**SECTION 08 17 43**

**SLI Series Fire-Rated FRP Doors and Frames**

**PART 1 GENERAL**

1. **SECTION INCLUDES**
	1. SLI-20FR Sandstone Texture Fire-Rated Fiberglass Door.
	2. SLI-20FR Sandstone Texture Fire-Rated Fiberglass Door in Fire-Rated Aluminum Retrofit Framing.
	3. SLI-20FR Sandstone Texture Fire-Rated Fiberglass Door in Fire-Rated Omega® Interior Aluminum Framing (Type II Frame).
	4. SLI-20FR Sandstone Texture Fire-Rated Fiberglass Door in FR-Series Fiberglass Frame.
	5. SLI-20FR Sandstone Texture Fire-Rated Fiberglass Door in Fire-Rated Metal Frame.
2. **RELATED SECTIONS**
	1. Section 04 00 00 – Masonry Mortar.
	2. Section 05 50 00 – Metal Fabrications.
	3. Section 08 01 17 – Operation and Maintenance of Integrated Door Opening Assemblies.
	4. Section 08 06 71 – Door Hardware Schedule.
	5. Section 08 06 80 – Glazing Schedule.
	6. Section 08 10 00 – Doors and Frames.
	7. Section 08 71 00 – Door Hardware.
	8. Section 08 80 00 – Glazing.
3. **REFRENCES**

* 1. [ASTM-D256](#ASTM_D_256) – Standard Test Methods for Determining the Pendulum Impact Resistance of Plastics.
	2. [ASTM-D570](#ASTM_D_570) – Standard Test Method for Water Absorption of Plastics.
	3. [ASTM-D638](#ASTM_D_638) – Standard Test Method for Tensile Properties of Plastics.
	4. [ASTM-D790](#ASTM_D_790) – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
	5. [ASTM-D2583](#ASTM_D_2583) – Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
	6. [ASTM D2794](https://www.astm.org/Standards/D2794.htm) – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
	7. [ASTM-E84](#ASTM_E_84) – Standard Test Method for Surface Burning Characteristics of Building Materials.
	8. [CAN / ULC S104](https://www.scc.ca/en/standardsdb/standards/25796) – Standard Method for Fire Tests of Door Assemblies.
	9. [UL 10B](https://standardscatalog.ul.com/standards/en/standard_10B_10) – Standard for Fire Tests of Door Assemblies.
	10. [UL 10C](https://standardscatalog.ul.com/standards/en/standard_10C) – Standard for Positive Pressure Fire Tests of Door Assemblies.
	11. [NFPA 80](https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=80) – Standard for Fire Doors and Other Opening Protectives.
	12. [NFPA 252](https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=252) – Fire Tests of Door Assemblies.
1. **SUBMITTALS**
	1. Must comply with Section 01 33 00 – Submittal Procedures.
	2. Action Submittals/ Informational Submittals.
		1. Product Data.
			1. Submit manufacturer’s product data sheets, catalog pages illustrating the products, description of materials, components, fabrication, finishes, installation instructions, and applicable test reports.
		2. Shop Drawings.
			1. Submit manufacturer’s shop drawings, including elevations, sections, and details indicating dimensions, tolerances, materials, fabrication, doors, panels, framing, hardware schedule, and finish.
		3. Samples.
			1. Submit manufacturer’s door sample composed of door face sheet, core, framing and finish.
			2. Submit manufacturer’s sample of standard colors for door face and frame.
		4. Testing and Evaluation Reports.
			1. Submit testing reports and evaluations provided by manufacturer conducted by and accredited independent testing agency certifying doors and frames comply with specified performance requirements listed in Section 2.01 C.
		5. Manufacturer Reports.
			1. Manufacturer’s Project References.
				1. Submit list of successfully completed projects including project name, location, name of architect, type, and quantity of doors manufactured.
	3. Closeout Submittals.
		1. Operation and Maintenance Manual.
			1. Submit manufacturer’s maintenance and cleaning instructions for doors and frames, including maintenance and operating instructions for hardware.
		2. Warranty Documentation.
			1. Submit manufacturer’s standard warranty.
2. **QUALITY ASSURANCE**
	1. Manufacturer’s Qualifications.
		1. Continuously engaged in manufacturing of doors of similar type to that specified, with a minimum of 25 years concurrent successful experience.
		2. Door and frame components must be fabricated by same manufacturer.
		3. Evidence of a documented complaint resolution quality management system.
3. **DELIVERY, STORAGE, AND HANDLING**
	1. Delivery.
		1. Deliver materials to site in manufacturer’s original, unopened, containers and packaging.
		2. Labels clearly identifying opening, door mark, and manufacturer.
	2. Storage.
		1. Store materials in a clean, dry area, indoors in accordance with manufacturer’s instructions.
	3. Handling.
		1. Protect materials and finish from damage during handling and installation.
4. **WARRANTY**
	1. Warrant doors, frames, and factory installed hardware against failure in materials and workmanship, including excessive deflection, faulty operation, defects in hardware installation, and deterioration of finish or construction in excess of normal weathering.
	2. Standard Period.
		1. Ten years starting on date of shipment.
	3. Limited lifetime
		1. Covers failure of corner joinery, core deterioration, and delamination or bubbling of door skin and corrosion of all-fiberglass products while the door is in its specified application in its original installation.
	4. Finish
		1. Through color with integral surfaseal film FRP sheet: 10 years.
		2. Painted SLI-20FR face sheets: 5 years.
		3. Painted FR frames: 3 years.

