CREATIVE COMPOSITES GROUP

SUPERLOC® SHEET PILE SYSTEM

Build Long-Lasting Shoreline and Asset Protection with StormStrong™ FRP Sheet Piles

THE LOW TOTAL LIFECYCLE COST ALTERNATIVE TO CONCRETE, STEEL AND WOOD

Providing Leadership In FRP Sheet Pile Technology

Creative Composites Group is the world leader in pultrusion manufacturing. Our commitment to continuous process and product improvement has transformed CCG into a world-renowned pultruder specializing in custom profiles while utilizing high-performance resins and our proprietary high-pressure injection pultrusion technology.

As the world's most innovative leader in the FRP pultrusion industry, over the last two decades, we've developed structural systems that out perform and outlast structures built with traditional materials of construction. CCG has continued to build upon their reputation by offering a complete line of quality composite products to the marine industry, including the SuperLoc Sheet Pile System. Developed to provide a solution for deteriorated waterfront structures subjected to the harsh marine environment, SuperLoc is the perfect solution for shoreline protection.

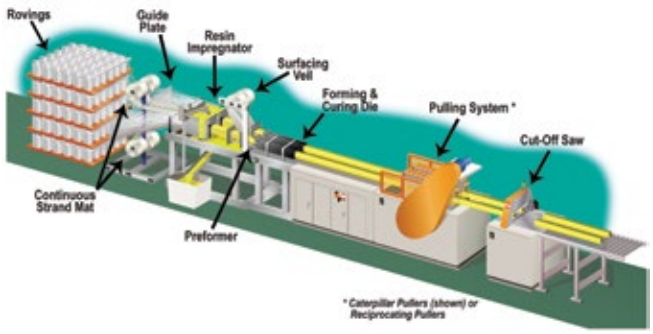
SuperLoc Sheet Piling

SuperLoc Composite Sheet Pile System, a FRP composite system, is manufactured by the pultrusion process and is designed and manufactured to provide a solution for deteriorated waterfront structures subjected to the harsh marine environment.

The patented SuperLoc product line offers cost effective, long-term and low-maintenance solutions, and has been vetted for two decades as the premier solution for long-term shoreline and asset protection.

What Is Pultrusion?

Pultrusion is a continuous manufacturing process utilized to make composite profiles with constant cross-sections whereby fiberglass reinforcements, in the form of roving and mats, are saturated with resin and channelled into a heated die. The profile exits the die in a solid state and in the form of the desired cross-section.



"The staff of Creative was able to stay ahead of us, even as our production increased beyond the original projected commitments. CCG was always accessible and Provided clear and accurate information. I'd consider them one of the best material suppliers that I have been involved with in my career."

— Robert Hutzler, Peter Scalamandre & Sons, Inc.

Why Choose SuperLoc Sheet Pile?

SuperLoc Composite Sheet Pile System is patented (Wale and Retaining Wall System US Patent #6,893,191 B2/May 17, 2005) and proven to provide a structural solution to waterfront protection while maintaining an aesthetically pleasing look. It's pound for pound stronger than steel, concrete or wood, and is manufactured in an environmentally controlled facility to stringent quality assurance standards.

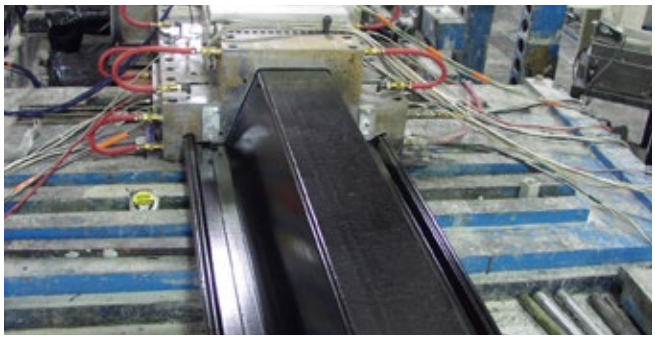
SuperLoc can be driven with standard pile driving equipment and is field drillable, making fabrication easier and faster than traditional materials.

