

Composite deck a good match for burned bridge

By Catherine Kavanaugh

PLASTICS NEWS STAFF

After a brush fire scorched a wooden bridge that's part of the Sandia Mountains trail system in New Mexico, state officials looked for a low-upkeep, fast fix that wouldn't become ready tinder in the recreation area near Albuquerque.

The Piedra Lisa Bridge carries hikers, bicyclists, dog walkers and folks out for a scenic stroll over a four-lane highway, so it was up to the New Mexico Department of Transportation (NMDOT) to replace the damaged deck for safety reasons.

The department opted for a fiber-reinforced polymer (FRP) bridge deck and ramps. Composite Advantage of Dayton, Ohio, got the \$139,000 order for 459 feet of their product called FiberSpan.

"We put in our deck panels in less than three days," President Scott Reeve said in a telephone interview. "If you're doing wood you're going plank by plank by plank. They were looking at three to four weeks for probably thousands of planks in this case."

With FiberSpan, the work crew could install 40 feet of 3.5-inch deep ramps and deck an hour.

Another FRP benefit for a bridge deck that sits under the desert sun comes in the form of the polymer, which is a fire resistant vinyl ester, Reeve added.

"We don't burn the same as wood," he said. "If there's a fire directly underneath the deck, it takes time before we start to burn. Then, as soon as you put out the fire or the wind blows it away from the deck, we self extinguish. If you remove the fire source from wood, it keeps burning."

In addition to improving fire resistance, the vinyl ester resists moisture and inhibits UV degradation.

A year after FiberSpan was installed, NMDOT is pointing to another advantage that state officials hope carries the bridge far into the future.

"The district wanted a maintenance-free product. They wanted the consultant to look at various options because they eventually need to stop replacing the timber decks. So far the FRP bridge deck has been maintenance free," Zann Jones, a bridge design bureau employee, said in a telephone interview.

FRP decks have an expected service life of 75 years based on accelerated testing, according to Composite Advantage, which says its products don't degrade