**PART 2 PRODUCTS**

1. **FIRE-RATED FRP DOORS**
	1. Manufacturer.
		1. Special-Lite, Inc.
			1. PO Box 6, Decatur, Michigan 49045.
			2. Toll Free (800) 821-6531, Phone (269) 423-7068, Fax (800) 423-7610.
			3. Web Site [www.special-lite.com](http://www.special-lite.com).
			4. E-Mail info@special-lite.com.
2. **DESCRIPTION**
	1. SLI-20FR Sandstone Texture Fire-Rated Fiberglass Door.
		1. Rated for 20 min. maximum duration.
		2. Door Opening Size.
			1. 4’0” x 8’0” maximum size single swing.
			2. 8’0” x 8’0” maximum size standard pairs.
			3. Click or tap here to enter text.
		3. Construction.
			1. Door Thickness.
				1. 1-3/4” at door edge.
				2. Optional 1-7/8” at door edge when Stainless Steel edge banding is used.
			2. Stiles.
				1. Negative pressure and Category B.

Structural Composite Lumber (SCL).

Nominal 0.847” SCL.

Maximum 0.5” wood/SCL.

Minimal after trim 0.847” SCL.

* + - 1. Rails.
				1. Top rail.

Structural Composite Lumber (SCL).

Nominal 0.847” SCL.

Minimal after trim 0.847” SCL.

* + - * 1. Bottom rail.

Structural Composite Lumber (SCL).

Minimum 4” SCL.

* + - 1. Core.
				1. Agrifiber A32 Particleboard.
				2. 1-1/2” nominal thickness.
				3. 29 pcf. minimum density.
			2. Face Sheet.
				1. 0.120” thick, Sandstone texture, through color FRP sheet.
				2. Optional painted finish consult manufacturer.
				3. Class C standard optional Class A available consult manufacturer.
			3. Door Edge.
				1. Standard.

Fiberglass.

0.090” thick painted fiberglass.

* + - 1. Optional.
				1. Stainless Steel Edge Channels.

0.062” thick, 3/4” leg, stainless steel edge channel.

Applied to entire perimeter of the door.

Sealed by 3M CP 25WB + Fire Barrier caulk applied to the inside edges of all the steel edge channels.

