



FIELD EQUIPMENT SHELTERS FOR THE WATER & WASTEWATER INDUSTRIES

Case Studies & Success Stories



**25 Year
Warranty**

TABLE OF CONTENTS

Introduction	2
Shelter Works Can Withstand Hurricanes	3
Shelter Works Proprietary Composite Lamination Process	4
Shelter Works Can Withstand Harsh Weather	5
Shelter Works Can Withstand Graffiti	7
Graffiti-Free Buildings With Shelter Works	8
Long-Lasting, Reliable Fiberglass Equipment Shelters	9
Why Gel Coat Is Better Than Paint	11
Shelter Works Can Withstand Arctic Temperatures	13
Prefabricated Fiberglass Building Holds Up In Ice Storm	14
Shelter Works Can Withstand Vandalism and Vagrancy	15
Shelter Works Can Withstand Corrosive Coastal Enviromnts	17



INTRODUCTION

The versatility of Shelter Works products makes our shelters ideal for the demands of the water/wastewater industries. Often, our customers need unique access to the equipment with special doors and roof hatches, special wall construction elements to accommodate heating and air conditioning units, explosion proof electrical packages or any other specification they may require. Shelter Works buildings are made exactly to suit each individual project, each individual site and each individual application. The purpose of this e-book is to present a broad range of projects that we've done for our water and wastewater customers. We hope they illustrate the versatility of our shelters and help generate ideas as to what you can specify in your next project.

Some applications include:

- Pumping Stations & Headworks
- Aeration Blowers
- Chemical Feed
- Sludge Pumps
- Chlorination
- Water Booster Pumps
- Dechlorination
- Chemical Storage
- Sludge Dewatering
- Well Covers
- Motor Control Centers
- Grit Washer Enclosures
- Flow Meters & Samplers

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SHELTER WORKS CAN WITHSTAND HURRICANES



The One That Survived Was Built By Us!

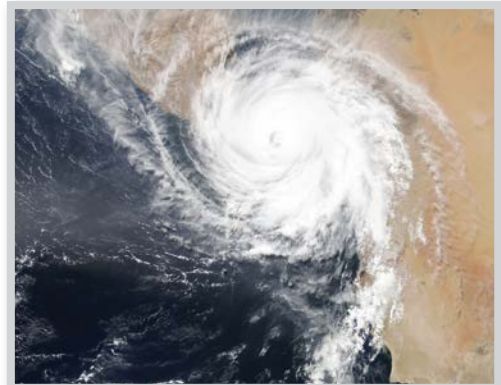
In September of 2005, Hurricane Rita swept through Texas and Louisiana and caused over \$12 billion in damages. Rita is the fourth strongest Atlantic hurricane on record. It prompted the largest evacuation in U. S. history. During the clean up after Rita, one of our representatives in Louisiana sent us a photo and said,

"The enclosure did not even have a ding on it, even though there was ample damage to houses, trees, etc. in the immediate area. You need to start claiming that your enclosures are 'hurricane-proof!'"

All Shelter Works® enclosures are designed utilizing our exclusive FiberBeam Technology™ and built to stand up to Mother Nature at her most extreme. Our shelters can be designed and built to meet state requirements for coastal regions where they will withstand 160 mph wind loads. When hurricanes barrel through a region, our customers need to have confidence that their critical field equipment is protected-even in a Category Five Hurricane.

