



*FRP Doors and Frames*  
**SPECIFICATIONS**  
**Section 08 16 13 [82250]**

Cline Aluminum Doors, Inc.  
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**PART 1 – GENERAL**

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**1.1 Section Includes** [Note: Delete items below not required for project.]

- A. **Fiberglass Reinforced Polyester (FRP) Flush Doors.**
- B. **FRP Panels.**
- C. **Aluminum Door Frames.**

**1.2 Related Sections** [Note: Delete any sections below not relevant to this project; add others as required.]

- A. Section 06 10 00 [06100] – Rough Carpentry (hardware installation).
- B. Section 04 20 00 [04200] – Masonry (frame installation).
- C. Section 07 90 00 [07900] – Joint Sealers.
- D. Section 08 71 00 [08710] – Door Hardware.
- E. Section 08 80 00 [08800] – Glazing.
- F. Section 09 90 00 [09900] – Field Painting.

**1.3 References** [Note: Select references from the lists below that are required by the edited section.]

- A. Aluminum Association, Inc. (AA).
  - 1. AA 5005-H14 – Sheet Architectural.
  - 2. AA 6061-T6 – Heavy Duty Structures.
  - 3. AA 6063-T5 – Extrusions, Pipe, Architectural.
  - 4. AA DAF-45 – Designation System for Aluminum Finishes.
- B. American Architectural Manufacturers Association (AAMA).
  - 1. AAMA 2603-98 – Pigmented Organic Coatings (Polycron).
  - 2. AAMA 2605-98 – Superior Performing Organic Coatings (Kynar).
  - 3. AAMA 609 – Anodized Architectural Finishes Cleaning and Maintenance.
  - 4. AAMA 610-02 – Painted Architectural Products Cleaning and Maintenance.
  - 5. AAMA 611-98 – Anodized Architectural Standards.
  - 6. AAMA 701 – Pile Weather Strip.
- C. American Society for Testing Materials (ASTM).
  - 1. A 123 – Zinc (Hot-Dip Galvanized) Coatings.
  - 2. C 591-01 – Unfaced Preformed Rigid Cellular Polyisocyanurate.
  - 3. C 728-97 – Insulation Board, Mineral Aggregate.
  - 4. E 330-97 – Structural Load Test.
  - 5. E 1996 – Wind Load Test.
  - 6. E 1886 – Impact Test Procedures (Inclusive of Large Missile Impact).
  - 7. E 1300 – Load Resistance of Glass in Building.
- D. Florida Building Code Compliant
  - 1. Florida Building Code #FL6336 (website address: [www.floridabuilding.org](http://www.floridabuilding.org))

[Note: When used in wind-borne debris regions this product complies with section 1609.1.4 of the Florida Building Code as an impact resistant product and does not require the use of external impact resistant covering. This product meets the requirements for enhanced protection of essential facilities (missile level "E", wind zone 4) as defined in ASTM E 1996.]

**1.4 Testing and Performance Requirements**

- A. Structural Test Unit: Minimum size of 3-feet (91.44 cm) by 7-feet (213.36 cm) with 24-inch (60.96 cm) by 34-inch (86.36 cm) vision light shall be evaluated compliant with ASTM E 330 testing method.
- B. Test Procedures and Performances:
  - 1. With door closed and locked, test unit in accordance with ASTM E 330 at static air pressure difference of 90.0 pounds per square foot (3.35 kPa) positive pressure and 90.0 pounds per square foot negative pressure with 165.4 miles (264.9 km) per hour wind load.
  - 2. At conclusion of test there shall be no glass breakage, permanent damage to fasteners, hardware parts, support arms or actuating mechanism, nor any other damage that would cause the door to be inoperable.

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## 1.5 Submittals

- A. Submit under provisions of **Section 01 30 00** [01300].
- B. **Product Data:** Manufacturer's descriptive literature for each type door and frame: include the following information:
  - 1. Fabrication methods.
  - 2. Finishing.
  - 3. Hardware preparation.
  - 4. Accessories.
- C. **Shop Drawings:** Indicate the following:
  - 1. Elevations and details of each door and frame type.
  - 2. Schedule of doors and frames.
  - 3. Conditions at openings with various wall thicknesses and materials.
  - 4. Location and installation requirements for hardware.
  - 5. Thicknesses of materials, joints.
  - 6. Connections and trim.
- D. **Samples:** Two sets of color chips representing specified colors and finishes.
- E. **Verification Samples:**
  - 1. Submit samples of each type, consisting of FRP door corner construction, minimum 6-inch by 6-inch (150 mm) legs.
  - 2. Where color or texture variations are anticipated, such as anodized finishes, include two or more units in each set of samples indicating extreme limits of variations.
- F. **Hardware Templates:** Provide finish hardware mounting details.
- G. **Manufacturer's Installation Instructions:** Printed installation instructions for each product, including product storage requirements.
- H. **Operations and Maintenance Data:** Printed instructions for each product.

