipment and installing doors and door frames.
			2. Provide means to protect other work from damage.
	3. **Installation**
		1. General:
			1. Install doors, components, hardware and accessories in accordance with manufacturer’s written instructions.
				1. Cutting, drilling and other alternation to tempered glass after tempering is not permitted.
			2. Install units level, plumb and true to line with uniform joints.
			3. Maintain uniform clearances between adjacent components.
		2. Adjusting
			1. Doors:
				1. Adjust to produce smooth operation, tight fit at contact points and weather tight closure.
				2. Provide a tight fit at meeting points and weather-stripping.
			2. Hardware:
				1. Adjust operating hardware to provide proper operation.

Comply with requirements in Section 08 71 00.

* + - * 1. [Install floor closer cases.

Set, seal and grout.]

***\*\*\*\*\*[OR]\*\*\*\*\****

* + - * 1. [Install overhead door closers.

Adjust for smooth operation.]

* 1. **Field Quality Control**
		1. Inspections
			1. Verify components are installed following manufacturer’s installation instructions and meet tolerances.
			2. Verify doors are weather-tight and hardware operates smoothly.
			3. Verify finishes are not marred or damaged.
		2. Testing
			1. Test Aluminum-Framed Entrance System as part of whole building air infiltration system.
			2. Meet building code requirements.
			3. Section 01 45 33
		3. Non-Conforming Work
			1. Adjust doors and hardware.
			2. Remove and replace items that cannot be repaired to satisfaction of Architect.
			3. Inspect.
	2. **Cleaning**
		1. Glass:
			1. Clean and polish in accordance with manufacturer written instructions.
			2. Remove excess glazing and sealant compounds, dirt, debris and other substances.
		2. Metal Surfaces:
			1. Wash with clean water and mild detergent.
			2. Avoid abrasive chemicals, detergents and implement that may mar or gouge material.
	3. Protection
		1. Protect doors, hardware and finishes from damage or deterioration.
			1. Provide temporary protective covering approved by manufacturer.
			2. Remove protective coverings at [Substantial Completion] [Project Completion].
		2. Repair damaged components.
			1. Follow manufacturer’s written recommendations.
			2. If component cannot be restored to like-new condition, provide new component.
		3. Restore damaged finishes.
			1. Refinish unit in field or shop.
			2. Reinstall and adjust.

**END OF SECTION**