Saffir-Simpson Hurricane Wind Scale

Category	Sustained Wind
1	74-95 mph
2	96-110 mph
3	111-129 mph
4	130-156 mph
5	157 mph or higher



SHELTER WORKS PROPRIETARY COMPOSITE LAMINATION PROCESS

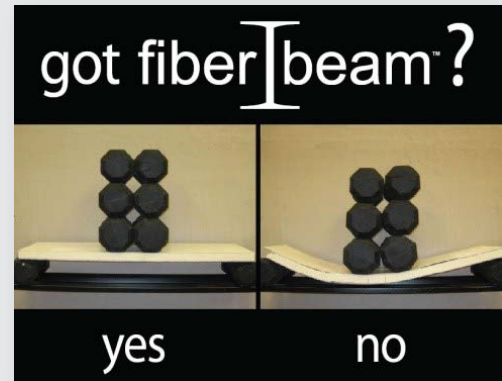
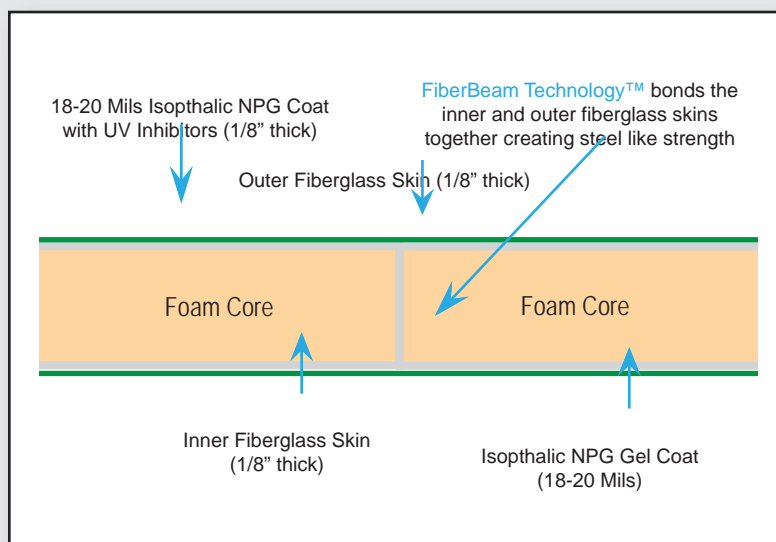
There are several manufacturers of FRP (fiberglass reinforced plastic) buildings that you might think are all roughly similar in construction; rigid sheets of low density foam laminated between two layers of fiberglass, known as a stressed skin sandwich panel. It has been done like this since the early days of FRP and it makes for a nicely insulated structure. Even Shelter Works used this technique early in its history, until we began experiencing some delamination that we had to fix under warranty. Something had to be done to solve the problem systemically. We reasoned that no matter how well you bond foam to FRP, the bond is only as good as the molecular strength of the weaker of the two materials - the foam.



FiberBeam™ Technology is Shelter Works' innovative, proprietary composite lamination process that bonds inner and outer fiberglass skins with a series of integrated fiberglass I-beams. When a typical FRP panel with foam core is placed under a load, the bond between the foam and the FRP is put under stress and can fail. With FiberBeams, the same panel is more rigid and can withstand much higher stresses without failing. FiberBeams are

essentially fiberglass studs, spaced not more than 12" apart, that are integrated into all of our walls, roofs and doors. FiberBeam provides a solid, structural connection between the inner and outer fiberglass skins of our buildings. They are not additional pieces, but rather are integrally formed during the lamination process resulting in a composite panel that can never come apart, or "delaminate".

Composite fiberglass buildings have the chemical properties that allow for both strength and longevity...But many have experienced the frustration of other manufacturers' products delaminating or not holding up to the strength requirements they really need. That's why they have turned to us...because FiberBeam™ Technology, in essence, is long-term structural peace of mind.



SHELTER WORKS CAN WITHSTAND HARSH WEATHER

Seeking High Quality Sanitary Lift Stations:
Solution? Shelter Works Pre-Fabricated Enclosure Buildings



Keith Simpson is something of a sleuth. When this Public Works Sewer Supervisor needed to find just the right solution, he didn't stop until he found the perfect answer: Shelter Works.

"I was looking for the best way to protect some field equipment, and I came upon some really good-looking buildings that were protecting some natural gas equipment," he explained. "I looked at the tag on the side of the building that said, 'Shelter Works' and investigated the company's website to learn more."



