

# VERTEX

**Molded  
Fiberglass  
Composite  
Shelters**

*different*

**Vertex shelters are unique:** joint-less molded fiberglass outer and inner shells with a foamed-in-place polyurethane foam core between, to produce the walls and roof as a unit, which is then bolted to an insulated, moisture-protected sandwich panel floor supported on two steel channels.

**The basic construction of Vertex equipment buildings utilizes advanced design, materials, and production techniques that provide the structures with many important features.**

### **VERY HIGH STRENGTH - TO - WEIGHT RATIO**

Fiberglass-reinforced polyester resin laminates have higher strength/weight ratios than most other materials. Additional strength is obtained in the monocoque construction of the Vertex design. The walls and roof are formed as a single unit by placing one molded fiberglass-reinforced polyester resin shell within another and creating an insulating structural core between them with foamed-in-place polyurethane. This molded sandwich of high strength fiberglass shells structurally bonded to a polyurethane rigid foam core greatly increases the rigidity and strength of the individual fiberglass shells.

Vertex doors are of this same superior construction. When this composite dome is bolted to a sandwich panel floor, the strong but relatively light weight structure of the Vertex building is produced.

### **PRACTICALLY MAINTENANCE-FREE**

For ability to perform under years of exposure to all kinds of corrosive atmospheric conditions, molded fiberglass-reinforced polyester laminates protected with a molded-in gel coat finish stand above all other practical building material systems. Maintenance painting of Vertex buildings is not required because of the molded-in gel coat color of both the exterior and interior fiberglass shells. In keeping with the maintenance-free basic structure, all hardware is corrosion resistant, primarily stainless steel. The steel floor beam / skid assembly is hot-dip galvanized after fabrication.



### **DURABLE**

The life of a Vertex building should be measured in decades. It is the nature of the materials used to provide this kind of longevity. Experience with fiberglass boats exceeding 20 years of service in hostile environments has established the fact that fiberglass structures will have a long and happy life. Vertex buildings and fiberglass boats are true fiberglass structures wherein the molded fiberglass-reinforced composite laminates constitute the basic structure.

Vertex buildings are flexible. They will take a great deal of punishment during shipping and handling without suffering any structural damage, primarily because of this flexibility and the durability of fiberglass-reinforced composites.

Very low (cryogenic) temperatures and high temperatures (150 degrees F) will not damage the buildings. Fiberglass-reinforced composites are tough, but like most other materials they can be damaged. Fortunately, however, repairs are easily accomplished, and in most cases the repaired area will equal the performance of the original construction.

## **ENVIRONMENTAL CONTROL**

In the all-important consideration of environmental control for electronic equipment, no better choice can be made than in a properly equipped Vertex building. This is true because the shelters are air tight and have extremely low U values (overall heat transfer coefficient). The right conditions can be maintained within the buildings at relatively low costs. Airtightness results from the fact that only one joint exists in the basic structure, which is between the composite dome and the floor. This joint is positively sealed while the building is in an inverted position by pouring a sealant between the floor and the fiberglass exterior shell. The sealant maintains a strong bond between the floor and the dome. The hatch-type door is weatherproofed with a continuous neoprene gasket. Vertex buildings will not leak water from above or from below.

## **ECONOMICAL**

Vertex buildings should compare favorably in purchase price with other choices. When total costs over a period of time are considered, which also include the operating costs of maintenance and heating and cooling, chances are that the Vertex building will be the most economical.

## **ADAPTABLE**

Adaptability is one of the important considerations in the selection of these specialized structures, which is another good reason for choosing Vertex. For instance, to aid in the attachment of heavy objects to the walls or ceiling, dense material blocking is fiberglassed to the backside of the inside fiberglass shell at continuous narrow recesses in the walls and ceiling of all buildings. Additional blocking is provided as needed for particular applications.