Lightweight

Transported and installed with lighter equipment.

Ease Of Installation

Installed/Driven with traditional equipment.



Engineered Solution

Designed for bulkhead applications and manufactured in a controlled environment.

Environmentally Friendly

SuperLoc is inert and will not leach dangerous chemicals into the environment.

Corrosion Resistant

Predicted to have a 75+ year service life.

Not Susceptible To Marine Borers

Unaffected by marine life.

Carolina Beach, NC

Typical Wall Applications

SuperLoc is a sheet pile product without many of the performance disadvantages of conventional materials such as aluminum, concrete, steel and wood. SuperLoc will not corrode, rot, or spall thereby reducing maintenance costs and future replacements. The FRP composite bulkhead system resists impact, creep, UV and weathering effects better than vinyl (PVC) materials and is easier to install in harder soils than vinyl sheet piling.

Typical applications are highlighted below.

1. **WAVE BREAKS**
2. **RETAINING WALLS**
3. **WATER CONTROL**
4. **LAND STABILIZATION**
5. **BRIDGE WINGWALLS**
6. **EROSION CONTROL**
7. **STAY-IN-PLACE FORMS**
8. **STORM SURGE/FLOOD PROTECTION**
9. **CONTAINMENT/CUT-OFF WALLS**

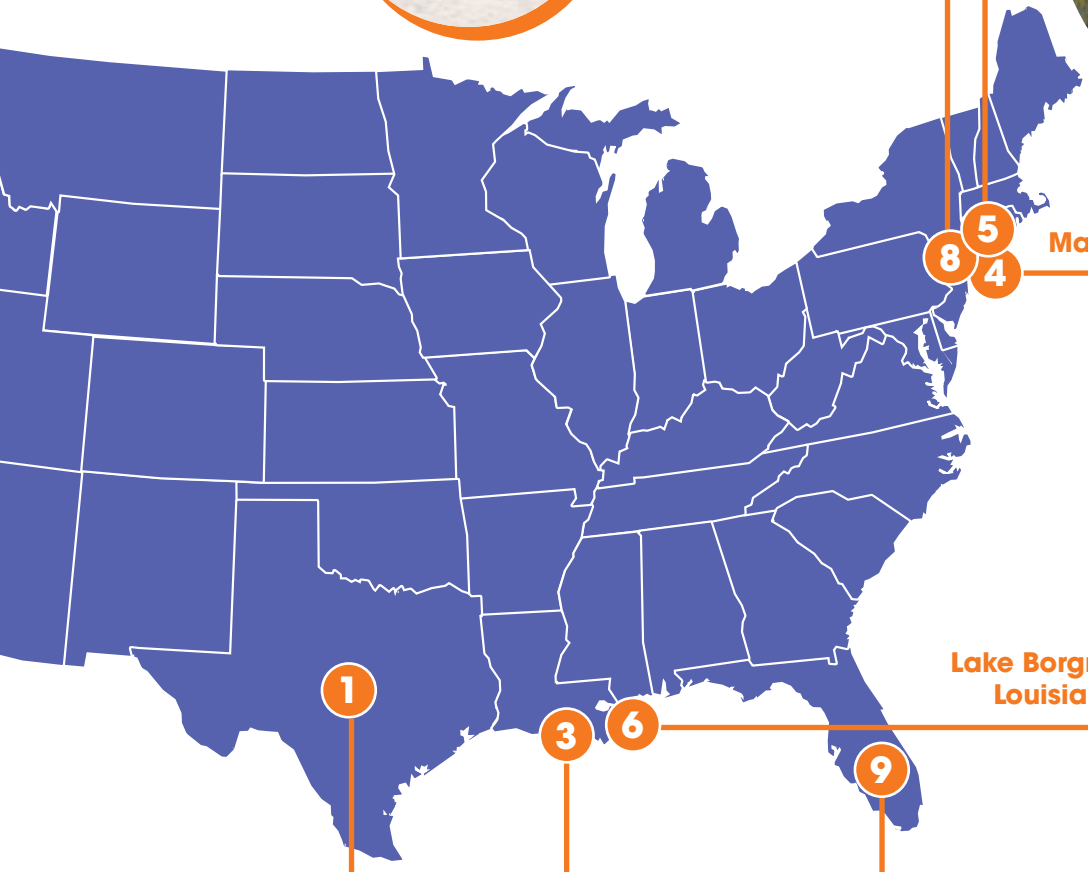
Waldo Point, California

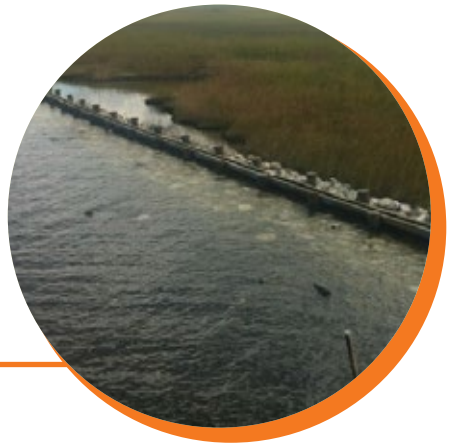
San Diego, California

Southampton, New York

Long Beach, New York

Mattituck, New York





Lake Borgne, Louisiana

Austin, Texas

Sebring, Florida

Terrebonne Parish, Louisiana

Full section test of a 1580 sheet pile wall at CCG by WVU. Note: The strain gauge instrumentation.

StormStrong Construction

SuperLoc StormStrong sheet piling is engineered with electrical-grade fiberglass and high-strength resins. The combination of the advanced resin and high-strength glass produces a superior, highly corrosion-resistant sheet pile. SuperLoc has been engineered to withstand storm surges and protect coastal property from extreme weather patterns caused by climate change.