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In Normal, Illinois, Simpson needed to build two high-quality sanitary lift station buildings to house sewage pumps and electronic controls. These stations pump sewage uphill until it flows, via gravity, down to the town's sanitary reclamation district. He explained,

"The weather can be very harsh on these stations, as they have electronics and computer componentry that needs to be protected. While the computers are in an insulated stainless steel cabinet, the whole system needed more protection. We have other buildings made of wood construction or brick that have higher periodic maintenance requirements. When looking at the Shelter Works construction and low maintenance expectations, this seemed to be a more feasible solution."



With windows to allow in natural light, and air conditioning and heating units for both summer and winter extremes, Shelter Works engineered the buildings to meet the need of Simpson's team to monitor and repair the equipment in a controlled environment. Combined with the low cost of maintenance, there are fewer headaches to come in the future.

"They are exactly what we needed. Quick installation, heat, air conditioning, well insulated, durable, low maintenance and a nice overall look. We are very happy with these pre-fabricated enclosure buildings."

Keith Simpson, Public Works Sewer Supervisor
Normal, IL

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SHELTER WORKS CAN WITHSTAND GRAFFITI

Fiberglass Buildings With Long Life And Graffiti Resistance

In December of 2013, the Town of Olla, Louisiana, broke ground on a recreational complex that is part of LaSalle Parish's "Live Lively LaSalle" fitness project, a Parish-wide effort to combat obesity. They are in the process of expanding a walking trail, building a basketball court with bathroom facility, adding exercise stations and a farmers' market.

The project engineer, Henry Shuler, chose a Shelter Works fiberglass building as part of this project for three reasons:

PRICE: The cost of purchasing the shelter was cheaper than building one, with a comparable life span, from the ground up. When you factor in the non-existent maintenance costs, the overall value of our shelters can't be beat.

LONGEVITY: Our buildings come with an industry-leading 25-Year Warranty. When we build a shelter, we build it for life.

GRAFFITI RESISTANCE: The protective barrier offered by our gel coats not only provides superior shielding from environmental stresses, it also allows for easy removal of graffiti. If the shelter is vandalized with spray paint, it can be easily removed using MEK (Methyl Ethyl Ketone) without any negative effects to the shelter's gel coat.

VIDEO: See how easy it is to remove graffiti from a Shelter Works building



GRAFFITI-FREE BUILDINGS WITH SHELTER WORKS

While many believe graffiti to be an “art form” that dates back thousands of years, many others see it as an inevitable nuisance that must be dealt with. Our customers are eager for easy solutions to eliminate the illicit artwork spray-painted onto buildings throughout their cities.

After installation, many of our clients who are responsible for the on-going maintenance of the fiberglass buildings discover graffiti on the sides of their structures over the years. Shelter Works buildings are made with a polymer gel coat that resists graffiti and makes clean-up super easy.

We recommend using a solution called Methyl Ethyl Ketone (or MEK) to easily remove spray paint from the walls of our shelters. Some people prefer to use Odorless Mineral Spirits to remove the graffiti, but in a side-by-side test we conducted internally, we found the MEK to be significantly more effective (see picture below).

THE GRAFFITI TEST

We bought standard black and red spray paint from the local hardware store and “tagged” four different areas of a building wall. On the left-hand side, we used the Odorless Mineral Spirits and on the right, MEK. While the Mineral Spirits decreased the visibility of the paint, the MEK eliminated the paint much more effectively.

In addition, the solvent had no effect on the gel coat, so the originally-intended color of the building remains intact. So if you find that you need a building that can withstand the abuse of clandestine artists, specify a Shelter Works prefabricated fiberglass building.



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Built for
Life.

LONG-LASTING, RELIABLE FIBERGLASS EQUIPMENT SHELTERS THAT ARE BUILT FOR LIFE

Equipment Shelters You Can Count On



"I think the first one we bought was 15 years ago..."

