

SECTION 08 2133 – FLUSH FIBERGLASS REINFORCED POLYESTER (FRP) DOORS AND
DOOR PERIMETER FRAMING

PART 1 -GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work in this section.

1.2 SUMMARY

- A. Provide each type of door and frame as shown on the drawings and in Drawing door schedules.
- B. This section includes, but is not limited to, the following:
 - 1. Fiberglass Reinforced Polyester (FRP) flush doors.
 - 2. Door perimeter frames and aluminum Storefront Framing Systems for FRP Doors (SF-2).
- C. Related sections include the following:
 - 1. Division 07 9200 Section "Joint Sealants".
 - 2. Division 08 4113 Section "Aluminum-Framed Entrances and Storefronts" for coordination to adjacent framing.
 - 3. Division 08 7200 Section "Door Hardware." for coordination of door hardware.
 - 4. Division 08 8000 Section "Glazing (glass)."

1.3 SYSTEM PERFORMANCE-FIBERGLASS REINFORCED POLYESTER (FRP) FLUSH
DOORS

- A. Provide door assemblies that have been designed and fabricated to comply with requirements for system performance characteristics listed below, as demonstrated by testing manufacturer's corresponding stock systems according to test methods designated.
- B. Air Infiltration: For a single door 3'-0" x 7'-0", 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 linear foot of perimeter crack.
- C. Thermal Transmission, Exterior doors; U-value, AAMA 1503-98: Maximum of 0.29 BTU/hr x sf x degrees F. Minimum of 55 CRF value.
- D. Surface Burning Characteristics; FRP Doors and Panels, ASTM E 84:
 - 1. Flame Spread: Maximum of 200, Class C.
 - 2. Smoke Developed: Maximum of 450, Class C.
- E. Surface Burning Characteristics; Class A; Option on Interior faces of FRP exterior panels and both faces of FRP Interior panels, ASTM E 84.
 - 1. Flame Spread: Maximum of 25.
 - 2. Smoke Developed: Maximum of 450.

F. Additional Criteria: Provide FRP doors and panels with the following performance or better:

1. Impact Strength: ASTM D 256 - nominal value of 15.0.
2. Tensile Strength: ASTM D 638 – nominal value of 14,000 psi.
3. Water Absorption: ASTM D 570 - nominal value of 0.20 to after 24 hours.
4. Indentation Hardness: ASTM D 2583 - nominal value of 55.
5. Flexural Strength: ASTM D 790 – 21,000 psi.
6. Swinging Door Cycle Test: ANSI A250.4 – Minimum of 20,000,000 cycles.
7. Swinging Security Door Assembly, Doors and Frames: ASTM F 476 – Grade 40.

1.4 SYSTEM DESIGN AND PERFORMANCE REQUIREMENTS – STOREFRONT SYSTEMS AND DOOR PERIMETER FRAME SYSTEMS

A. General: Provide thermal-break or thermally-improved aluminum entrance and storefront assemblies that comply with specified performance characteristics.

B. Thermal Movement: Design framing systems to provide for expansion and contraction of component materials.

C. Performance Requirements: AAMA/NWWDA 101/I.S.2.

1. Rating: F-AW60 90 x 96.
2. Air Infiltration, ASTM E 283, 6.24 psf (50 mph): less than 0.01 cfm. per sq. ft.
3. Water Resistance, ASTM E 331: 15.0 psf.
4. Overall Design Pressure, ASTM E 330: 60.0 psf, positive and negative.
5. Structural Test Pressure, ASTM E330: 90.0 psf, positive and negative.
6. Forced Entry Resistance, ASTM F 588: Grade 40.

D. Thermal Performance:

1. Condensation Resistance Factor (CRF) AAMA 1503: 54.
2. Thermal Transmittance AAMA 1503: 0.69 Btu/hr-sq ft-F.
3. Standardized Thermal Transmittance (U-Factor) (Ust), NFRC 100: 0.64 Btu/hr-sq ft-F.

