

The Journal for Surface Water Quality Professionals Stormwater

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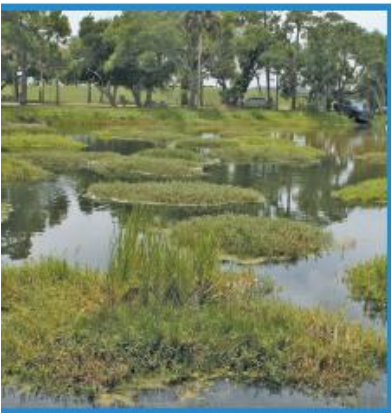
www.stormh2o.com

installation to the ocean, but we were able to get the pipe past the problem area.”

The DOT is very happy with the end product. “Due to the harsh environment of the Outer Banks, with the northeasters and hurricanes, if NCDOT can achieve another 50 years of life from this structure, we would be extremely pleased.”

Clay County, FL

When Tropical Storm Faye blew across Florida in 2008, stormwater rushed through one of the corrugated steel



Transfield Services North America

Spraying on the Permaform. The corrosion is visible to the right.

culvert pipes under State Road 16 in Clay County and began to suck the surrounding soil into the pipe.

“It created a void along the side of the road about 10 feet deep and 20 feet across. You could have put a couple

feet across. You could have put a couple of minivans in this hole,” says Spencer Townsend, project manager for the Clay and Nassau counties local sites for Transfield Services North America.

Transfield Services, a multinational Australian company, provides operations, maintenance, and asset and project management services around the world. In Clay County, it performs routine and preventive maintenance along 358 lane miles of roadway for the Florida DOT, but this project was anything but routine.

SR 16 is a two-lane, two-way highway in a rural area and an important truck route that links I-95 in the east to US 301 in the center of the state, Townsend says. There’s very little cover between the 1950s-era pipe and the road, and the pipe—96 feet long and 13 feet in diameter—was much larger than most. Crews couldn’t rip up the road and put in a box culvert because they had to keep the road intact while they were working on the pipe, and the product had to be high-strength because there was so little cover.

Their solution—to spray on high-build, abrasion- and corrosion-resistant mortars from AP/M Permaform of Des Moines,



The Clay County culvert pipe before the project began

Transfield Services North America



The pipe after project completion

Transfield Services North America

IA—was unusual, too.

"It's a newer application for this type of product," says Townsend. "They've used it for years in sanitary sewers and manholes, but I believe this is one of the first times it's been used on such a big pipe and not in a vertical application. It's very high strength, and it has an additive that makes it very sticky, so it's perfect for shooting on a pipe."

Transfield Services partnered with the Florida DOT; Coastal Construction Products, which is based in Florida and sup-

plied the products; and T.V. Diversified Inc. in Lake Worth, FL, the contractor. Diversified built a cofferdam to stop the water, which flows from Black Creek to St. Johns River, from entering the pipe during the project.

"One of the biggest challenges was containing the water," says Townsend. "The contractor made it look easy."

Workers pressure-washed the wall of the pipe, which had been treated with bitumen to prevent rust. Because of its age, though, it was corroded where the surface of the water met the air. They built an approach slab and wing walls at one end of the pipe and a departure slab with wing walls at the other.

One of the advantages of the material is that it cost about a quarter less than slip-lining, he says. Another is that it can be custom engineered. Because there was so little cover between the pipe and the road, the engineer on the project specified a maximum of 2 inches and a minimum of 1 inch of cover to be sprayed evenly inside pipe. Fortunately, the pipe was bolted together with bolts that extended 1 inch from the highest part of the corrugation. "We used that as a gauge," he says. "The bolts were consistent throughout the pipe."

Workers used PL 8000 as well as a small amount of PL 12000, mixed with water from the stream. "The water quality was tested," says Townsend. "It

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Before

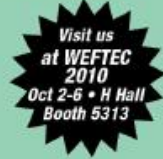


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turned out to be from good to perfect. All we had to do was put in a rough filter." One person sprayed it from a hose while a second hand-trowelled behind him. The application took about two weeks and was completed in March 2010.

Transfield Services plans to monitor the pipe, but Townsend isn't expecting it to need maintenance. There's a safety feature built into the concrete, and the pipe is so large that it isn't subject to blocking or sediment buildup.

"The whole project went pretty smoothly," he says. "I think it was largely due to the cooperation among the supplier, the contractor, the DOT, and ourselves. Everyone worked to ensure that this would be a successful project."

County of Fairfax, VA

Trees and underbrush had grown up the hill since a concrete storm pipe had been installed in the County of Fairfax, VA, and by 2009, the pipe was failing.

Instead of replacing it, Pleasants Construction, which is based in Clarksburg, MD, and works on site development and water and sewer line construction, used Reline America Inc.'s Blue-Tek, a glass fiber reinforced pipe and a UV cured-in-place pipe (CIPP) lining. Blue-Tek rehabilitated the existing pipe and allowed it to stay in place, says Tim Cook, director of construction for the Rehabilitation Department of Pleasants Construction.

"We do a lot of the drain work for the County of Fairfax," says Cook. "Around