That's what Regis Yurcich recalls about the first of many Shelter Works fiberglass equipment shelters purchased for one of the 171 waste water pump stations he's in charge of as Chief of Facilities for Newcastle County, Delaware.

We recently spoke with Yurcich to ask why they keep coming back to Shelter Works to protect their equipment. He explained,

"Because they are so durable, these buildings last a long time, and the fact that they are delivered in one piece is great. It makes installation so streamlined, and it's easy to move if necessary."

At one point, they added additional flow for one of their facilities, which meant the wet well had to be increased in size (considerably). A new, larger structure had to be built, but rather than destroy the old building, they were able to reuse the structure elsewhere to protect some different equipment.



That durability is such an important quality, as many times their buildings take a lot of abuse. Yurcich explains the security these shelters provide,

"We have one building that gets graffiti on it all the time; it takes a beating regularly and holds up really well. Because these buildings are in neighborhoods, they can't be eyesores—they need to be attractive or people will complain about them. In all these years, we've never had a complaint about a Shelter Works equipment shelter."

"We've had other types of buildings, but they just don't meet the need as well. Some other fiberglass buildings have not been the size we needed and therefore don't provide as much access to the equipment," ... "In addition, we put electrical panels on the walls of most of our fiberglass buildings, so by having the reinforcing beams in the walls, that additional weight load is easily managed."

With the ultimate in durability, flexibility, ease of installation and lightweight, one-piece construction, Shelter Works fiberglass equipment shelters will continue to serve the needs in Newcastle County, Delaware in the years to come.

"Because the Shelter Works shelters can be customized, they can be developed in just the right size for optimal access to the equipment."

Regis Yurcich
Chief of Facilities
Newcastle County, Delaware

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WHY GEL COAT IS BETTER THAN PAINT

Gel Coat vs Paint



Shelter Works uses the same types of gel coats used to produce today's advanced marine craft, transportation equipment and aircraft. The gel coat is the outer layer of the composite that protects the rest of the structure from moisture, chemicals and UV damage. The materials have been formulated and tested for use in the harshest conditions.

Shelter Works' gel coats provide three basic benefits:

- Protective barrier
- Life long aesthetic appeal
- Long lasting, maintenance-free performance

Our gel coats are unlike the paint or powder-coatings that are applied to the surface of other enclosures. These types of coatings adhere to the building's surface for a while, but over time they will peel, crack, chip and fade. Our gel coats are not painted to the exterior, they are molecularly bonded to the underlying fiberglass, becoming a part of the composite. This eliminates any peeling, cracking or chipping.

Better Than Wood

On wood or steel structures, either a paint or powder-coating is applied to the surface and provides a protective coating. This coating "sticks" to the surface for a while, but over time it will lose its ability to adhere to the surface and it will peel, crack, chip and/or fade.

Better Than Steel

Some types of metal buildings form heavy duty panels for a self framing design that is painted after fabrication with either liquid or powder paint. Using this method, a successful finish is highly dependent on metal preparation for proper adhesion and uniform coverage to provide a barrier to corrosion.

Gel Coat Is Better Than Paint

All paints have inherent issues with adhesion and corrosion requiring routine maintenance or complete refinishing every 5-10 years. A painted surface is not as reliable as our gel coat technology, as it is susceptible to the effects from atmosphere, dents, scratches, etc.