1.5 QUALITY ASSURANCE

A. Standards: Comply with the requirements and recommendations in applicable specification and standards by NAAMM and AAMA, including the terminology definitions and specifically including the "Entrance Manual" by NAAMM, except to the extent more stringent requirements are indicated.

B. Manufacturer's Qualifications: Provide entrances and storefronts produced by a single manufacturer with not less than twenty (20) years of successful experience in the fabrication of assemblies of the type and quality required.

C. Installer's Qualifications: Entrances and Storefronts shall be installed by a firm in continuous business with at least five (5) years of successful experience in the installation of systems similar to those required.

1. Bidders and installers shall be factory trained distributors and approved by the FRP Door Manufacturer.

- D. Design Criteria: Drawings indicate typical sizes, spacing of members, profiles and dimensional requirements of entrance and storefront work. Minor deviations will be reviewed by the Architect for acceptance in order to utilize manufacturer standard products. Architect's sole judgment shall prevail that such deviations do not materially detract from the design concept intended performances.
- E. Field Measurement: Field verify all information prior to fabrication and furnish all materials and additional accessories to suit door construction for hardware.
- F. Regulation and Codes: Comply with the current edition in force at the project location of all local, state and federal codes and regulations, including the current Americans with Disabilities Act (ADA).

1.6. SUBMITTALS

- A. Product Data: Submit Manufacturer's product data, specifications and instructions for each type of door and frame required.
 - 1. Include details of core, stile and rail construction, trim for lites and all other components.
 - 2. Include details of door hardware mounting.
 - 3. Include sample of each aluminum alloy to be used on this project. Where normal finish color and texture variations are expected, include two or more samples to show the range of such variations.
 - 4. Include one sample of typical fabricated section, showing joints, fastenings, quality of workmanship, hardware and accessory items before fabrication of the work proceeds.
- B. Submit shop drawings for the fabrication and installation of the doors and frames, and associated components. Details to be shown one-half full size. Include elevations, sections, and details, indicating dimensions, tolerances, materials, fabrication, framing, glazing, and door hardware schedule.
- C. Maintenance Manual: Submit manufacturer's maintenance and cleaning instructions for all systems.
- D. Warranty: Submit manufacturer's standard warranties.

1.7. PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to jobsite in their original, unopened packages with labels intact. Inspect materials for damage and advise manufacturer immediately of any unsatisfactory materials.
- B. Package door assemblies in individual cartons protected so no portion of the door has contact with the outer shell of the container.

1.8. PROJECT WARRANTY

- A. Provide a written warranty signed by manufacturer, installer and contractor, agreeing to replace, at no cost to the Owner, any doors, frames or factory hardware installation which fail in materials or workmanship, within the warranty period. Failure of materials or workmanship includes: excessive deflection, faulty operation of entrances, deterioration of finish, or construction in excess of normal weathering and defects in hardware installation.
 - 1. Fiberglass Reinforced Polyester (FRP) door warranty period – ten (10) years.
 - 2. Monumental door warranty period – ten (10) years.

3. Door Perimeter Framing warranty period – ten (10) years.
4. Aluminum Storefront Framing Systems – ten (10) years.
5. Factory applied hardware installation – ten (10) years.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Fiberglass Reinforced Polyester Doors: Subject to compliance with requirements, provide products from one of the following:
 1. Manufacturer's Product – Basis-of-Design:
 - a. Manufacturer: Special-Lite, Inc., Decatur, MI.
 - b. Product: Special-Lite SL-17 with recessed door pull SL-82.
 - c. Color and Finish: Selected by Architect from Manufacturer's full range.
 2. Other acceptable manufacturers:
 - a. Other manufacturers may be bid as a voluntary alternate only.
- B. Door Perimeter Framing: Subject to compliance with requirements, provide products from:
 1. Same as door manufacturer or storefront and curtainwall manufacturer.
- C. Storefront Systems: Subject to compliance with requirements, provide products from one of the following:
 1. Special-Lite, Inc., Decatur, MI.
 2. EFCO Corporation, Monett, MO.
 3. Kawneer N.A., Norcross, GA.
 4. Tubelite, Reed City, MI.
 5. Vistawall Architectural Products.
 6. Other Manufacturers shall submit Substitution Request – refer to Division 01 6000 Section "Product Requirements" for Substitution Request Form.

