SECTION 081614 – FRP FLUSH DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Fiberglass reinforced polyester (FRP) flush doors.

B. Related Sections:

1. Section 084113 “Aluminum-Framed Entrances and Storefronts” for aluminum frames for FRP doors.
2. Section 087100 “Door Hardware”.
3. Section 088000 “Glazing”.

1.3 DEFINITIONS

A. ADA/ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disability Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities."

1.4 REFERENCES

A. American Architectural Manufactures Association (AAMA) – AAMA Glossary (AAMA AG): For fenestration industry standard terminology and definitions.

B. SFBC: South Florida Building Code.

1.5 PERFORMANCE REQUIREMENTS

A. General Performance: Provide door assemblies that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer’s corresponding standard systems.

B. Structural Loads:

1. Wind Loads:

a. Basic Wind Speed: 90 mph (40 m/s).
b. Importance Factor: 1.15.
c. Exposure Category: C.

2. Seismic Loads: As indicated on Drawings.

C. Air Infiltration: For a single door 36 inches by 84 inches (914 mm by 2134 mm) width by height, test specimen shall be tested in accordance with ASTM E 283 at pressure differential of 6.24 psf. Door shall not exceed 0.90 cfm per lineal foot at perimeter crack.

D. Water Resistance: For a single door 36 inches by 84 inches (914 mm by 2134 mm) width by height, test specimen shall be tested in accordance with ASTM E 331 at pressure differential of 7.50 psf. Door shall not have water leakage.

E. Hurricane Test Standards, Single Door with Single-Point Latching:

1. Uniform Static Load, ASTM E 330: Plus or minus 75 pounds per square foot.
2. Forced Entry Test, 300 Pound Load Applied, SFBC 3603.2 (b)(5): Passed.
3. Cyclic Load Test, SFBC PA 203: Plus or minus 53 pounds per square foot.
4. Large Missile Impact Test, SFBC PA 201: Passed.

F. Sound Transmission: Exterior doors shall be tested in compliance with ASTM E 90 and produce a minimum STC rating of 25.

G. Thermal Transmission: Exterior doors shall comply with the requirements of AAMA 1503-98; maximum of 0.29BTU/hr x sf x degrees F, minimum of 55 CRF value.

H. Surface Burning Characteristics: Interior faces of FRP exterior panels shall be tested in accordance with ASTM E 84, Class A option:

1. Flame Spread: Maximum of 25.
2. Smoke Developed: Maximum of 450.

I. Impact Strength: FRP doors and panels shall be tested in accordance with ASTM D 256; 15.0 foot-pounds per inch of notch.

J. Tensile Strength: FRP doors and panels shall be tested in accordance with ASTM D 638; 14,000 psi.

K. Flexural Strength: FRP doors and panels shall be tested in accordance with ASTM D 790; 21,000 psi.

L. Water Absorption: FRP doors and panels shall be tested in accordance with ASTM D 570; 0.20 percent after 24 hours.

M. Indentation Hardness: FRP doors and panels shall be tested in accordance with ASTM D 2583; 55.

N. Abrasion Resistance: Face sheets shall be tested in accordance with the Taber Abrasion Test; 25 cycles at 1,000 gram weight with CS-17 wheel to produce a maximum of 0.029 average weight loss percentage.

O. Stain Resistance: Face sheets shall be tested in accordance with ASTM D 1308 and be unaffected after exposure to red cabbage, tea, and tomato acid and stains shall be removed easily with mild abrasive or FRP cleaner when exposed to crayon and crankcase oil.

P. Chemical Resistance: Tested in accordance with ASTM D 543 to produce an excellent rating:

1. Acetic acid, concentrated.
2. Ammonium hydroxide, concentrated.
3. Citric acid, 10%.
4. Formaldehyde.
5. Hydrochloric acid, 10%.
6. Sodium hypochlorite, 4 to 6 percent solution.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for FRP flush doors.

B. Shop Drawings: For FRP flush doors. Include plans, elevations, sections, details, and attachments to other work, operational clearances and installation details

C. Samples for Initial Selection: For units with factory-applied color finishes including hardware and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type, class, grade, and size of FRP flush doors.

F. Other Action Submittals:

1. FRP Flush Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer and testing agency.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for FRP flush doors, indicating compliance with performance requirements.

C. Warranties: Sample of special warranties.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For FRP flush doors to include in maintenance manuals.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

1. Do not revise intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If revisions are proposed, submit comprehensive explanatory data to Architect for review.

