



SECTION 08220
SKULE DOOR
FIBERGLASS REINFORCED PLASTIC (FRP) DOORS AND FRAMES

PART 1. – GENERAL

1.1 SUMMARY

Section Includes:

1. Fiberglass Reinforced Plastic (FRP) Doors
2. Fiberglass Reinforced Plastic (FRP) Frames
3. Fire Rated Fiberglass Reinforced Plastic (FRP) Doors
4. Fire Rated Fiberglass Reinforced Plastic (FRP) Frames

Related Sections include but are not limited to:

1. General Conditions
2. Section 04200 - Unit Masonry
3. Section 08710 - Finish Hardware
4. Section 08800 - Glass and Glazing
5. Section 09900 - Painting and Coating: Field Finishing

1.3 Quality Assurance

A. Referenced Standards

A.1. Door properties

1. AAMA 920-03. Operating cycle performance of side-hinged exterior door systems
2. ANSI A250 .4-2001. Criteria for physical endurance for steel doors frames, anchors and hardware.
3. NWDA TM-7. Physical endurance of doors and associated hardware under accelerated conditions.

Florida Building Code

1. SFBC PA 201 Procedures for large missile impact.
2. SFBC PA 202 Uniform static load on building components.
2. SFBC PA 203 Products subjected to cyclic wind pressure.

A.2. Laminate Properties

1. ASTM D256. Impact Resistance
2. ASTM D 543. Resistance of plastics to chemical reagents.
3. ASTM D 570. Water absorption of plastics.
4. ASTM D 638. Tensile strength of plastics.
5. ASTM D 790. Flexural strength of plastics
6. ASTM D 1308. Stain resistance
7. ASTM D 1621 Compressive strength.

8. ASTM D 1623 Tensile adhesion of core.
9. ASTM D 2126. Thermal and humid aging of plastics.
10. ASTM D 2583 Indentation hardness.
11. ASTM D 5420 Gardner impact strength
12. ASTM E 84 Surface burning characteristics of plastics

A.3 Core Properties

1. ASTM E 90. Sound transmission loss of building partitions.
2. ASTM E 330. Structural performance under uniform static air pressure difference.
3. ASTM E 413. Classification for rating sound transmission.
4. ASTM E 1332. Determination of outdoor-indoor transmission class.
5. ASTM F 476. Swinging door assemblies security.

1.4. PERFORMANCE REQUIREMENTS

Provide a door system that performs as required by test standards. This door system complies with the standards applicable to each type of test condition.

1. AAMA 920-03. Operating cycle performance of side-hinged exterior door systems. One million cycles.
2. ANSI A250 .4-2001. Criteria for physical endurance of doors frames, anchors and hardware. One million cycles
3. NWDA TM-7. Physical endurance of doors and associated hardware under accelerated conditions. One million cycles

Florida Building Code

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|----------------|---|------|
| 1. SFBC PA 201 | Procedures for large missile impact. | Pass |
| 2. SFBC PA 202 | Uniform static load on building components. | Pass |
| 2. SFBC PA 203 | Products subjected to cyclic wind pressure. | Pass |

A.2. Laminate Properties

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|-----------------|--|------------------|
| 2. ASTM D 543. | Resistance of plastics to chemical reagents. | Excellent rating |
| 3. ASTM D 570. | Water absorption of plastics. | 0.20 @ 24 hrs. |
| 4. ASTM D 638. | Tensile strength of plastics. | 13000 psi |
| 5. ASTM D 790. | Flexural strength of plastics | 21000 psi |
| 6. ASTM D 1308. | Stain resistance | Unaffected |
| 7. ASTM D 1621 | Compressive strength. | 180 psi |
| 8. ASTM D 1623 | Tensile adhesion of core. | 120 psi |
| 9. ASTM D 2126. | Thermal and humid aging of plastics. | |
| 10. ASTM D 2583 | Indentation hardness. | 55 |
| 11. ASTM D 5420 | Gardner impact strength | 120 in-lb |
| 12. ASTM E 84 | Surface burning characteristics of plastics | |
| | Flame spread Class C | 200 max |
| | Smoke developed Class C | 450 max |
| | Flame spread Class A | 25 max |
| | Smoke developed Class A | 450 max |

A.3 Core Properties

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|-----------------|---|------|
| 1. ASTM E 90. | Sound transmission loss of building partitions. | |
| | Mineral Core | 35 |
| | Polypropylene Core | 33 |
| | Foam Core | 33 |
| | Honeycomb phenolyc impregnated carton | 31 |
| 2. ASTM E 330. | Structural performance under uniform static pressure. | Pass |
| 3. ASTM E 413. | Classification for rating sound transmission. | |
| 4. ASTM E 1332. | Determination of outdoor-indoor transmission class. | |
| | Mineral Core | 32 |

