



*Field Equipment Shelters
for the*
AVIATION INDUSTRY
Case Studies & Success Stories





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FAA SHELTERS THAT MEET YOUR EXACT NEEDS

Over the years, Shelter Works has been serving the aviation industry in many ways, and can provide any type of FAA shelter you may need, such as an Instrumentation Landing System (ILS) building, live slope enclosures, collision avoidance system buildings or a radar shelter. Our FAA shelters meet either public and military landing strip field equipment needs. We've supplied buildings for a broad range of applications and can build whatever FAA-approved shelter you require.

As the following case studies will show, our engineers help solve whatever challenges a particular site may pose. Because all of our frangible, RF transparent, fiberglass buildings are custom-made, our clients can get exactly what they are looking for. It doesn't matter whether you are dealing with a radar shelter that needs to be RF transparent, an Instrumentation Landing System (ILS) equipment building that needs to accommodate existing cement footers or foundations, or an FAA shelter that houses specialized proper centerline and live slope equipment. Shelter Works can provide you a solution.

I wanted one-stop shopping. I didn't want to get a building and then have to hire separate contractors for all the integration work that needed to be done. I've done that before and it slows everything down, is hard to manage, and isn't very cost- or time-efficient. I did not want to go down that road again, so when I found that Shelter Works makes custom telecommunications shelters, I was happy."

Geoffrey Pamplin
Facilities Engineer , GCI Communications Corp.

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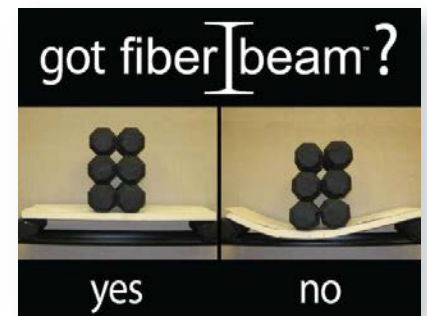
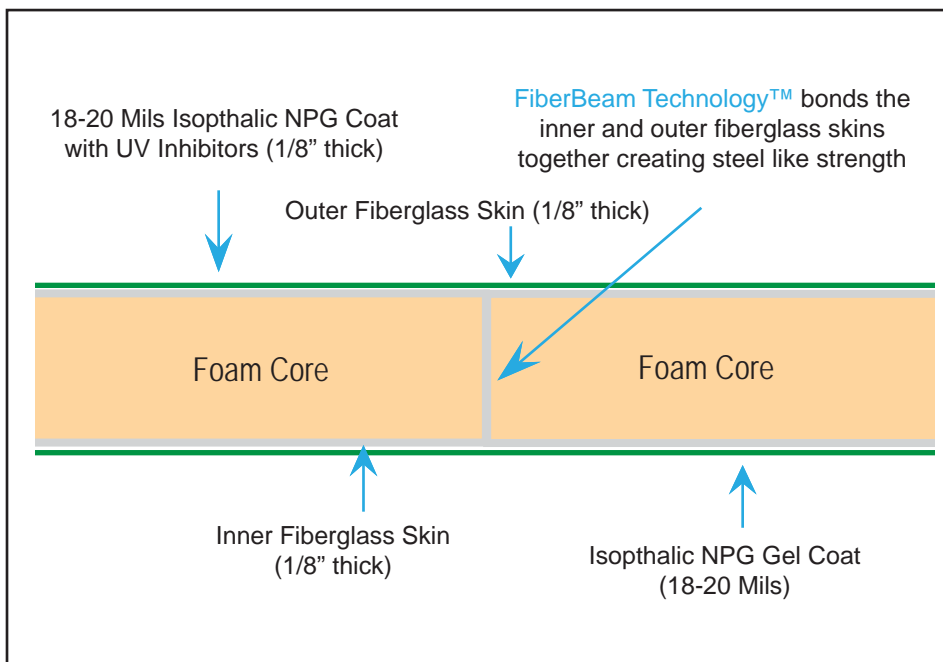
SHELTER WORKS PROPRIETARY COMPOSITE LAMINATION PROCESS

Because of Shelter Works' unique wall and roof construction methods, our shelters are both strong and frangible. Shelter Works constructs its buildings using a unique FiberBeam™ technology that allows the building to be pound for pound stronger than steel. This ensures that it can be made to withstand hurricane-force winds or very heavy snow loads....But because it is fiberglass construction, it easily meets the FAA's frangibility requirements.