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## 1.6 Quality Assurance

- A. **Manufacturer Qualifications:** Company specializing in manufacturing FRP door and frame systems of the type required for this project, with minimum ten continuous years documented experience.
- B. **Product Qualifications:** Wind-load test certification conforming to ASTM E 330 on samples of previous products shall be provided for the type of door to be used.
- C. **Installer's Qualifications:** Workmen skilled in handling FRP door and frame systems of the type required for this project.
- D. **Instruction:** The manufacturer or his representative will be available for consultation to all parties engaged in the project, including instruction to installation personnel.

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## 1.7 Delivery, Storage and Handling

- A. Deliver doors and frames palletted, wrapped or individually crated. Doors shall be side protected with surrounding grooved 2-inch (50.8 mm) by 4-inch (101.6 mm) wood frame and covered with 275-pound (124.74 kg) test corrugated cardboard.
- B. Inspect delivered doors and frames for damage; unload and store with minimum handling. Repair minor damage if refinished items are equal in all respects to new work; otherwise, remove damaged items and replace with new.
- C. Store products of this section under cover in manufacturer's unopened packaging until installation.
  - 1. Place units on minimum 4-inch (101.6 mm) wood blocking.
  - 2. Avoid non-vented plastic or canvas covers.
  - 3. Remove packaging immediately if packaging becomes wet.
  - 4. Provide 0.25-inch (6.35 mm) air spaces between stacked doors.

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## 1.8 Project Conditions

- A. **Field Measurements:** Take field measurements of areas to receive aluminum frames; note discrepancies on submitted shop drawings.

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## 1.9 Scheduling

- A. Ensure that all approvals and/or shop drawings are supplied or returned to the manufacturer in time for fabrication without affecting construction progress schedule.
- B. Ensure that templates and/or actual hardware requested by manufacturer are available in time for fabrication without affecting construction progress schedule.

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## 1.10 Warranty

- A. **Manufacturer:** Ten year warranty against defects in workmanship and materials, including warping, rotting, decaying or bowing.
- B. **Installer:** Warrant installation procedures and performance for five years against defects due to workmanship and materials handling.

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# PART 2 – PRODUCTS

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## 2.1 Manufacturers

- A. Acceptable Manufacturer: **Model: Series 200BE** Cline Aluminum Doors, Inc.  
112 – 32nd Avenue West, Bradenton, Florida 34205-8907  
Telephone: (800) 648-6736, (941) 746-4104; Fax: (941) 746-5153  
Website: www.clinedoors.com, Email: inquire@clinedoors.com
- B. Requests for substitution will be considered in accordance with provisions of Section 01 60 00 [01600].

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## 2.2 Components

- A. **Aluminum Members:** Alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish.
- B. **FRP Door Composite Components:** Minimum 3-ply composite laminated construction to include:
  - 1. **Facing:** 0.120-inch composite FRP panel (3.18mm) exterior grade, UV-protected fiber reinforced polyester panel on interior and exterior faces. Ultraviolet inhibitors shall be maximum amount formulated within the resin. Exterior and interior FRP panels shall be a Class C Flame Spread: Maximum of 120, and Smoke Developed Rating of 290 or less (ASTM E 84)
  - 2. Surface texture will be pebble embossed with a non-directional pattern.
  - 3. All mylar transporter fabrication film must be removed from FRP face sheets prior to door fabrication.
  - 4. FRP face panels shall be USDA accepted with minimal porosity.
  - 5. Face sheet shall be bonded to core and backup tube from edge to edge of door.
  - 6. FRP face sheets shall be a Class C Flame Spread: Maximum of 120 and Smoke Developed rating of 290 or less (ASTM E 84), for both interior and exterior faces of interior and exterior doors.
  - 7. **Core:** Organic materials shall be used to form a marine grade honeycomb core with high compression strength of 94.8 psi (ASTM C365), and internal aluminum hardware backup tube.
  - 8. **Hardware Backup:** The hardware backup tube shall be a minimum 4.25-inches (107.95 mm) in width, 1.375-inches (34.93 mm) in depth with a wall thickness of 0.125-inches (3.18 mm). Contiguous for the full perimeter of the door to allow for all specified and non-specified hardware reinforcement.
  - 9. **Hardware Prep:** Basic to include mortise lock edge prep or cylindrical lock prep; and pairs prepped for flush bolts, if required.
  - 10. **Bonding Agent:** Environmentally friendly adhesive with strength buildup of 350 pounds per square inch (24.6 kg/cm<sup>2</sup>).
  - 11. **Perimeter Door Trim:** Wall thickness of 0.050-inch (1.25 mm) minimum in 6063-T5 extruded aluminum alloy with special beveled edge cap design and integral weather stripping on lock stile.
  - 12. **Replaceable Door Trim:** Mechanically fastened to the hardware backup tube, allowing for replacement in the field, if damaged.
  - 13. **Trim Finish:** To have minimum of a Class I anodized finish.
  - 14. **Weather stripping:** Replaceable wool pile with nylon fabric, polypropylene backing meeting AAMA 701 standards. Applied weather striping not acceptable
  - 15. **Materials:** Only nonferrous, non-rusting members shall be acceptable, including tie rods, screws and reinforcement plates.
  - 16. **Regulations:** All components and agents to meet EPA standards.