2.2 MATERIALS AND ACCESSORIES

- A. Aluminum Members: Alloy and temper as recommended by manufacturer for strength, corrosion resistance and application of required finish and control of color; ASTM B 221 for extrusions, ASTM B 209 for sheet/plate with aluminum wall thickness of 0.125".
- B. Components: Furnish door and frame components from the same manufacturer. "Splitting" of door and frame components is not permitted.
- C. Fasteners: Aluminum, 18-8 stainless steel or other non-corrosive metal fasteners, guaranteed by the manufacturer to be compatible with the doors, frames, stops, panels, hardware, anchors and other items being fastened.
- D. Glazing Gaskets: Gaskets installed in captive assembly of glazing stops.
 1. EPDM: ASTM 2000.
 2. Closed-Cell Foam: ASTM D 1667.

- E. Concealed Flashing: Provide 26 gage minimum dead-soft stainless steel, or 0.026" minimum extruded aluminum of alloy and type selected by manufacturer for compatibility with other components.
- F. Brackets and Reinforcements: Where feasible, provide high-strength aluminum brackets and reinforcements; otherwise provide nonmagnetic stainless steel or hot-dip galvanized steel complying with ASTM A 386.
- G. Compression Weather-stripping: Provide the manufacturer's standard replaceable compressible weather-stripping gaskets.

2.3 FABRICATION

- A. Sizes and Profiles: The required sizes for door and frame units, and profile requirements are shown on the drawings.
- B. Coordination of Fabrication: Field measure before fabrication, and show recorded measurements on final shop drawings.
- C. Complete the cutting, fitting, forming, drilling and grinding of all metal work prior to assembly. Remove burrs from cut edges, and ease edges and corners to a radius of approximately 1/64".
- D. No welding of doors or frames is acceptable.
- E. Maintain continuity of line and accurate relation of planes and angles. Secure attachments and support at mechanical joints, with hairline fit at contacting members.
- E. Attachment of all hardware shall be made using machine screws which are supplied by the manufacturer.
- F. All holes shall be drilled and tapped using the recommended drill size for the tap required.
- G. Door frame stops shall be applied stops, minimum 0.625" high x minimum 1 1/4" wide.
- H. Door attachment points shall be minimum of 1/8" thickness.
- I. Where hardware is to be attached to frame stop (Example: exit device strike, door closer shoe, O.H. stop & etc.), a piece of solid bar stock aluminum sized to fill the frame stop void x 12" long shall be securely attached to the frame tube.
- J. Where it is not practical to have solid bar stock reinforcement at attachment points, use "RIV-NUTS" for attachment of hardware items.

2.4. FIBERGLASS REINFORCED POLYESTER (FRP) FLUSH DOORS

- A. Materials and Construction
 - 1. Construct 1-3/4" thickness, Stiles and Rails, 6063-T5 aluminum alloy, minimum of 2-5/16-inch depth, mitered or square butt corners.
 - 2. Provide joinery of 3/8-inch diameter full-width tie rods through extruded splines top and bottom as standard tubular shaped stiles and rails reinforced to accept hardware as specified.
 - 3. Securing internal door extrusions: 3/16-inch angle blocks and locking hex nuts for joinery. Welds, glue, or other methods are not acceptable.