Foam Core	29
Honeycomb phenolyc impregnated carton	28
Polypropylene Core	28

5. ASTM F 476. Swinging door assemblies security. Grade 40

B. Qualifications

1. **Manufacturer Qualifications:** A company specialized in the manufacture of fiberglass reinforced plastic (FRP) doors and frames as specified herein with a minimum of **30 years of documented experience** with record of successful in-service performance for the applications as required for this project.
2. **Installer Qualifications:** An experienced installer who has completed fiberglass door and frame installations similar in material, design, and extent to those indicated and whose work has resulted in construction with a record of successful in-service performance.
3. **Source Limitations:** Obtain fiberglass reinforced plastic doors and frames through one source fabricated from a single manufacturer, including fire rated fiberglass frames.
4. **Source Limitations:** Hardware and accessories for all FRP doors as specified in Section 08710 shall be provided and installed by the fiberglass door and frame manufacturer.
5. **Source Limitations:** Glass for windows in doors shall be furnished and installed by door and frame manufacturer in accordance with related section, Division 8, Glazing.

1.5 SUBMITTALS

Submit shop drawings and product technical data in accordance with Section 01300

A. Product Technical Data:

1. Manufacturer's detailed specification of construction and fabrication
2. Manufacturer's Installation instructions.
3. Schedule of doors and frames indicating the specific reference numbers used on shop drawings indicating location, size, finish and hand of each door, elevation of each door, internal reinforcement, frame configuration, elevation, finish and anchor types.

B. Submittal Drawings for Customer Approval shall be submitted prior to manufacture and will include the following information:

1. Summary door schedule indicating the specific reference numbers as used on owner's Drawings, with columns noting door type, frame type, size handing, accessories and Hardware.
2. A drawing depicting front, and rear door elevations showing bill of material for each door.
3. Construction and mounting detail for frame.

1.6 DELIVERY, STORAGE AND PROTECTION

Deliver door and frame assemblies packaged in manufacturer's standard containers to provide protection during transit. Store, protect and handle products at project site in strict accordance with manufacturer's instructions to prevent damage to the finish of factory-finished doors and frames.

Inspect doors and frames on delivery for damage, and notify shipper and supplier if damage exists. Minor damages may be repaired provided refinished items match new work and are acceptable to the Architect. Remove and replace damaged items that cannot be repaired as directed.

Store doors and frames at building under cover. Avoid using non-vented plastic or canvas covers that could create a humidity chamber.

PART 2 PRODUCTS

ACCEPTABLE MANUFACTURERS

Subject to compliance with the Contract Documents, the following manufacturer is acceptable: Skule Door Company, LLC, PO Box 4557, Brownsville, Texas 78523. Telephone (866) 894 -7511 Fax (956) 831 -7530 E-mail info@skuledoor.com

FIRE RATED AND NON-RATED DOORS

Fiberglass Reinforced Plastic Doors

1. **Face Panels:** Standard face panels shall be chemical resistant, using a fiberglass- reinforced polyester resin system with light stabilizing additives. Thickness of panels shall be 0.090 to 0.125, with a standard of 0.120".
2. **Door Thickness:** 1 3/4"
3. **Finish:** All surfaces shall have a textured, semi-gloss, seamless gel coat finish.

Internal Construction

1. **Stiles and Rails** shall be constructed of rectangular and square high modulus pultruded fiberglass tubes.
2. **Core material** as application dictates.
 - a. Honeycomb Core, Phenolic impregnated resin honeycomb.
 - b. Polyurethane Foam Core, 1 1/2" thick rigid block of polyurethane with an "R" factor of 11-12 shall be laminated to the interior of the face panels.
 - c. Mineral Core, fire rated up to 90 minutes.
 - d. Polypropylene honeycomb 1-1/2" thick
3. **Internal reinforcements** for full mortise hinges to be solid FRP blocking and for thru-bolted hardware to be high modulus pultrusions.

Door Accessories

1. **Windows:** Glazing support structures and window lite retainers shall be fabricated from high modulus pultrusions and/or fiberglass composition common to the door construction. The opening itself shall be sealed in such a manner as to prevent moisture or contaminants from penetrating the interior of the door. Polyvinyl window retainers will not be acceptable.
2. **Louvers:** Door louvers shall be constructed using FRP material in an inverted "v" type design and will adhere to the same guidelines as window openings above.
 1. **Transoms:** All transom panels will be identical to the doors in materials, construction, thickness, finish and color.
 2. **Astragals:** Astragals for pairs of doors will be fabricated of FRP material in the manufacturer's standard design.
 3. Fire rated door accessories will be manufactured or supplied in compliance with the labeling agency and in accordance with UL10C.