* + - 1. Cutouts.
				1. Manufacture doors with cutouts for required vision lites per the manufactures listing.
			2. Hardware.
				1. Pre-machine doors in accordance with templates from specified hardware manufacturers.
				2. Field apply factory supplied gaskets and seals, full width intumescent and smoke seal required at top of door, smoke seals required on both jambs.
1. **FRAMING**
	1. Framing
		1. [Fire-Rated Aluminum Retrofit Framing.](http://special-lite.com/product/retrofit-framing/)
			1. [Model.](http://special-lite.com/wordpress/wp-content/uploads/files/Categories/Framing%20%26%20Panels/Aluminum%20Door%20Frames/Literature/RetrofitFraming.pdf)
				1. Choose an item.
			2. Materials.
				1. [See 2.05.A.](#Aluminum_Members)
			3. Insert frame as indicated on the Drawings, using integral stop fitted with weather-stripping.
			4. Corner joints of miter design, secure with furnished aluminum clips, and screw into place.
			5. Hardware.
				1. Pre-machine and reinforce insert frame members for hardware in accordance with manufacturer's standards and hardware schedule.
				2. Surface mounted closures will be reinforced for but not prepped or installed at factory.
				3. Factory install hardware.
			6. Anchors.
				1. Anchors of suitable type to fasten insert framing to existing frame materials.
				2. Minimum of 5 anchors on jambs up to 7'-4" height, 3 anchors on headers, and 1 additional anchor for each additional foot of frame.
		2. [Capping.](http://special-lite.com/wordpress/wp-content/uploads/files/Categories/Framing%20%26%20Panels/Aluminum%20Door%20Frames/Literature/RetrofitFraming.pdf)
			1. Model.
				1. SL-70
			2. Materials.
				1. [See 2.05.A.](#Aluminum_Members)
				2. Size as indicated on drawings.
		3. [Fire-Rated Omega® Interior Aluminum Framing (Type II Frame).](http://special-lite.com/product/omega-interior-aluminum-framing-type-ii-frame/)
			1. Series.
				1. Choose an item.
			2. Trim.
				1. Choose an item.
			3. Materials.
				1. [See 2.05. A.](#Aluminum_Members)
			4. Perimeter Frame Members.
				1. Type II rectilinear framing system.
				2. Factory fabricated.
			5. Integrated Door Stops.
				1. Mohair door gasket black or grey coordinated with framing finish color.
			6. Frame Member to Member Connections.
				1. Secure joints with fasteners.
				2. Provide galvanized steel reinforcing clips.
			7. Hardware
				1. Pre-machine and reinforce frame members for hardware in accordance with manufacturer's standards and door hardware schedule.
				2. Surface mounted closures will be reinforced for but not prepped or installed at factory.
				3. Factory install door hardware.
			8. Reinforcements.
				1. 0.125” thick aluminum hinge and strike reinforcement.
				2. Steel reinforcements as required for fire-rating.
			9. Anchors:
				1. Anchors appropriate for wall conditions to anchor framing to wall materials.
			10. Sustainability Characteristics.
				1. LEED Declaration.

Entrance Products contribute to point calculations for the following credits:

MR Credit 4.1 Recycled Content 10% (post-consumer = ½ pre-consumer) 1 point.

MR Credit 4.2 Recycled Content 20% (post-consumer = ½ pre-consumer) 1 point.

All aluminum extrusions are produced using prime-equivalent billet produced from 100% reprocessed 6063-T6 alloy recovered from industrial processes. The USGBC classifies these extrusions as pre-consumer recycled material.

Manufacturing facility located within 500 miles of major components and materials, including aluminum extrusions.

The point of recovery and smelting of pre-consumer recycled material within 500 miles of the manufacturing facility.

* + 1. FR-Series Fiberglass Framing.
			1. Maximum of 20 min fire rating when installed in fiberglass frames.
			2. Materials.
				1. ¼” thick, solid, pultruded, FRP profiles.
				2. No corrosive components or reinforcements.
				3. Solid tectonite filler.
				4. No steel or aluminum filler is allowed.
			3. Perimeter Frame Members.
				1. Factory fabricated.
				2. Integral 5/8” x 2-1/4” doorstop.
				3. Mitered with 4” x 4” x 3/8” pultruded FRP angle reinforcement with interlocking pultruded FRP brackets.
				4. 5-3/4”, 6-3/4”, 7-3/4”, or 8-3/4” jamb depth.
				5. 2” face on jambs.
				6. 2” or 4” face on header.
				7. Knocked down for field assembly.
			4. Anchors
				1. Factory furnished as specified by drawings.
				2. Drywall tuck available.
		2. Any category C standard frame.
		3. Any category C proprietary frame.
1. **PERFORMANCE**
	1. Face Sheet.
		1. Standard Interior and Exterior Class C 0.120” thick, Sandstone texture, through color FRP sheet.
			1. Flexural Strength, ASTM-D790: 27 x 103 psi.
			2. Flexural Modulus, ASTM-D790: 0.7 x 106 psi.
			3. Tensile Strength, ASTM-D638: 18 x 103 psi.
			4. Tensile Modulus, ASTM-D638: 1.0 x 106 psi.
			5. Barcol Hardness, ASTM-D2583: 40.
			6. Izod Impact, ASTM-D256: 7.0 ft-lb/in.
			7. Gardner Impact Strength, ASTM-D5420: 30 in-lb.
			8. Water Absorption, ASTM-D570: 0.16%/24hrs at 77°F.
			9. Surface Burning, ASTM-E84: Flame Spread ≤ 200, Smoke Developed ≤ 450.
			10. Chemical Resistance.
				1. Excellent Rating.

Acetic Acid, Concentrated.

Acetic Acid, 5%.