4. Furnish integral reglets to accept face sheet to permit a flush appearance. Rail caps or other face sheet capture methods are not acceptable.
 - b. Color: Same color as the FRP door color.
5. Extrude top and bottom rail legs for interlocking continuous rail rigidity weather bar and reinforcement for door hardware.
6. Door Face Sheeting: SpecLite3 FRP, 0.120-inch thickness, finish color throughout. Abuse-resistant engineered surface.
 - a. Color and Finish: Slate Gray.
 - b. Aluminum trim to match FRP door color, except at fire rated frp doors which shall have stainless steel trim.
7. Core of Door Assembly: Minimum five (5) pounds per cubic foot density foamed-in-place polyurethane free of CFC and HCFC. Minimum "R" value of 9. Meeting stiles on pairs of doors, and weather bars with nylon brush weather-stripping.
8. Manufacture doors with cutouts for vision-lites, louvers or panels. Factories furnish and install all glass, louvers and panels prior to shipment.
9. Premachine doors in accordance with templates from the specified door hardware manufacturers and approved hardware schedule. Factories install hardware.
10. Furnish pulls for each door leaf unless the hardware specification requires other applications (Ex: lever handle lockset).
 - a. Manufacturer's Product Basis-of-Design: Special-Lite "SL82 pulls" or approved equal acceptable to the Architect.
11. Provide internal 1/8" aluminum reinforcement for specified hardware configurations to prevent any "thru-bolting" of door hardware connections. Thru Bolting of door closers is not permitted.
12. Glazing: Fabricate doors to facilitate replacement of glass or panels, without disassembly of doors.
13. Adjustable bottom brush: Include adjustable bottom brush at bottom of all exterior doors.

2.6. GLAZING

A. Design system for replacement of glass.

1. Manufacturer's standard flush glazing system of recessed channels and captive glazing gaskets or applied stops as shown.
2. Allow for thermal expansion on exterior units.
3. Glass as indicated or as selected by the Architect and factory glazed into doors.

2.7. ALUMINUM FRAME STOREFRONT SYSTEMS (SF-2)

A. Manufacturer's Product – Basis-of-Design:

1. Manufacturer's Model: Special-Lite Model Series SL-600TB.
2. Color and Finish:
 - a. Clear Anodized Aluminum Finish.
3. Other Manufacturers: As indicated in PART 2.1 MANUFACTURERS.

B. Framing:

1. Size: 2 inches x 6 inches, unless otherwise indicated. Thermal-break or thermally-improved member.
2. Material: Aluminum extrusions, ASTM B 221, Alloy 6063-T5.
3. Jamb, Mullions, Sills, Horizontal Intermediates, and Headers: 0.080-inch wall thickness.
4. Lock Jamb, Hinge Jamb, and Door Headers: 0.125-inch wall thickness.

2.8 DOOR PERIMETER FRAMING

A. Approved Manufacturers: As indicated in PART 2.1 MANUFACTURERS.

B. Tubular Framing

1. Framing system from the door manufacturer of the profile, size and type shown. .125" minimum wall thickness and type 6063-T5 aluminum alloy .625" high applied stops with screws and weatherstripping. Frame members are to be box type with four (4) enclosed sides. Open back framing will not be acceptable.
2. Furnish sub frame of size and profile detailed for all doors being installed in the Curtainwall system. Do not hang and latch doors directly to Curtainwall system.
3. Caulk joints before assembling frame members. Secure joints with fasteners and provide a hairline butt joint appearance. Prefit doors to frame assembly at factory prior to shipment. Field fabrication of framing using "stick" material is not acceptable.
4. Applied stops for side, transom and borrowed lites and panels, with fasteners exposed on interior or unsecure portion only. Premachine and reinforce frame members for hardware in accordance with manufacturer's standards and the approved hardware schedule. Factory install hardware.
4. Anchors appropriate for wall conditions to anchor framing to wall materials. A minimum of five anchors up to 7'4" on jamb members, and one additional anchor for each foot over 7'4". Secure head and sill members of transom, sidelites and similar conditions.
5. Factory preassemble sidelites to the greatest extent possible, and mark frame assemblies according to location.
6. Coordination of Fabrication: Field measure before fabrication, and show recorded measurements on final shop drawings.
7. Complete the cutting, fitting, forming, drilling and grinding of all metal work prior to assembly. Remove burrs from cut edges, and ease edges and corners to a radius of approximately 1/64".
8. No welding of doors or frames is acceptable.
9. Maintain continuity of line and accurate relation of planes and angles. Secure attachments and support at mechanical joints, with hairline fit at contacting members.
10. Attachment of all hardware shall be made using machine screws which are supplied by the manufacturer.
11. All holes shall be drilled and tapped using the recommended drill size for the tap required.
12. Frame stops shall be applied stops, Minimum 5/8" high x Minimum 1 1/4" wide.