ADVANCED UV PROTECTION

UV rays and heat from solar radiation degrade the molecular structure of most materials. The extent of degradation ranges from mere fading to reduction in strength. Additives in the form of ultraviolet light absorbers and inhibitors greatly increase the performance in long term sunlight exposure. Polyester synthetic veils are applied to the SuperLoc in order to encapsulate the E-glass fibers and provide a resin rich surface.

Results have shown that UV degradation does not affect the modulus of elasticity. Fading of the polymerized resin will occur at various rates over time. Typically, within three years the gloss is eliminated and a visual whitening or yellowing can be observed on the surface. In general, the amount of sunlight and intensity will depend on the geographical location. Therefore, the rate at which composite materials will lighten is variable. The SuperLoc system utilizes the most advanced resin technology and pigmentation to ensure the best possible aesthetics over time.

CCG's StormStrong sheet piles are shipped standard with two layers of Ultra Violet (UV) protection. First, CCG adds UV light absorbers to each sheet pile. The UV light absorbers are mixed into the thermoset resin, prior to production, and function as long term thermal and light stability promoters. Second, the composite sheet piles are encompassed with a 10 mil polyester surfacing veil. The 10 mil veil creates a resin rich surface and protects the glass reinforcements from fiber blooming.

STORMSTRONG FIBER REINFORCEMENTS

All composite sheet piles are manufactured with electrical-grade E-glass reinforcements in the form of unidirectional roving, Continuous Filament Mat (CFM) and stitched fabric mats. The combination of fiber reinforcements has been engineered for optimal bending strength, as well as superior stiffness. All E-glass reinforcements meet a minimum tensile strength of 290 ksi per ASTM D2343.