Bleach Solution.

Detergent Solution.

Distilled Water.

Ethyl Acetate.

Formaldehyde.

Heptane.

Hydrochloric Acid, 10%.

Hydrogen Peroxide, 3%.

Isooctane.

Lactic Acid, 10%.

* + - 1. USDA/FSIS Requirements.
				1. FRP face sheet with surfaseal is a finished outer surface material that is rigid; durable; non-toxic; non-corrosive; moisture resistant; a light, solid color such as white; easily inspected; smooth or an easily cleaned texture.
				2. FRP face sheet with surfaseal does not contain any known carcinogen, mutagen, or teratogen classified as hazardous substances; heavy metals or toxic substances; antimicrobials; pesticides or substances with pesticidal characteristics.
		1. Optional Interior Face Only Class A 0.120” thick, Sandstone texture, through color FRP sheet.
			1. Flexural Strength, ASTM-D790: 14 x 103 psi.
			2. Flexural Modulus, ASTM-D790: 0.4 x 106 psi.
			3. Tensile Strength, ASTM-D638: 7 x 103 psi.
			4. Tensile Modulus, ASTM-D638: 0.8 x 106 psi.
			5. Barcol Hardness, ASTM-D2583: 45.
			6. Izod Impact, ASTM-D256: 4.0 ft-lb/in notched.
			7. Water Absorption, ASTM-D570: 0.16%/24hrs at 77°F.
			8. Surface Burning, ASTM-E84: Flame Spread ≤ 25, Smoke Developed ≤ 450.
			9. Taber Abrasion Resistance, Taber Test: 0.036% Max Wt. Loss, cs-17 wheels, 1000g. Wt., 25 cycles.
	1. Door Assembly.
		1. 20 min pp with additional edge sealing materials.
		2. Category B with Category G field applied edge sealing system.
		3. S-Label when Category H Smoke & Draft Control Gasket is field applied.
1. **MATERIALS**
	1. Fiberglass.
		1. See 2.02.A.2.e.
		2. See 2.02.B.2.e.
		3. See 2.02.C.2.e
	2. Fasteners.
		1. All exposed fasteners will have a finish to match material being fastened.
		2. 410 stainless steel or other non-corrosive metal.
		3. Must be compatible with items being fastened.
2. **FABRICATION**
	1. Factory Assembly.
		1. Door and frame components from the same manufacturer.
		2. Required size for door and frame units, shall be as indicated on the drawings.
		3. Maintain continuity of line and accurate relation of planes and angles.
		4. Secure attachments and support at mechanical joints with hairline fit at contact surfaces.
	2. Shop Fabrication
		1. All shop fabrication to be completed in accordance with manufactures process work instructions.
		2. Quality control to be performed before leaving each department.
3. **FINISHES**
	1. Door Face.
		1. FRP Face Sheets
			1. Through color.
				1. [Color.](http://special-lite.com/wordpress/wp-content/uploads/files/Categories/Doors/Fiberglass%20Doors/Hybrid/Literature/SL-20-Color-Selections.pdf)

Choose an item.

* + - 1. Painted.
				1. [Color.](https://special-lite.com/news/paint-color-change/)
				2. Choose an item.
				3. Custom colors available consult manufacturer.
	1. Door Edge.
		1. Painted Fiberglass.
			1. Painted.
				1. [Color.](https://special-lite.com/news/paint-color-change/)
				2. Choose an item.
				3. Custom colors available consult manufacturer.
		2. Stainless Steel.
	2. Frame
		1. [Fire-Rated Omega® Interior Aluminum Framing (Type II Frame).](http://special-lite.com/product/omega-interior-aluminum-framing-type-ii-frame/)
			1. Aluminum.
				1. Anodizing.

Class 2 Anodizing, minimum 0.4 to 0.7 mils thick.

Color.

Choose an item.

* + - * 1. Paint.

Aluminum.

Fluropan®.

Topcoat.

70% polyvinylidene difluoride (PVDF) resin, meets or exceeds all AAMA 2605 specifications

Color.

Consult manufacturer.

* + - * 1. Powder Coat.

Special-Lite’s® Wood Expressions™.

Color.

Choose an item.

Durability against humidity, warping and cracking.

Resists fading from UV rays.

Natural, high-definition grains with the look and feel of real wood.

Durable powder coat protects against scratching.

AAMA 2603 Powder Coat.

Color.

Choose an item.

Minimum dry film thickness of 2 to 4 mils.

H-2H Hardness.

Meets AAMA 800.