13. Where hardware is to be attached to frame stop (Example: exit device strike, door closer shoe, O.H. stop & Etc.) a piece of solid bar stock aluminum sized to fill the frame stop void x 18" long shall be securely attached to the frame tube
14. Where it is not practical to have solid bar stock reinforcement at attachment points, use "RIV-NUTS" for attachment of hardware items.

2.9. DOOR HARDWARE

- A. Refer to Division 08 Section "Door Hardware" for Finish Hardware.
- B. Factory install all light kits, glass and louvers in doors.
- C. Factory install all hardware on doors and frames.
 1. Door Hardware supplier to deliver all hardware to FRP manufacturer.
 2. Includes but is not limited to: Hinges, Pivots, Flush bolts, Dummy Trim, Door Position Switches, EPT's, Electric Strikes, Magnetic Locks, Locksets, Lockset Trim and Cylinders, Panic Exit Devices, Door Pulls, Push Plates, Push and Pull Bars, Carry Bars, Concealed Door Closers, Concealed Door Stops, Kick Plates, Mop Plates, Armor Plates, Weather-stripping and Gasketing.
 3. Does not include: Surface Mounted items that require different locations based on degree of swing of door, Thresholds.

2.10 ALUMINUM FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.
- D. Aluminum Finish Types:
 1. Aluminum Members: ASTM B 221 for extrusions, ASTM B 209 for sheet/plate; alloy and temper recommended by the manufacturer for the strength required, for corrosion resistance, and for the finish required.
 - i. Type AL-1 Clear Anodized Aluminum Finish – Natural Clear Aluminum Satin Finish Class-2; Clear anodized finish: AA-M12C22/A31 (Nonspecular, as-fabricated Mechanical finish; medium etched matte chemical finish; clear, Architectural Class-2 anodic coating, minimum 0.4 mil thick). Comply with AAMA 611.

PART 3 - EXECUTION

3.1 INSTALLATION

FRENCH ASSOCIATES, INC.
architects planners interiors

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FLUSH FIBERGLASS REINF. POLYESTER (FRP) DRs.,
MONUMENTAL DOORS, DOOR PERIMETER FRAMING
AND ALUMINUM STOREFRONT FRAMING SYSTEMS

- A. Comply with manufacturer's recommendations and specifications for the installation of the doors and frames. Factory install hardware, glass and louvers in doors. Factory assemble side-lites and transoms to the greatest extent possible.
- B. Set units plumb, level and true to line, without warp or rack of doors or frames. Anchor securely in place. Separate aluminum and other metal surfaces with bituminous coatings or other means as approved by architect.
- C. Set thresholds in a bed of mastic and back-seal.
- D. Clean surfaces promptly after installation of doors and frames, exercising care to avoid damage to the protective coatings.
- E. Repair doors and frames that are damaged to as new and replace deteriorated doors and frames as directed by the Architect.
- F. Provide Owner with all adjustment tools and instruction sheets. Arrange an in-service session to Owner at Owner's convenience. Any workmanship that is defective or deficient shall be corrected to the Owner's satisfaction and at no additional cost to the Owner.

END OF SECTION 08 2133