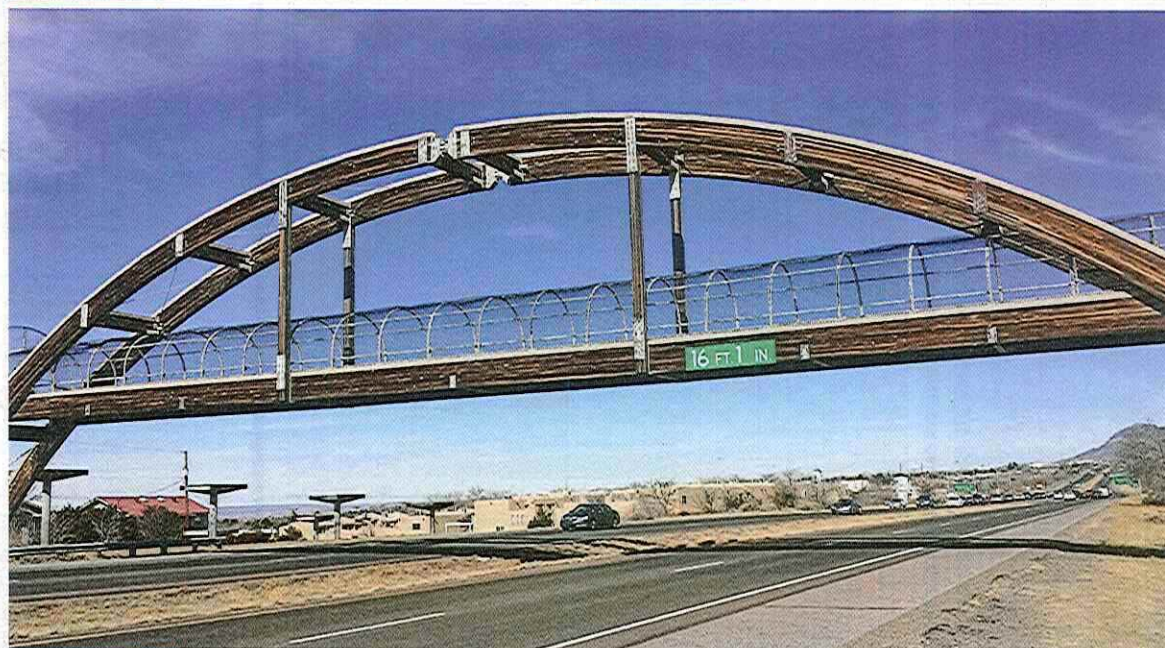
BRIDGE
BEFORE

A brush fire scorched The Piedra Lisa Bridge, which is part of the Sandia Mountains trail system in New Mexico.



BRIDGE
AFTER

State officials looked to replace the bridge with fiber-reinforced polymer (FRP) deck and ramps from Composite Advantage.



BRIDGE
BENEFITS

The bridge carries hikers, bicyclists, dog walkers and folks out for a scenic stroll over a four-lane highway. The FRP replacement, called FiberSpan, is made from a fire-resistant vinyl ester which can tolerate sitting under the hot desert sun. Vinyl ester also resists moisture and inhibits UV degradation.

Composite Advantage photos

even in corrosive chemical environments.

The panels can be fabricated in a variety of shapes and sizes out of fiberglass sheets that have been molded with closed cell foam reinforced by fibers at 45-degree angles. The fibers are infused with resin and placed close together for strength. Composite Advantage uses Derakane 610 vinyl ester, which was introduced for the emerg-

ing FRP market in 2011.

FRP panels are lightweight, too, weighing 10 to 20 percent of reinforced concrete. For the Piedra Lisa Bridge, the crew dropped several 40-foot long bridge ramps into place by a crane. The 7-foot deck panels, which weigh 300 pounds, were positioned manually inside the fenced-in tunnel of the overpass that stretches across the highway.

"You put them on a dolly and

two people can push it up there," Reeve said. "Then, you have four people pick it up and put it in place."

The project-specific size ramps and decks were manufactured while a contractor tore out the damaged bridge deck and prepared the site for installation.

"With prefabricated deck panels we're doing work in the shop in parallel to other work they're

doing in the field. So instead of doing things sequentially we can get some work done in parallel," Reeve said.

The bridge materials were trucked to the job site and the Piedra Lisa Bridge, which is part of a popular paved trail that runs the entire length of Albuquerque, was functional again in three days.

"I ride my bike across it and it's so much smoother than the old timber," Jones said. "It's much better, especially when it's wet."

The bridge ramps and deck were coated with a non-slip industrial paint, Reeve said.

The cause of the fire that damaged most of the timber wood deck of the Piedra Lisa Bridge in June 2013 isn't known.

"I recall reading in the newspaper they think kids accidentally started the fire. It was close to July 4th," Jones said.

The blaze originated at the west side of the bridge, where pine trees and vegetation helped it spread.

"I would estimate 60 percent of the timber deck would not be safe to walk on," Jones added. "Most of the [engineered glued laminated timber] beams were charred from the fire. The depth of the charring was minimal to a depth of half of an inch."

NMDOT is joining an increasing number of bridge owners that are giving FRP decks a chance. Pedestrian bridges are the biggest market for Composite Advantage, Reeve said, about the company that also makes vehicular and trail bridges.

"Some of it is economics and how many bridges are out there," he added. "Part of it is there's so much going on out there right now in terms of expanding pedestrian and bike paths. That is a huge popular item right now."

Last fall a township in Pennsylvania used FiberSpan to repurpose an abandoned trestle bridge for a rails-to-trails project. Composite Advantage molded a spacer into the FRP deck to clear the rivet heads. The installation of the 350-foot long, 13-foot wide deck, which spans a gorge and provides passage to natural attractions, took three days.

"There are all kinds of these paths going on and people are saying what we can do in terms of low maintenance," Reeve said. "Most parks and recreation entities don't have a lot of money to defer for that. They have their funding for a project and they say let's use materials that don't require annual maintenance."