

# Pile it On

## New SUPERPILE ideal for marine conditions

By Heather Hudson

In the shadow of the Golden Gate Bridge, San Francisco's expansive shoreline is home to a 350-slip marina owned by the city's parks and recreation department. Owners of pleasure crafts, sailboats and members of two yacht clubs all vie to lease a coveted spot along one of the most celebrated coastal cities in the world.

But despite the prestige associated with disembarking along this celebrated stretch of waterfront, sailors are using extra caution as they pull in alongside deteriorating timber floats and docks held up by raw timber and outdated creosote-coated piles.

Hungry marine borers (tiny mollusks or crustaceans that feed on wood in warm seas) have chomped their way through much of it, exposing the very foundation of the marina and helping it show every minute of its 50 years.

Indeed, this crumbling marina was overdue for a renovation when Dutra Construction Company Inc. began its rehabilitation in April 2011. At the heart of the project are some revolutionary new fender piles from Creative Pultrusions, Inc. (CPI), which are replacing the rickety timber ones.



**"We chose to focus on developing the fiberglass fender pile because of its form, fit and functionality, as well as the fact that some environmental issues are coming up with wood."**

**– Dustin Troutman, Marketing and Product Development Director, Creative Pultrusions, Inc.**

The San Francisco Marina project that used CPI's SUPERPILES

**“This pile answers all the questions on issues associated with traditional piles. Concrete piles are going to spall; ours aren’t going to spall. Wood’s going to rot; ours aren’t going to rot. Wood leaches into the environment; our piles aren’t going to leach chemicals into the environment. All the negative attributes associated with traditional piles are overcome with the development of the SUPERPILE.”**

**– Dustin Troutman, Marketing and Product Development Director,  
Creative Pultrusions, Inc.**

“We think [these piles] are a better solution than the timber pile. It’s more economical and through all the testing they’ve done with the material, it seems to be a superior product ... everything else gets eaten through by marine borers in a salt water environment so we think they will last longer than the 50 years the original timber piles have lasted,” says Mike Edde, project manager with Dutra Construction.

Sold through Lee Composites Inc., an independent representative of marine fendering systems, the newly designed marina is installing CPI’s fiberglass technology as centre piles. Driven in the middle of a double berth, they act as a fender between two boats that share a double slip.

“There are a lot of high winds in the area and sailboats use them to moor off of, guiding them in to where they need to go. The fender piles act as a buffer between the two boats sharing a slip,” says Edde.

Roughly 190 fender piles will be installed before the project is complete at the end of 2012. A 3,000-lb. drop hammer is all it takes in soft conditions and crews are able to drive 10-12 in an eight-hour day.

CPI’s Marketing and Product Development Director Dustin Troutman says the San Francisco project is the perfect match for this new and innovative pultrusion pile with the special resin.

“This product is made up of e-glass fiberglass and a polyurethane resin, which is what makes it so successful. The urethane resin has strength, stiffness and impact





- Best Drill Attachment
- Patented Hydraulic Drifters
- Patented Feed System
- Made in the USA



**TEI ROCK DRILLS**  
 MONTROSE, COLORADO  
 (970) 249-1515  
 teirockdrills.com

strength compared to other resins used in the industry. It's perfect for fendering."

CPI has long been a world leader in pultrusion manufacturing, specializing in pultruding large custom profiles and using high-performance resins with their proprietary high-pressure injection process. In 2008, it was acquired by Hill & Smith Holdings, PLC, a global leader in the design, manufacture and supply of infrastructure products, galvanizing services and building and construction products.

With a pedigree like that it's no wonder the company is so successful in innovating new pultrusion products. All of their high-strength pultruded profiles are designed and manufactured to provide lasting performance in highly corrosive environments and are lightweight compared to wood or metal products. CPI has a hand in a lot of different markets, including manufacturing sheet piling, all kinds of structural shapes, crossarms, power poles and more.

### What is the pultrusion process?

Pultrusion is a manufacturing process used for producing continuous lengths of reinforced polymer structural shapes with constant cross-sections. Reinforcements, in the form of roving and mats, are saturated with resin and guided into a heated die. Once in the die, the resin undergoes a curing process called polymerization.

As the reinforcements are saturated with the resin mixture and pulled through the die, the resin hardens from the heat of the die and a rigid, cured profile is formed. The pultrusion process requires little labor and is ideal for mass production of constant cross section profiles.

Always looking to expand, Troutman says CPI conducted extensive market research before securing funding to invest heavily in a new type of fiberglass fender pile, which is well suited to perform exactly the kind of function it does in San Francisco.

"We chose to focus on developing the fiberglass fender pile because of its form, fit and functionality, as well as the fact that some environmental issues are coming up with wood," says Troutman.

"The advantage of this type of pile is that the material is inert and is not going

to leach any chemicals into the water. It's more cost-effective than plastic piles. High-density polyethylene has skyrocketed over the last few years due to higher oil prices, making it difficult to afford."

The fender piles are typically hollow, making them lightweight, which reduces the shipping and installation costs of traditional piles.

"This pile answers all the questions on issues associated with traditional piles. Concrete piles are going to spall; ours aren't going to spall. Wood's going to rot; ours aren't going to rot. Wood leaches into the environment; our piles aren't going to leach chemicals into the environment. All the negative attributes associated with traditional piles are overcome with the development of the SUPERPILE."

Before they brought the SUPERPILES to market, extensive testing was done to get the technology approved and on the Florida Department of Transportation's list of qualified products. "That was a big hurdle for us. Our piles were subjected to full section, connection and ASTM testing. We needed to demonstrate the energy absorption characteristics of the system, not just the piles," says Troutman.

He says the fendering piles are ideal for use in colder climates, including Canada. The materials are similar to their other pultrusion products in use in Alaska and they've had parts tested in a cold regions test lab by the U.S. Army Corps of Engineers, noting that they don't exhibit traditional brittle behaviour like thermoplastics (PVC and polyethylene) in cold weather.

Since putting fender piles on the market last year, CPI has sold several jobs, including a new bridge fendering system to protect the abutment and foundation for the Margate Bridge in New Jersey.

Back in San Francisco, Edde is a satisfied customer, particularly because of the custom sleeve CPI opted to add to each pile when concerns were raised about abrasion from the boats rubbing against the pile as tides fluctuate.

"They added a HDPE sleeve around the top portion of the pile that was exposed to the abrasion. It wraps around the pile and is fastened with screws. We were really pleased with that extra feature," says Edde. 