



EQUIPMENT ENCLOSURE

SECTION 13161 PRE-ENGINEERED ENCLOSURE

PART 1 GENERAL

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

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

1.3 REFERENCES

- A. ASTM D 256 – Standard Test Method for Determining the Pendulum Impact Resistance of Notched Specimens of Plastics.
- B. ASTM D 618 – Standard Practice for Conditioning Plastics for Testing.
- C. ASTM D 638 – Standard Test Method for Tensile Properties of Plastics.
- D. ASTM D 732 – Standard Test Method for Shear Strength Plastics by Punch Tool.
- E. ASTM D 790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- F. ASTM D 792 – Standard Test Method for Specific Gravity (Relative Density) and Density of Plastics by Displacement.
- G. ASTM D 1622 – Standard Test Method for Apparent Density of Rigid Cellular Plastics.
- H. 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: Test results of representative fiberglass reinforced plastic 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(s).
- D. Samples: 8-inch square sample of representative fiberglass reinforced plastic laminate.
- E. Manufacturer's installation instructions.

1.5 SYSTEM DESCRIPTION

- A. Size: provide an enclosure of the following type(s):
1. Size: 3 FEET 0 INCHES W x 3 FEET 0 INCHES D x 3 FEET 2 INCHES H.
 - i. One-piece molded construction, paneled construction shall not be acceptable.
 - ii. Fully opening front access door.

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; Tel. (877) 435-8637, Fax (770) 664-6565, 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: Buildings shall be warranted to be free of defects in workmanship and materials for a period of two years from shipment.

2.2 MATERIALS

- B. One-Piece Molded Composite Construction:
1. Laminate: Isophthalic polyester resin and chopped commercial grade E-glass strand fiberglass with a coupling agent that will provide a suitable bond between the glass reinforcement and the resin, with a minimum glass content of 25%.
 - i. Exterior surface: 15 mil gel coat with U.V. inhibitors and a satin finish, lightly textured and free from fiber pattern, roughness, or other irregularities.
 - ii. Exterior laminate: 1/8 inch thick (minimum); chemically bonded to the surface gel coat and encapsulating the foam core.
 - iii. Foam core (2.2.A.2)

- iv. Interior laminate: 1/8 inch thick (minimum); chemically bonded to the interior gel coat and encapsulating the foam core.
- v. Interior surface: White (#1540) gel coat with satin finish, and free from exposed glass or other irregularities.
- vi. Laminate properties:
 - 1. Tensile strength (ASTM D 638): 11,000 psi.
 - 2. Flexural strength (ASTM D 790): 18,000 psi.
 - 3. Shear strength (ASTM D 732): 12,000 psi.
 - 4. Barcol hardness (ASTM D 2583): 40.
 - 5. Impact (ASTM D 256): 12 ft lbs/inch.
 - 6. 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 1.8 pounds per cubic foot. Foam shall be T200 Elfoam.
- ii. 1 inch thick with a minimum insulating value of R=7.
- iii. 2 inch thick with a minimum insulating value of R=14 (**OPTIONAL**).
- iv. Core properties:
 - 1. Thermal conductivity (ASTM C 518): 0.13 BTU inch / hr. SF F.
 - 2. Density / specific gravity (ASTM D 1622): 1.8 PCF/0.03.

3. Coupons prepared in accordance with ASTM D 618.

- C. 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. Doors:

- a. Front access door: One-piece molded fiberglass construction 1 1/4 inch thick.
 - i. Mount door with continuous T-304 stainless steel piano hinge.
 - ii. Provide T-304 stainless steel padlockable hasp.

B. Louvers:

- a. Provide one, _____ inch by _____ inch (10 inch or 12 inch - square) fiberglass gravity shutter with heavy-duty fiberglass frame using stainless steel pins and bearing at pivot points (**OPTIONAL**).

C. Floor:

- a. Base corner flanges drilled for 3/4 inch mounting holes.
- b. Integral full floor (**OPTIONAL**).

2.4 EQUIPMENT

- A. 125 CFM (120 VAC) 7 inch diameter exhaust fan with manually adjustable ventilation louver. Exhaust fan to be wired to the exterior weatherproof fan / light switch (**OPTIONAL**).
- B. Lamp: 100-watt (A21 bulb type) vapor-tight wall mount incandescent light. Lamp to be wired to the interior weatherproof fan / light switch (**OPTIONAL**).

- C. Weatherproof interior duplex switch box **(OPTIONAL)**.
- D. Heater: 200 watt, line powered wall heater with built-in thermostat (0-100 F) **(OPTIONAL)**.
- E. Heater: 400 watt, line powered wall heater with built-in thermostat (0-100 F) **(OPTIONAL)**.
- F. Heater: 500 watt, line powered wall heater with built-in rheostat **(OPTIONAL)**.
- G. Thermostat: white electric heat line voltage thermostat for remote operation of fan or heater. SPDT switch type (open on rise) in degrees F (40-80) **(OPTIONAL)**.
- H. Receptacle: GFCI receptacle 15A 125V, 20 A 125V feed-through, with 5mA +/- 1mA trip threshold in weatherproof outlet box **(OPTIONAL)**.
- I. Circuit Breaker Panel: 60 amp, main lug, NEMA 1, surface mount panel **(OPTIONAL)**.
- J. Electrical wiring in flexible, liquid tight, PVC jacketed galvanized steel Anaconda conduit TYPE EF. Not suitable in explosion-proof applications **(STANDARD WITH ANY ELECTRICAL EQUIPMENT OPTION)**.

2.5 FINISHES:

- A. Color: #1540 Pure White.
- B. Color: _____ **(OPTIONAL)**.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that the concrete slab 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.
- B. Move and position the shelter into the appropriate position. The neoprene gasket *(provided by others)* should be positioned between the concrete slab and the enclosure mounting points or flange.
- C. After closing the enclosure door, layout the anchor bolt pattern. Drill and set the anchor bolts starting with one on each side of the door(s). The anchor bolts behind and in front of the door(s) should be flat head anchors if the mounting flange is external. Drill the anchor boltholes to the depth and diameter required by the anchor bolt manufacturer. Wedge style concrete anchors (1/2 inch diameter x 4 1/2 inch length) are recommended.
- D. Verify the operation of the door(s) before installing the remaining anchor bolts.
- E. The anchor bolts should be installed on maximum 24 inch centers or as otherwise specified.
- F. Seal the flange with sealant or grout.

- G. Install 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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