All of our fiberglass shelters and buildings use FiberBeam™ Technology, our innovative, proprietary composite lamination process that bonds inner and outer fiberglass skins with a series of integrated fiberglass I-beams. The beams are spaced every 12" throughout the walls, doors, and roof, resulting in a fiberglass composite building system that is equal to the strength of steel.

Foam is a great insulator but not a good structural material. That is why we developed FiberBeam™ Technology. When a typical FRP panel with a foam core is placed under a load, the bond between the foam and the FRP is put under stress and can fail. With FiberBeam™, the same panel is more rigid and can withstand much higher stresses without any bowing or buckling.



fiberbeam
TECHNOLOGY
strength • performance • reliability

All roof and wall areas are made with unique FiberBeam™ construction

IT'S NOT A COATING: IT'S A MOLECULAR BOND

Of course, any FAA shelters on an airstrip are required to be orange and white checkered for maximum visibility to the pilots. Another great aspect of Shelter Works' FAA shelters is that, because we use gelcoat instead of paint, there is no ongoing expense or effort to maintain that color. The gelcoat is molecularly bonded into the fiberglass resin, so it never needs to be painted.

All of our buildings come with complete integration systems as specified by our customers. Whether you require emergency lighting, alarm systems, terminal boxes, surge arrestors, power distribution panels, underfloor or overhead cable trays, load bank controllers, 30 kVA transformers, and or complicated standard and back up HVAC systems, we've got it covered. With endless options for any type of FAA shelter, our customers trust Shelter Works to provide exactly the kind of building required in exactly the way you need it.

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I NEED A FIBERGLASS BUILDING I CAN CRUSH

Airports have some very stringent requirements for their field equipment protection needs, and one of our clients, John Myers at BAE Systems, made such a request for a project he was working on. In order to house part of a radar system in a California airfield, he needed a “frangible” building.

A frangible building is one that is easily broken apart. Experts feel that this requirement increases the overall safety of the airfield, because if an airplane crashed into it, it is better to have the building crush instead of the aircraft. Materials such as concrete or metal are therefore deemed as unacceptable. While wood construction would work, the maintenance costs are significantly higher than a fiberglass shelter.

Myers needed a sturdy, secure building that could repeatedly withstand the forces of a jet wash that would still crumble (or disintegrate) in the event of an aircraft impact. Shelter Works was able to build a shelter to meet the exact needs for this particular application.

In addition, the exterior of the building has to be coated in an orange-and-white checkerboard pattern in accordance with the airfield requirements. With Shelter Works’ gel-coated, corrosion-resistant, fiberglass building for their field equipment protection, they practically eliminate their maintenance costs while still providing long-lasting protection for their field equipment.



*Eliminate maintenance costs
while still providing long
lasting protection for your
field equipment*



A FIBERGLASS EQUIPMENT SHELTER WITH ADDED R-VALUE AND FRANGIBILITY

Equipment shelters need to protect equipment from everything-freezing temperatures, snow, ice, rain, blistering summer heat, vandalism, and occasionally, from errant aircraft that may smash into them.



EXTREME TEMPERATURES AND YOUR EQUIPMENT SHELTER

Anyone who is been to upstate New York understands that region is susceptible to extreme temperatures in the winter. There is an airstrip on a military base that often experiences sustained temperatures of -20°F. On this airstrip, there is a refueling station for helicopters that had an old steel building that the military planned to knock down. Steel is a conductive material that is particularly susceptible to temperature swings (specifically expansion and contraction) and can easily transfer cold temperatures from the outside of the shelter to the inside.

