



EQUIPMENT ENCLOSURE SPECIFICATION

SECTION 13169 PRE-ENGINEERED FIBERGLASS ENCLOSURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pre-engineered enclosures.
- B. Electrical wiring and devices for pre-engineered enclosures.
- C. Heating equipment for pre-engineered enclosures.
- D. Ventilation equipment for pre-engineered enclosures.
- E. Air conditioning equipment for pre-engineered enclosures.

1.2 RELATED SECTIONS

- A. Section 03300 – Cast-In-Place Concrete: Concrete building pad.
- B. Division 16: Electrical connections.

1.3 REFERENCES

- A. ASTM C 518 – Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- B. ASTM D 256 – Standard Test Method for Determining the Pendulum Impact Resistance of Notched Specimens of Plastics.
- C. ASTM D 618 – Standard Practice for Conditioning Plastics for Testing.
- D. ASTM D 638 – Standard Test Method for Tensile Properties of Plastics.
- E. ASTM D 732 – Standard Test Method for Shear Strength Plastics by Punch Tool.
- F. ASTM D 790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- G. ASTM D 792 – Standard Test Method for Specific Gravity (Relative Density) and Density of Plastics by Displacement.
- H. ASTM D 1622 – Standard Test Method for Apparent Density of Rigid Cellular Plastics.
- I. ASTM D 2583 – Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Certified independent test results of representative wall laminate.
- C. Shop Drawings: Show:
 - 1. Critical dimensions, jointing and connections, fasteners and anchors.
 - 2. Materials of construction.
 - 3. Sizes, spacing, and location of structural members, connections, attachments, openings, and fasteners.
 - 4. Color.
- D. Samples: 8-inch square sample of representative wall construction, upon request.
- E. Manufacturer's installation instructions.



1.5 SYSTEM DESCRIPTION

- A. Size: provide one-piece molded construction FRP enclosure of the following type:
 - 1. Size: 3 FEET 2 INCHES W x 3 FEET 2 INCHES D x 4 FEET 4 INCHES H (Model 200-091).
- B. Construction:
 - 1. One-piece construction.
 - 2. Paneled construction shall not be acceptable.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products indoors or in weather protected area until installation. Protect from construction traffic and damage.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. The product shall be manufactured by TRACOM, Inc.; 6575-A Industrial Way, Alpharetta, Georgia 30004; Toll-Free Voice (877) 435-8637, Toll-Free Fax (866) 435-8637, www.tracomfrp.com.
- B. Requests for substitution must be made in writing and received by the engineer's office a minimum of ten (10) business days before bid opening. Substitutions shall be made in accordance with the provisions of Section 01600.
- C. Substitutions: Manufacturers not pre-approved shall not be allowed.
- D. Warranty: Enclosures shall be warranted to be free of defects in workmanship and materials for a period of two years from date of shipment.

2.2 MATERIALS

- A. One-Piece Molded Composite Construction:
 - 1. Laminate: Isophthalic polyester resin with high performance, chopped, commercial grade glass strand fiber reinforcement with a suitable coupling agent.
 - i. Minimum glass content: 30%.
 - ii. Exterior surface: 15 mil (minimum) gel coat with U.V. inhibitors and a satin finish lightly textured and free from fiber pattern, roughness, or other irregularities.
 - iii. Exterior laminate: 1/8 inch thick (minimum); chemically bonded to the surface gel coat and encapsulating the foam core.
 - iv. Foam core (2.2.A.2)
 - v. Interior laminate: 1/8 inch thick (minimum); chemically bonded to the interior gel coat and encapsulating the foam core.
 - vi. Interior surface: 15 mil (minimum) gel coat with U.V. inhibitors and a textured finish, free from exposed glass or other irregularities.
 - vii. Laminate properties:
 - 1. Tensile strength (ASTM D 638): 11,000 PSI.
 - 2. Flexural strength (ASTM D 790): 28,000 PSI.
 - 3. Shear strength (ASTM D 732): 12,000 PSI.
 - 4. Barcol hardness (ASTM D 2583): 40.
 - 5. Density / specific gravity (ASTM D 792): 93.6 PCF/1.5.
 - 2. Core:
 - i. Rigid closed cell, self-extinguishing, polyisocyanurate foam with a density of 2.5 pounds per cubic foot. Foam shall be P250 Elfoam without exception.
 - ii. 1 inch thick with a minimum core insulating value of R~7.



- iii. 2 inch thick with a minimum core insulating value of R~14 (**OPTIONAL**).
- iv. Core properties:
 - 1. Thermal conductivity
(ASTM C 518): 0.145 BTU inch/hr./SF/°F.
 - 2. Density / specific gravity
(ASTM D 1622): 2.3 PCF.
 - 3. Shear Strength
(ASTM C 273): 25 lb/in²
 - 4. Tensile Strength
(ASTM D 1623): 45 lb/in²
 - 5. Compressive Strength (7% deflection/yield)
(ASTM D 1621): 35
- 3. Coupons prepared in accordance with ASTM D 618.
- B. The manufacturer shall maintain a continuous quality control program and upon request shall furnish to the engineer certified test results of the physical properties.