***Here are some Vertex standard options available to further adapt the buildings to your needs.....***

- ✓ **Service openings easily installed at about any location in the walls, roof or floor.**
- ✓ **Choice of standard door sizes or special sizes and location.**
- ✓ **Molded fiberglass hoods at air conditioner and other openings.**
- ✓ **Special door hardware.**
- ✓ **Any choice of colors.**
- ✓ **Special structural design loading for floor walls and roof.**
- ✓ **Bullet protection.**
- ✓ **Partitions.**
- ✓ **Cable guides at the roof to stabilize the load for helicopter transport.**
- ✓ **Additional fire - proofness.**
- ✓ **Electrical work, equipment and furnishings to standard Vertex design or to your specifications.**



# STANDARD BUILDING SPECIFICATIONS

## General Description

The shelter shall consist of two basic elements, one element which forms the four walls and roof and the other element being a sandwich panel floor assembly. The four walls and roof structure shall consist of three single elements, each having been formed in a mold in a continuous manner without any joining of parts to make the whole. These three single elements are described as a fiberglass exterior shell, a fiberglass interior shell, and a poured-in-place polyurethane foam core between the fiberglass shells.

The sandwich panel floor shall be supported on a steel channel beam assembly. The door shall be of the same basic construction as the four walls and roof. The doorway shall be formed in the exterior fiberglass shell at the time that this element is produced.

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## Walls and Roof

The four walls and roof shall be a molded sandwich consisting of three separately molded jointless elements, i.e., two 1/8" minimum thickness fiberglass shells bonded to a foamed-in-place polyurethane core. The fiberglass shells shall have a gel coat finish of the specified colors. The gel coat shall be applied in a 15 to 20 mil thickness to the mold as a mold overlay to provide a molded-in finish to the shells. Reinforcing members shall be installed to the backside of the inside shell on a consistent plan for the attachment of equipment to the walls and ceiling. The polyurethane foam shall have a minimum free-rise density of 2.0 lbs. per cu. ft. The polyester resin shall be fire retardant and have a minimum ASTM E84 Class 11 rating.

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## Floor

The floor shall be a sandwich panel consisting of a 3/4" wood product upper face, 2 x 4 wood blocking, a 3/4" wood product lower face, and a rigid foam insulating core. Both faces and all four edges of the panel shall be covered with fiberglass reinforced polyester resin. The floor finish shall be as specified. The approximate thickness of the floor shall be 3". The floor shall be attached to the dome with bolts of a size and spacing needed to meet the design loadings of the shelter. The outside fiberglass building shell shall cover the edge of the floor and the space between this shell and the floor shall be filled with a sealant material.

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## Floor Beam Assembly

The floor beam assembly shall consist of two steel channel beams with two or more lateral braces spanning between the beams. The beam assembly shall be bolted to the floor after the fiberglass coating specified elsewhere has been applied to the bottom of the floor. Steel plates extending beyond the shelter walls shall be bolted to the ends of the beams to provide pick-up points for handling the shelter. All steel shall be hot-dip galvanized after fabrication in accordance with ASTM A-123.

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## Door and Door Hardware

The door shall be constructed as a sandwich panel consisting of two molded, gel-coated fiberglass skins bonded to a poured-in-place polyurethane foam core. Nominal thickness shall be 2-1/4". Neoprene weather-stripping shall provide a continuous and unbroken seal around the door. The door frame shall be formed in the exterior fiberglass shell during the production of that shell. A minimum of two brass or stainless steel wedge-type levers with provision for padlocking shall be provided. Chromium plated pull handles shall be installed on the inside and outside of the door. A minimum of three stainless steel security type hinges shall be installed. An aluminum door stop/holder shall be provided. All fasteners shall be stainless steel.

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## Shelter Design Criterion

The shelter shall meet the below-listed design criteria:

Floor loading:	200 psf
Wall loading:	150 mph wind
Roof loading:	See data sheet for each model
Heat transmission:	See data sheet for each model