SHELTER WORKS STANDARD COLORS



DESERT
SAND

POLAR
WHITE

STORM
GREY

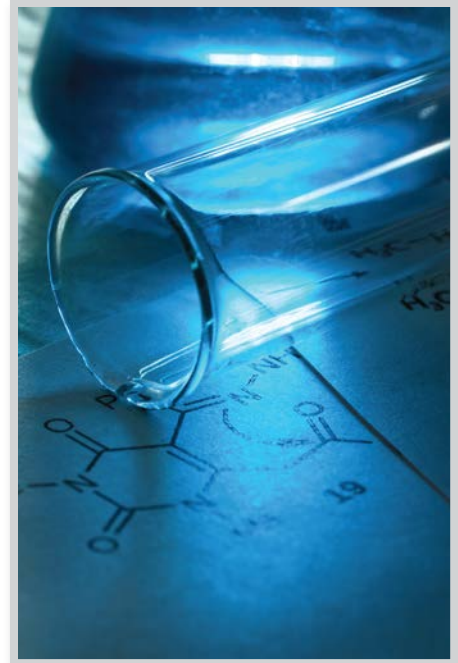
MEADOW
GREEN



Polymer Technology

The gel coat Shelter Works offers uses the same basic resin chemistry found in the structural fiberglass composite. Only pigments and fillers are included in gel coat to provide the desired color and to provide resistance to Ultra Violet deterioration and hydrolysis. Gel coat is sprayed into the molds as the first step in the manufacturing process, and it is many times thicker than paint. Once applied, it begins to chemically transform from a liquid to a solid through a process of cross-link polymerization. When the fiberglass composite is applied in the following step, the cross linking of the polymer chains occurs between the layer of gel coat and the layer of fiberglass composite. In essence, the two layers bond as one layer at the molecular level. The color is now not just a coating adhered to the fiberglass; it is an integral part of the fiberglass. Therefore, it will never flake, peel or need to be repainted.

Our customers need maintenance-free structures that will be aesthetically pleasing over long periods of time. That's why we are putting science to work for our customers and using high quality gel coats instead of paints.



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Built for
Life.

SHELTER WORKS CAN WITHSTAND ARCTIC TEMPERATURES, DAMAGING ICE STORMS AND ALASKAN SNOW LOADS

What R-Value Do You Need?



R-Value is a measure of thermal resistance that helps you calculate how much heat transfer you can expect through a wall area.

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.

SHELTER WORKS R-VALUES

$$R\text{-Value} = \frac{\text{Temperature Difference} \times \text{Area} \times \text{Time}}{\text{Heat Loss}}$$

Foam Thickness	R-Value
1.5"	R-10
2.0"	R-13
2.5"	R-16
3.0"	R-19
3.5"	R-22



Prefabricated Fiberglass Building Holds Up In Ice Storm

In addition to large pumping stations, there are many small pump houses that protect critical field equipment used in Fayetteville, Arkansas. One particular building protects a jet pump on a pneumatic tank at the bottom of the hill that allows water to flow to houses in a rural area of town.

During a large ice storm in 2010, a tree fell on the structure and damaged an antenna attached to the building. However, the structure itself didn't have a dent in it.

"As you can see, the building fared very well,"



said Aaron Watkins, Pump and Tank Technician for the City of Fayetteville. In addition, because the building had vents, city workers were able to put a generator into the structure so that water could continue to flow despite the power outage. For the municipal employees of the City of Fayetteville, the challenge was to keep citizens supplied with basic needs during this time of crisis. *"Even though many areas were without power for several weeks, no one went without water during that whole time,"* he explained.

"These premade Shelter Works buildings save time and money. They are more cost-efficient to install and easier to maintain long-term. It saves tremendously on labor. Everything comes prewired; the electrical systems are already in place. Because everything comes included, you just hook it up and you're done."

Aaron Watkins
Pump and Tank Technician
City of Fayetteville, AR

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SHELTER WORKS CAN WITHSTAND VANDALISM AND VAGRANCY

Fiberglass Building Installed In The Redwood Forest



Because of our high-quality construction, Shelter Works is setting the standard for critical equipment protection to the California Department of Parks and Recreation.

Hasmet Celik, from Celik Engineering Corporation, had to overcome a host of construction challenges in protecting the potable water treatment equipment in the very popular Williams Grove Day Use Area of Humboldt Redwoods State Park which is located 225 miles north of San Francisco.