2.3 COMPONENTS

- A. Base Mounting Flange:
 - a. Integral external base mounting flange, 1/4 inch thick, 3 inches wide.
- B. Doors:
 - a. Fully opening front and top access doors.
 - b. Construction:
 - i. One-piece molded fiberglass construction, 1-1/4 inches thick.
 - ii. Mount doors with:
 - 1. (2) 5-1/2 inch laminated T-304 stainless steel strap hinges (front access door).
 - 2. T-304 stainless steel continuous piano hinge (top access door).
 - iii. Provide key-locked stainless steel T-handle for each door. Locks to be keyed alike.
 - iv. Neoprene strip gasket with flexible lock to retain permanent grip.
 - v. Provide (2) telescoping, self-locking door support arms (top access door).
- C. Floor:
 - a. Integral reinforced floor.

2.4 OPTIONS (***select all that apply***)

- A. Electrical
 - a. Circuit Breaker Box: NEMA 3R duplex metallic breaker box with (2) 20 Amp breakers (**OPTIONAL**).
 - b. Electrical Wiring: 12 gauge stranded, color-coded THHN electrical wiring in flexible, U.L. listed, non-conductive conduit. SO cord or other non-encased wiring shall not be acceptable (**STANDARD when enclosure equipped with both the circuit breaker box and any other electrical equipment option**).
 - c. Receptacle: GFCI receptacle 15A 125V, 20 A 125V feed-through, with 5mA +/- 1mA trip threshold.
 - i. Interior (**OPTIONAL**).
 - ii. Exterior with clear weatherproof cover (**OPTIONAL**).
 - d. Switch, Weatherproof:
 - i. Single toggle switch box, for _____ (**OPTIONAL – specify operation**).
 - ii. Double toggle switch box for _____ (**OPTIONAL – specify operation**).
- B. HVAC
 - a. Exhaust Fan:
 - i. 71 CFM cooling fan, with thermostat and fixed 4 inch diameter polyethylene louver (**OPTIONAL**).



- ii. Shutter-mounted 120 CFM 7 inch diameter exhaust fan with integral gravity shutter, aluminum fan blades, fiberglass canopy, and OSHA compliant polyester-coated wire guard **(OPTIONAL - requires switch or thermostat to control)**.
 - b. Heater: 500 watt, T-304 stainless steel line powered wall heater with built-in thermostat. No separate electrical outlet shall be required **(OPTIONAL)**.
 - c. Louver:
 - i. (4) Fixed aluminum louvers, 10 inches W x 3 inches H, standard.
 - ii. Fixed polyethylene, 4 inch diameter **(OPTIONAL)**.
 - iii. Manually adjustable T-304 stainless steel, 5 inch diameter **(OPTIONAL)**.
 - d. Shutter: Gravity operated fiberglass intake shutter, 10 inch x 10 inch, with heavy duty fiberglass frame and exterior removable insect screen **(OPTIONAL)**.
 - i. Fiberglass hood over intake shutter **(OPTIONAL)**.
 - ii. Shutter motor, wired to exhaust fan **(OPTIONAL)**.
 - e. Thermostat: NEMA 4X line voltage thermostat for remote operation of heater or exhaust fan, 0-45 C and 30-110° F **(OPTIONAL – specify operation)**.
 - C. Lighting
 - a. Light:
 - i. 100 watt, vapor-tight wall mount incandescent light. U.L. listed for wet locations **(OPTIONAL)**.
 - ii. 100 watt, NEMA 4X non-metallic wall mount incandescent light **(OPTIONAL)**.
 - iii. 9-inch wall mount fluorescent light with integral switch and 115 VAC convenience outlet **(OPTIONAL)**.
 - D. Miscellaneous
 - a. Shelf: Fiberglass instrument shelf, 19 inches W x 17 inches D.

2.5 FINISHES

- A. Color: #1555 Whale Bone.
- B. Color: _____ **(OPTIONAL)**.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that the concrete pad is level, true to plane, and of the correct dimensions to receive the structure. Correct all deficiencies before proceeding.

3.2 INSTALLATION

- A. Install products in accordance with engineer's instructions, plans, blueprints, etc, local codes, and in a manner consistent with the installation instruction and recommendation of the manufacturer.

DO NOT DISCARD the stainless steel spreader bar inside the front access door. The bar ensures the smooth operation of the front access door. The bar may be temporarily removed to allow for the installation / removal of equipment from the enclosure, but MUST BE REINSTALLED. FAILURE TO SO MAY RESULT in the BINDING of the door against the door frame.

- B. Move and position the shelter into the appropriate position.
- C. After closing the enclosure doors:
 - i. Layout the anchor bolt pattern.



- ii. Starting on each side of the front door, drill the anchor bolt holes through the mounting flange and into the concrete slab to the depth and diameter required by the anchor bolt manufacturer.
- iii. Stainless steel wedge style concrete anchors [1/2 inch diameter x 4-1/2 inches long – (minimum)] are recommended. TRACOM does not recommend the use of pre-set anchor bolts. Anchor bolts are to be supplied by others.
- iv. Verify the operation of the doors before installing the remaining anchor bolts.

FAILURE to VERIFY the operation of the door(s) BEFORE the remaining anchor bolts are set MAY RESULT in the BINDING of the door against the door frame.

- D. Seal the flange with sealant, urethane caulk, or grout to ensure a watertight installation.
- E. Install (as necessary) and test the enclosure accessories in accordance with the manufacturers' instructions.

3.3 ADJUST AND CLEAN

- A. Clean surfaces in accordance with the manufacturer's instructions.
- B. Remove trash and debris, and leave the site in a clean condition.

END OF SECTION

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