C. **Glazing:** [Note: Select items below relevant to this project.]

1. Glass shall be 0.25-inch (6.36 mm) tempered. (Standard thickness)

– or select –

1. Glass shall be 1-inch (25 mm) insulating, tempered.

– or select –

1. Glass shall be 0.5625-inch (14.29 mm) laminated hurricane glass

[Note: Retain one of the above to specify glass thickness.]

2. Stops shall be snap-in, non-removable type, 6063-T5 extruded aluminum alloy and 0.050-inch (1.25 mm) thickness.
3. Seals shall be vinyl inserts.
4. No fasteners shall be exposed.

D. **Door Louvers:**

1. **Blades and Frames:** 6063-T5 extruded aluminum alloy, 0.062-inch (1.57 mm) minimum thickness. Louver blades shall be inverted “Y” type.
2. **Insect Screens:** 18-16 mesh, 0.011-inch (0.28 mm) diameter aluminum, set in 6063-T5 extruded aluminum alloy frame, 0.050-inch (1.25 mm) minimum thickness.
3. Louver shall have a minimum of 50-percent free airflow.

E. **Aluminum Frames:**

1. **Frame Components:** Extruded channel (tubular) 6063-T5 aluminum alloy, minimum wall thickness 0.125-inch (3.18 mm); cut corners square and joinery shall be mechanical with no exposed fasteners.
2. **Profile:** Open Back with Applied Stop (OBS), 1.75-inch by 5-inch (44 x 127 mm).  
– or select –
2. **Profile:** Open Back with Applied Stop (OBS), 1.75-inch by 6-inch (44 x 152.39 mm).
3. **Hinge and Strike Mounting Plates:** Extruded aluminum alloy bar stock, 0.1875-inch (4.75 mm) thick mounted in a concealed integral channel with no exposed fasteners.
4. **Replaceable Weather stripping:** AAMA 701, wool pile with nylon fabric, polypropylene backing, at head and jambs.
5. **Door Stop:** No screw-on stops acceptable.
6. **Frame Finish:** Shall be anodized with Class II mechanical finish to match door finish.

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2.3 **Finish** [Note: Retain one or more of the following paragraphs to specify finish.]

- A. **Finish:** Clear anodic coating; AA-M12C22A31 Class II mechanical finish, non-specular, with chemical medium-matte etch, minimum thickness 0.4-mil (0.01 mm).

– or select one of the following custom finishes –

- A. **Finish:** Dark Bronze anodic coating; AA-M12C22A34 Class II mechanical finish, non-specular as fabricated, with medium-matte chemical etch, minimum thickness 0.4-mil (0.01 mm).
- A. **Finish:** Medium Bronze anodic coating; AA-M12C22A34 Class II mechanical finish, non-specular as fabricated, with medium-matte chemical etch, minimum thickness 0.4-mil (0.01 mm).
- A. **Finish:** Light Bronze anodic coating; AA-M12C22A34 Class II mechanical finish, non-specular as fabricated, with medium-matte chemical etch, minimum thickness 0.4-mil (0.01 mm).
- A. **Finish:** Black anodic coating; AA-M12C22A34 Class II mechanical finish, non-specular as fabricated, with medium-matte chemical etch, minimum thickness 0.4-mil (0.01 mm).
- A. **Finish:** High Performance Organic Coating; Kynar/Polyvinylidene Fluoride (PVDF) (AAMA 605.2).