FIRE RATED AND NON-RATED FRP FRAMES

General: Fabricate frames of fiberglass reinforced plastic.

1. **Head and Jamb:** Pultruded fiberglass reinforced plastic, minimum 1/4" wall thickness, conforming to SDI requirements.
2. **Frame Profile:** Double rabbeted with 5/8" stop. Face will be 2" with a standard jamb depth of 5 3/4".
3. **Joint Connection:** Jamb to Head joints will be neatly mitered at 45 degrees.
4. **Finish:** 15 mil +/- 3 mil gel coat finish. Color to match door unless otherwise indicated.
5. **Fire rated frames** will be FRP, similar to non-rated frames in manufacture and appearance and shall be in compliance with the labeling agency and in accordance with UL10C. Fire rated frames manufactured in a material other than fiberglass will not be accepted.

Reinforcements

1. **Corner:** Reinforcement at frame corner will be pultruded fiberglass angle, 4" x 4" x 5 3/8" x 1/4".
2. **Hardware:** Frames will incorporate non-woven polyester fabric at mortise hinge, closer and strike locations for unparallelled screw-holding strength.

Anchoring Systems

1. Wire anchors are recommended for masonry construction.
2. **New Masonry**
Wire Type
FRP Base Anchor
3. **Existing Masonry**
#14-10x3-3/4" Crete Flex Masonry Screw
FRP Base Anchor
4. **Stud Wall (Metal or Wood)**
1/4-20x2-3/4" SS Phillips Head Machine Screw
FRP Base Anchor

FABRICATION

Fabricate FRP doors and frames rigid, neat in appearance and free from defects. Form to sizes and profiles as indicated on drawings.

In compliance with the hardware manufacturer's instructions and templates, doors and frames shall be mortised and reinforced for hardware, including hinges, locks, strikes, closers, etc.

Bottom of frames will terminate at the indicated finished floor level.

Clearances will be as follows:

1. **Jambs and Head:** 1/8 inch plus or minus 1/16 inch
2. **Between Edges and Pairs of Doors:** 1/8 inch plus or minus 1/16 inch
3. **Between Bottom of Door and Threshold:** Maximum 3/8 inch
4. **Between Bottom of Door and Top of Finish Floor:** Maximum 3/4 inch

PART 3 EXECUTION

3.1 INSPECTION OF CONDITIONS

Installer shall meet local building standards requirements and shall examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of fiberglass doors and frames and shall submit a written report if the conditions are unacceptable. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

Install doors and frames plumb, rigid, properly aligned and securely fastened in place. Install in accordance with manufacturer's instructions and NFPA 80 standards at fire rated openings.

Where applicable, set frames in place prior to construction of enclosing walls and ceilings. Space between wall and frame may be solidly filled with mortar and anchors built into the joints as the walls are constructed.

A flame spread classification of 25 or less per ASTM E84 will apply to all FRP component parts and shall be self extinguishing per ASTM D635.

Check plumb, squareness and twist of frames as walls are constructed. Brace securely until permanently anchored. Shim as necessary to comply with installation tolerances.

Remove temporary braces and spreaders necessary for installation only after frames have been properly set and secured.

Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows: 1) Three anchors per jamb from 60 to 90 inches in height, 2) Four anchors per jamb from 90 to 96 inches in height.

Protect frames during construction.

Align doors in frames for uniform clearances at each edge.

3.3 ADJUSTING

Adjust doors in accordance with door manufacturer's maintenance instructions to swing open and shut without binding and to remain in place at any angle without being moved by gravitational influence.

Adjust door hardware to operate correctly in accordance with hardware manufacturer's maintenance instructions Contact Simon Door Co. if help is required with hardware installation instructions; do not alter doors to fit hardware without prior approval.

3.4 CLEANING

Clean all exposed surfaces, removing dirt and excess sealant from all exposed surfaces. Follow the manufacturer's maintenance instructions for proper techniques and products to clean all surfaces.

Remove debris and leave work in complete and proper operating conditions.

3.5 Warranty

Fiberglass doors and frames shall carry a lifetime warranty against failure due to corrosion from the specific environment named at the time of purchase. Manufacturer's written warranty and conditions will apply to all products contained in this section.