C. Accessible Entrances: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

D. Source Limitations for FRP Flush Doors: Obtain from single source from single manufacturer.

E. Preinstallation Conference: Conduct conference at Project site.

1.10 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of FRP flush doors that do not comply with requirements or that fail in materials or workmanship 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 metals, metal finishes, and other materials beyond normal weathering.
d. Adhesive or cohesive sealant failures.
e. Water leakage through fixed glazing and framing areas.
f. Failure of operating components.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Special-Lite, Inc.; SL-17 Flush Doors, or comparable product by one of the following:

1. Kawneer North America; an Alcoa company; Flushline Entrances.
2. Manco Window Systems, Inc.; 170 Series.

B. Door Opening Size: As indicated on drawings and door schedule.

C. Construction:

1. Door Thickness: 1-3/4 inches (44 mm).
2. Stiles and Rails: Aluminum extrusions made from prime-equivalent billet, minimum 2-5/16 inch (59 mm) depth.
3. Corners: Mitered.
4. Provide joinery of 3/8 inch (9.5 mm) diameter full-width tie rods through extruded splines top and bottom integral to standard tubular shaped stiles and rails reinforced to accept hardware as specified.
5. Securing Internal Door Extrusions: 3/16 inch (4.8 mm) angle blocks and locking hex nuts for joinery:

    a. Welds, glues, or other methods are not acceptable.

6. Furnish extruded stiles and rails with integral reglets to accept face sheets; lock face sheets into place to permit flush appearance.

    a. Rail caps or other face sheet capture methods are not acceptable.

7. Extrude top and bottom rail legs for interlocking continuous weather bar.
8. Meeting Stiles: Pile brush weatherseals; extrude meeting stile to include integral pocket to accept pile brush weatherseals.
9. Bottom of Door: Install bottom weather bar with nylon brush weatherstripping into extruded interlocking edge of bottom rail.
10. Use of glue to bond sheet to core or extrusions is not acceptable.

2.2 MATERIALS

A. Aluminum:

1. Extrusions: ASTM B 221; 6063-T5 or 6063-T6.
2. Sheet and Plate: ASTM B 209.
3. Alloy and Temper: As recommended by aluminum-framed flush entrance doors manufacturer for strength, corrosion resistance, and application of required finish and not

less than 0.09 inch (2.25 mm) wall thickness at any location for the main frame and sash members.

B. Face Sheets:

1. Pebbled texture fiberglass reinforced polyester (FRP), 0.120 inch (3 mm) thick Class A sheet, finish color throughout.
2. For interior and exterior, 0.125 inch (3.1 mm) tempered hardboard backer to be used with a face sheet for impact resistance.
3. Color: As selected from manufacturer's full range.

C. Core:

1. Foamed-in-place Class 1 urethane foam at 5.0 lb./cu.ft. density.
2. R-value: minimum 9.
3. Urethane foam shall have zero ozone depletion potential ("0" O.D.P.) and contain no chlorofluorocarbons (CFC's) or hydrochlorofluorocarbons (HCFC's).

D. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum-framed flush entrance door members, trim hardware, anchors, and other components.

E. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.

F. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for Type SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.

2.3 FRP FLUSH DOOR HARDWARE

A. General: As specified in Section 087100 "Door Hardware".

B. Pre-machine doors in accordance with templates from specified hardware manufacturers and hardware schedule.

C. Factory install FRP flush door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

D. Pull Handles: Provide manufacturer's standard recessed pull handle at all exterior faces of FRP flush doors.

2.4 GLAZING SYSTEMS

A. General: As specified in Section 088000 "Glazing".

B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber complying with ASTM E 2203.

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

D. Vision Lites:

1. Provide aluminum framed vision lites.
2. Factory install vision lites.

2.5 FABRICATION

A. Coordination of Fabrication: Field measure before fabrication and show recorded measurements on shop drawings.

B. Assembly:

1. Complete cutting, fitting, forming, drilling, and grinding of metal before assembly.
2. Remove burrs from cut edges.
3. Accurately fit and secure joints and corners; make joints hairline in appearance.
4. Prepare components with integral reinforcement for door hardware.
5. Arrange fasteners and attachments to conceal from view.

C. Welding of doors of frames in not acceptable.

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

2.6 FINISHES

A. General: Comply with AAMA-AFPA "Anodic Finishes/Painted Aluminum" for recommendations for applying and designating finishes.

B. Anodized Finish:

1. Clear, AA-M10C22A44, Class I finish, 0.7 mils thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with the requirements for installation tolerances and other conditions affecting performance of work.

B. Verify rough opening dimensions, levelness of sill plates and operational clearances.

C. Examine wall flashings, air barriers, and other built-in components to ensure a coordinated, weathertight installation.

1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
2. Metal Surfaces: Dry, clean, free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.

D. Notify Construction Manager of conditions that would adversely affect installation and subsequent use.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing FRP flush doors, hardware, accessories, and other components.

B. Install FRP flush doors level, plumb, square, true to line, without distortion or impending thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

C. Set sill thresholds in full bed of mastic and backseal.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or elctrolytic action at points of contact with other materials with bituminous coatings or other means approved by Architect.

E. Install exterior doors to be weathertight in closed position.

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. Adjust doors, hinges, and locksets for smooth operation without binding.

B. Clean aluminum surfaces immediately after installation in accordance with manufacturer's written instructions.

C. Comply with glass manufacturer's written recommendations for final cleaning and maintenance; remove nonpermanent labels and clean all glass surfaces.

D. Protect installed doors to ensure that doors will be without damage or deterioration at time of Substantial Completion.

END OF SECTION 081614