* + 1. Fiberglass.
			1. Two-component flexible acrylic urethane Satin topcoat. (STANDARD)
				1. [Color.](https://special-lite.com/news/paint-color-change/)
				2. Choose an item.
				3. Custom colors available consult manufacturer.
				4. Excellent exterior durability.
				5. Unique, high-solids, high-build, multifunctional coating.
				6. Low VOC, Satin coating.
				7. Impact Resistance, ASTM D-4226 Minimum 1.2 in/lb/mil
				8. Color retention: ≤1Δ (CIE L.a.b.), Montreal 45° South: 12 months
				9. Very good chemical resistance.
			2. Two-component acrylic urethane enamel Gloss topcoat. (OPTIONAL)
				1. [Color.](https://special-lite.com/news/paint-color-change/)
				2. Custom colors available consult manufacturer.
				3. Unique, high-solids, high-build, multifunctional coating.
				4. Low VOC, Gloss coating.
				5. Impact Resistance, ASTM-D2794: 80-102 in/lb (direct), 40-80 in/lb (reverse) @ 1.5 mils thickness.
				6. Color retention: Δ E < 5 (CIE L.a.b.), Florida Exposure: 18 months
				7. Excellent chemical resistance.
1. **ACCESSORIES**
	1. Vision Lites.
		1. Factory Glazing.
		2. Steel vison kit with 1/4” fire-rated glass.
		3. Size as indicated on the drawings.
			1. Maximum 704 in² in listed and labeled kit for positive pressure applications using listed glazing. Minimum 5” from top or edge of door to lite cutout and minimum 5” from latch cutout to lite cutout.
			2. Maximum 32” high.
			3. Maximum 22” wide.
	2. Hardware.
		1. All hardware must be listed and labeled for use in mineral core fire doors.
		2. Pre-machine doors in accordance with templates from specified hardware manufactures and hardware schedule.
		3. Factory install hardware.
		4. EPT Units
			1. Allowed between top and middle hinge locations.
			2. 1/16” maximum clearance per side when installing EPT.
			3. Limited to maximum 60 min positive and neutral pressure applications.
			4. Intumescent caulk or strips are required on bottom, top, and side of EPT device.
		5. Hardware Schedule.
			1. Choose an item.
				1. Hinges Per NFPA 80, Table 6.4.3.1.

Choose an item. Click or tap here to enter text.

* + - * 1. Locking Hardware

Single point latching on singles, 4-point latching for pairs.

Must be listed for use with wood core fire doors.

Rim x Rim with listed mullion allowed for pairs.

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* + - * 1. Surface Bolts.

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* + - * 1. Protection plates.

Brass, bronze, steel, aluminum, polycarbonate or decorative laminate maximum 12 from bottom rail.

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* 1. Wire Raceway
		1. Maximum 3/8” x 3/8” bore.
		2. Maximum 2 raceways.
		3. Minimum 4” between raceways.
		4. Centered in door core.
		5. Maximum 40” above the bottom of door edge.

**PART 3 EXECUTION**

1. **EXAMINATION**
	1. Examine areas to receive doors.
	2. Notify architect of conditions that would adversely affect installation or subsequent use.
	3. Do no proceed with installation until unsatisfactory conditions are corrected.
2. **PREPARATION**
	1. Ensure openings to receive frames are plumb, level, square, and in tolerance.
3. **ERECTION**
	1. Install doors in accordance with manufacturer’s instructions.
	2. Install doors plumb, level, square, true to line, and without warp or rack.
	3. Anchor frames securely in place.
	4. Separate aluminum from other metal surfaces with bituminous coatings or other means approved by architect.
	5. Set thresholds in bed of mastic and back seal.
	6. Install exterior doors to be weathertight in closed position.
	7. Repair minor damages to finish in accordance with manufacturer’s instructions and as approved by architect.
	8. Remove and replace damaged components that cannot be successfully repaired as determined by architect.
4. **FIELD QUALITY CONTROL**
	1. Manufacture’s Field Services.
		1. Manufacturer’s representative shall provide technical assistance and guidance for installation of doors.
5. **ADJUSTING**
	1. Adjust doors, hinges, and locksets for smooth operation without binding.
6. **CLEANING**
	1. Clean doors promptly after installation in accordance with manufacturer’s instructions.
	2. Do not use harsh cleaning materials or methods that would damage finish.
7. **PROTECTION**
	1. Protect installed doors to ensure that, except for normal weathering, doors will be without damage or deterioration at time of substantial completion.

**END OF SECTION**