[Note: Retain one of the following subparagraphs to specify color.]

1. **Color:** Selected by Architect from manufacturer’s full range of available colors.
2. **Color:** Custom color matching Architect’s sample.

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## 2.4 Fabrication

- A. **General:** Receive hardware if required by manufacturer.
- B. **FRP Door Construction:** Of type, size and design indicated:
  - 1. **Minimum Thickness:** 1.75-inches (44 mm), 3-ply composite laminate system.
  - 2. **Door Size:** Sizes shown are nominal; provide standard clearances as follows:
    - a. Hinge and Lock Stiles: 0.125-inch (3.18 mm).
    - b. Between Meeting Stiles: 0.25-inch (6.35 mm).
    - c. At Top Rails: 0.125-inch (3.18 mm).
    - d. Between Door Bottom and Threshold: 0.125-inch (3.18 mm).
- C. **Aluminum Frames:** Of shapes and contours indicated.
  - 1. Corners shall be cut square.
  - 2. Reinforce and secure mechanically.
  - 3. No exposed fasteners.

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## 2.5 Accessories

- A. **Fasteners:** Aluminum, nonmagnetic stainless steel, or other material warranted by manufacturer as non-corrosive and compatible with aluminum components.
  - 1. Do not use exposed fasteners.
- B. **Brackets and Reinforcements:** Manufacturer's high-strength aluminum units where feasible, otherwise, nonferrous stainless steel.
- C. **Bituminous Coating:** Cold-applied asphaltic mastic, compounded for 30-mil (0.76 mm) thickness per coat.

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# PART 3 – EXECUTION

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## 3.1 Examination

- A. Verify that wall surfaces and openings are ready to receive frames and are within tolerances specified in manufacturer's instructions.
- B. Verify that frames installed by other trades for installation of doors of this section are in strict accordance with recommendations and approved shop drawings and within tolerances specified in manufacturer's instructions.

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## 3.2 Preparation

- A. Perform cutting, fitting, forming, drilling, and grinding of frames as required for project conditions; do not damage sight-exposed finishes.
- B. Separate dissimilar metals to prevent electrolytic action between metals.

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## 3.3 Installation

- A. Install doors and frames in accordance with manufacturer's instructions and approved shop drawings; set frames plumb, square, level, and aligned to receive doors.
- B. Anchor frames to adjacent construction in strict accordance with recommendations and approved shop drawings and within tolerances specified in manufacturer's instructions.
  - 1. Seal metal-to-metal joints between framing members using good quality elastomeric sealant.
- C. Where aluminum surfaces contact with metals other than stainless steel, zinc or small areas of white bronze, protect from direct contact by one or more of the following methods.
  - 1. Paint dissimilar metal with one coat of heavy-bodied bituminous paint.
  - 2. Apply good quality elastomeric sealant between aluminum and dissimilar metal.
  - 3. Paint dissimilar metal with one coat of primer and one coat of paint recommended for aluminum surface applications.
  - 4. Use non-absorptive tape or gasket in permanently dry locations.

- D. Hang doors with required clearances as follows:
  - 1. Hinge and Lock Stiles: 0.125 inch (3.18 mm).
  - 2. Between Meeting Stiles: 0.250 inch (6.35 mm).
  - 3. At Top Rails: 0.125 inch (3.18 mm).
  - 4. Between Door Bottom and Threshold: 0.125 inch (3.18 mm).

E. Adjust doors and hardware to operate properly.

F. Install glazing in glazing frames.

[Note: Delete any of the following paragraphs that do not apply to project; coordinate with RELATED SECTIONS article of PART 1 of this section.]

G. Install hardware for doors of this section.

H. Installation of door hardware is specified in Section 08 71 00 [08710].

I. Installation of glass is specified in Section 08 80 00 [08800].

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### 3.4 Cleaning

- A. Upon completion of installation, thoroughly clean door and frame surfaces in accordance with AAMA 609.
- B. Do not use abrasive, caustic or acid cleaning agents.

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### 3.5 Protection

- A. Protect products of this section from damage caused by subsequent construction until substantial completion.
- B. Repair damaged or defective products to original specified condition in accordance with manufacturer's recommendations.
- C. Replace damaged or defective products that cannot be repaired to Architect's acceptance.

## End of Section



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