The 1960's-era shanty that was previously protecting the equipment was deteriorating, and the engineers in charge were looking for a more secure solution. *"The area gets a great deal of traffic, both from people and from mountain lions, deer and other wildlife,"* Celik explained. *"The decision-makers for this project chose Shelter Works' superior design to provide a more secure structure that would also protect against vandalism and vagrancy."*

Another reason the design engineers specified a Shelter Works structure is the superior construction of the walls. It was easy to drill and anchor equipment to the walls using Unistrut.



The real challenges were with installation:

- **Spotted Owl Mating Season:** Because this is a protected area where spotted owls mate, the window of time for installation is very short (September 16-January 30). This falls in the rainy season, which makes the steep slopes very slippery and soil erosion an influencing factor.
- **Only Wheelbarrows Allowed:** The access way is one single trail where construction equipment is not allowed. The trail leads foot traffic directly on top of some exposed redwood tree roots that would be damaged if any construction equipment were used.
- **Other Environmental Considerations:** Celik and his team worked closely with environmental experts to determine the best way to install. With assistance from the local fire crew (who are inmates at the local prison), they were able to lower the building down from above, using the slope and some strategically placed branches to help slide the structure down the hill.

“Because it was so lightweight and was sliding on organic matter (rather than on the soil itself), the building didn’t get damaged—much to our surprise,” Celik explained. “This shelter worked really well. We were worried that when we tipped the building on its side, the building might collapse, but it was so well built that those fears were totally unfounded.”

- **Highway Lane Closures Needed:** They had to close lanes of the highways to accommodate the crane used to position the building. *“Fortunately, it took less than a day to install because the shelter was well-built, durable and all ready to go,”* Celik reported.



“The decision-makers for this project chose Shelter Works’ superior design to provide a more secure structure that would also protect against vandalism and vagrancy.”

Hasmet Celik
Celik Engineering Corporation

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Life.™

SHELTER WORKS CAN WITHSTAND CORROSIVE ENVIRONMENTS

Custom-sized Doors And Coastal Code Requirements Are No Problem For Shelter Works



These were some of the challenges brought to us by a customer who needed electrical equipment shelters for a waste water treatment plant in the Southwest.

There were three large buildings that had to be custom-made with oversized double doors measuring 6'4" wide by 8'2" tall that would allow the customer to bring large equipment into the shelter. Shelter Works is very accustomed to making custom modifications and was able to provide the doors to their special size requirements.

Because all three are within 1 mile of the Gulf of Mexico, they had to have wood embedded in walls, roof, and doors to meet coastal windborne debris code requirements. Furthermore, we had to provide air conditioners that were phenolic coated so that they would resist corrosion from the salt air.

All had to meet strict energy conservation rules ASHRAE 90.1 (2004) and International Energy Conservation Code (IECC – 2006). Our 3rd party Professional Engineering firm was responsible to ensure the shelters met these requirements with enough wall and roof insulation.

In addition to being energy efficient, these fiberglass buildings were efficient from both a time- and money-saving standpoint.

"In order to save time and speed up the installation, we switched from the original plan of doing a tilt-up concrete electrical equipment shelter to an FRP shelter," explains Paul Gilsdorf, Project Manager on the job.

"The functionality is just as good, and the maintenance of FRP is easier. By going with the Shelter Works structure, the roof maintenance is actually much lower."



WARRANTY

Shelter Works products are engineered specifically to meet the rigid requirements of industrial applications because they need to live up to the tagline: "Built for Life". We take a tremendous amount of care in designing the highest quality shelters. From engineering each aspect of providing submittal drawings to installation, we source the highest quality materials to provide a quality final product. All of our shelters go through extensive quality checks to ensure that every shelter will perform to expectations.

We view our relationships with our clients as long-term partnerships; they rely on us to provide long-term solutions that protect for years and years. A 25-year warranty conveys that sense of partnership and gives customers peace of mind. They know they can trust the quality of our products to protect their critical field equipment.



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