The team assigned to this project determined that the mechanical room did not have enough room to properly house some electric power panels that service the refueling station. Todd Jewett, Senior Project Manager of Pemco Contracting, had seen a Shelter Works equipment shelter at this same military facility that was protecting sewer equipment and suggested that Shelter Works fiberglass construction might provide the perfect answer for protecting those electric power panels and provide those servicing the equipment with protection from weather whenever they needed to service these panels. The composite design provides an inherent thermal barrier and dimensional stability with low conduction. Because Shelter Works equipment shelters are custom engineered, the team was able to specify added foam insulation during the construction of the walls and roof to get exactly the R-value they desired.



The standard Shelter Works wall comes with an R-value of 10. The R-Value is a measure of thermal resistance that helps you calculate how much heat transfer you can expect through a wall area. The higher the R-Value the better the insulation from heat or cold. Areas of a wall with windows, doors and vents will have a lower R-Value.

In most instances, the standard Shelter Works wall provides enough insulation to meet our customer's needs. However, in climates with temperature extremes and where operating temperatures are a concern some customers opt for more insulation and thicker walls. When insulation alone is not enough, heaters and air conditioners can be installed to regulate temperature.

FRANGIBILITY AND EQUIPMENT SHELTERS



In addition to the thermal properties of Shelter Works fiberglass construction and the non-conductive nature of the building, Shelter Works buildings meet a frangibility requirement often specified for airfields. Many times, buildings that are on or near airstrips need to meet certain frangibility requirements--that is, if an aircraft were to hit the building, the specification calls for a building that would be frangible. In addition to the highly attractive 25 year warranty, ultra-lightweight construction and maintenance-free nature of our shelters, Shelter Works buildings meet these frangibility requirements.



"The fiberglass building is performing as needed, and we couldn't be happier. There have been no issues, which is exactly what you want from a building!"



Todd Jewett
Senior Project Manager
Pemco Contracting

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SHELTER WORKS COMPOSITE FIBERGLASS BUILDING MEETS FAA FRANGIBILITY REQUIREMENTS

During a routine facilities check, the United States Air Force discovered a few of its steel equipment buildings did not meet the frangibility requirements outlined for all airport equipment shelters on one of its bases, so they called on Shelter Works to come up with a frangible building that would meet all the necessary codes. In this particular case, there were several competing specifications that had to be met. The trickiest, most stringent requirements were:

Frangible: Frangibility is the property of an object to break apart into smaller pieces upon impact. It is a way to preserve Air Force assets in the event of a crash. This is an important characteristic of enclosures that sit out on the runway, and the US Air Force requires that all airport equipment shelters are frangible so as to maintain the integrity of America's aircraft in the event of a mishap.



Hurricane Resistant: This particular coastal location is prone to hurricanes every year, so there was a requirement that whatever structure was developed needed to be able to withstand wind speeds of up to 140 mph (ours can withstand wind loads of up to 162 miles an hour.)

Highly Customizable: Because of the unique characteristics of this project, there were many additional features that needed to be added to this building, like mesh windows (so they wouldn't shatter as aircraft goes by at supersonic speeds). The building had stringent electrical requirements because it protects Air Force BAK 12 Arresting Gear (this is specialized cabling equipment similar to that found on aircraft carriers that can "catch" a hook on the back of military aircraft that allows the airplane to make a super-fast stop). There's a 2 foot high knee wall that the structure needed to sit on as well.

How can you develop something that is super-strong (to resist hurricane force wind loads) but crushable (to meet FAA frangibility standards)? Steel equipment shelters don't meet these requirements...but Shelter Works fiberglass buildings do. Such an assignment is easy for Shelter Works because every building we make is individually engineered to meet the exact specifications for that location and each particular client need. The Shelter Works team worked to understand and provide all the necessary paperwork. Air Force officials approved the submittal without delay so the project could continue as scheduled.



"The team is really knowledgeable and easy to work with. They were willing to do the research necessary to ensure that we met all the code requirements that the Air Force had."



United States Air Force Base Contractor

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