ADVANCED RESIN/MATRIX OPTIONS

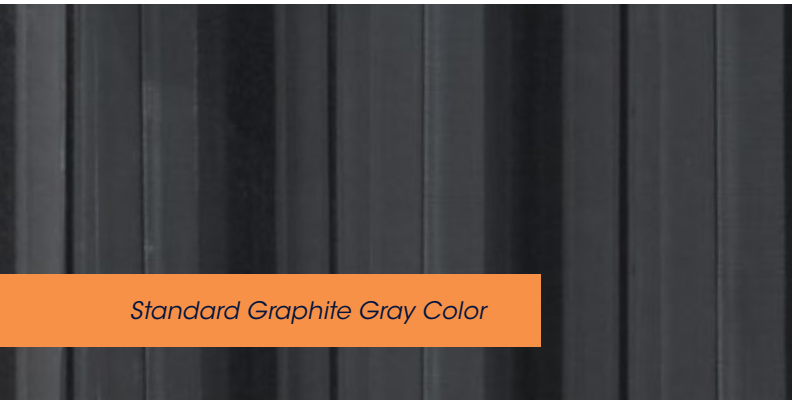
CCG manufactures the SuperLoc sheet piles and accessories in both isophthalic polyester (Polyester) and vinyl ester (VE) resin formulations. Proper resin selection should be based on the environmental aspects of the site conditions including the soil and water pH and chemical exposure.

Polyester pultrusions are manufactured for corrosion related applications. Polyester resins display excellent structural properties and are resistant to acids, salts, and many dilute chemicals at moderate temperatures. They perform well in acidic environments; however, Polyester pultrusions are not recommended for caustic or alkaline environments. The pH should be kept below 10.5. Oxidizing environments usually present limitations. A long service life can be expected for waterfront environments in salt and fresh water.

VE Resins are based on bisphenol-A epoxy resin. VE resins provide resistance to a wide range of acids, alkalis, bleaches and solvents for use in many chemical environments. They also offer excellent toughness and fatigue resistance. The mechanical properties are typically 10% to 15% higher than polyester properties. A long service life can be expected for waterfront environments in salt and fresh water.

COLOR

SuperLoc and its accessories come standard in graphite gray, the color that has been selected for both its aesthetics and UV performance. Custom colors are available upon request. Minimum quantities and color match charges apply.



Standard Graphite Gray Color

StormStrong System Testing

The SuperLoc StormStrong system has undergone extensive testing at Pennsylvania State University, West Virginia University (WVU) and the University of Akron. Testing ranged from full section to coupon to internationally recognized ASTM standards when applicable.

Coupon level tensile testing utilizing CCG calibrated 56 Kip Instron

Long Branch, New Jersey

Choose Creative Composites Group for Comprehensive Project Support

Your Single Source for Architecturally Stunning and Innovatively Engineered Waterfront Infrastructure Using FRP

Advance your products and projects beyond the limitations of traditional concrete, steel and wood by leveraging the combined strength of Creative Composites Group. We are a leader in technical innovation that is backed by the industry's most comprehensive FRP manufacturing group for waterfront infrastructure.

CCG can help you engineer and manufacture waterfront infrastructure projects to meet the needs of future generations.

Other companies commoditize FRP in off-the-shelf shapes and forms; Creative Composites Group does not. We offer comprehensive engineering, design and consultation for shoreline and asset protection. Our manufacturing capabilities include the broadest range of engineered FRP solutions to build your ideal projects. That's possible only with our proven engineering processes, end-to-end collaboration, service and support resources. Since FRP composites last longer than conventional materials they often have a lower lifetime cost when you consider longer service life and low to no maintenance costs.

Discover Your Custom Engineered FRP Waterfront Infrastructure Provider

Creative Composites Group is committed to becoming a trusted business partner who is keenly interested in your project's success. Creative Composites Group works alongside your team, from facility owners to design engineers and contractors. CCG will help you develop and customize an FRP solution to meet the most demanding structural requirements and environmental conditions.

Contact us for your next engineered FRP sea wall or waterfront infrastructure project. We'd be thrilled to discuss it with you.

CreativeCompositesGroup.com

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DLR042022R2