

Sliplining in El Paso, Texas



24-in.
Fusible PVC Used
to Install New
Water Line on
Heavily Trafficked
Highway

By Sharon M. Bueno

Horseshoe Construction is handling the sliplining portion of the project that stretches three miles.

An extensive sliplining project in El Paso, Texas, to upgrade an existing and failure-prone 36-in. water line is nearing completion. Once finished sometime in January, more than 16,000 ft of 24-in. C905 fusible polyvinyl chloride (PVC) pipe will have been installed — an industry first, according to project officials.

The three-phase project for the El Paso Water Utility (EPWU) began in spring 2006 and takes place on a 16,300-ft stretch of Zaragosa Road — one of three major ports of entry roads from Juarez, Mexico, that intersects Interstate 10, which is the main thoroughfare through El Paso going east to west. Because this is a highly traversed highway that handles an estimated 45,000 vehicles each day, any traffic disruption would be a nightmare for motorists.

In need of repair was a 36-in. steel line concrete cylinder pipe that has failed numerous times in recent

years. The pipe failure caused residential flooding, as well as highway flooding — the latter resulting in a shutdown of the highway for periods as long as two weeks. The existing pipe was installed in three segments from 1959 to 1973.

The Zaragosa pipeline is a critical component of the EPWU water transmission and distribution network. During the summer, it conveys river water treated at the Jonathan Rogers Water Treatment Plant and during the winter months, it carries water pumped from wells in northeast El Paso, according to the EPWU Web site. The pipeline also provides water to some of the EPWU customers in the Ysleta area (these customers were moved to new pipelines before construction on this project began).

The failing Zaragosa pipe lies within a Texas Department of Transportation (TXDOT) right of way; TXDOT originally wanted the new line located off its right of way due to

past problems with line failure and the resulting effect on the highway. Open-cut was originally proposed, but would have required that easements along the route to be purchased. This plan would have pushed costs past \$15 million and created a more lengthy project schedule and distance to cover.

EPWU and engineers Brown and Caldwell decided to put the project out to bid in April 2006 for sliplining only, deeming the method to be the most expedient for the project, as well as more cost-effective and less disruptive than others being considered. Bids could be submitted using either 30-in. HDPE or 24-in. fusible PVC for the new pipeline.

Horseshoe Construction, a sewer and water rehab contractor based in Houston, was one of four contractors to submit a bid using the fusible PVC. At a bid of \$4.3 million, Horseshoe Construction, the low bidder, was awarded the project in May.

“From our standpoint, we chose [Fusible PVC] because it was less costly,” explains Brad King, Horseshoe Construction project manager. He noted that using HDPE would have required additional and substantial costs to the project. For example, he explains that an additional \$200,000 would have been needed to 1) purchase flange adaptors and 2) to cover the costs of doing the downhole fusion on those adaptors. King also noted that the weight of the HDPE pipe was nearly double that of the fusible PVC, which would have required a bigger machine or smaller pulls – either way, adding more time and money to the bottom line of the bid.

He notes that there has been concern in the past with using fusible PVC, citing industry rumors of possible problems at the fusion points; King says he did his research on the pipe and spoke to the pipe manufacturer to eliminate them.

“Underground Solutions [fusible PVC pipe manufacturer for the project] assured me that there wouldn’t be any problems with the pipe,” King says. “There has been enough research and experience to know that [the pipe] can perform without any problems... and it has.”

The Project

The Zaragoza pipeline project covers almost three miles, extending nearly two miles north of the Texas-Mexico border and continuing north across Interstate 10. The project was divided into three milestones:

- 6,000 ft in the TXDOT right of way had to be completed by July 19, 2006, due to a scheduled state asphalt project for the highway.
- 3,000 ft in the City of El Paso right of way and another 3,500 ft in the TXDOT right of way had to be completed by Oct. 2.
- 4,000 ft for a supply line that would supply a tank at the north end of the project for irrigation. This had a completion date of Nov. 26 but couldn’t begin until Oct. 2 due to the need to keep the pump station running until the end of irrigation season.

Due to a delay by EPWU in receiving the necessary permits by the



The project took place on an extremely busy section of highway at the Texas-Mexico border.



Project officials say this project marked the first time that 24-in. Fusible PVC was used on an HDD project of this size.

state, Horseshoe Construction, which used a Grundoburst 80-ton static pipe bursting machine, didn’t receive its notice to proceed until the end of June. Because of the permit delay as well as additional TXDOT restrictions to how the project could be done, the entire project is now expected to be completed by Feb. 15, 2007.

Project Challenges

Horseshoe Construction overcame numerous challenges during this project ranging from manpower to weather to TXDOT restrictions. “Our challenges had nothing to do with the pipe,” King notes. “The project overall has been great. Our main challenges on the project have been the restrictions and restraints put on us by TXDOT.”

The manpower issue arose after TXDOT required on its permits that the contractor work 24 hours a day, seven days a week; contract requirements for bidding said the contractor couldn’t work more than eight hours a day, five days a week.

“That change created the biggest strain on us because we couldn’t just pull another crew from Houston because they were on other jobs,” King says. “We had to start hiring and training people to operate a second crew.” The two crews were to work 12 hours a day, seven days a week, with project manager King and superintendent Buddy Knox, putting in an average of 110 hours a week to oversee the project.

Another challenge dealt with TXDOT lane restrictions and how Underground Solutions could fuse its pipe along the four-lane, non-divided highway. “Originally, we were going to shut down the [northbound] right lane for each milestone of the project to allow for fusion because the fusion would outpace the installation and we needed [Underground Solutions] to fuse as much pipe as possible,” King says. “However, TXDOT would only allow us to set up one segment of fused pipe at a time. [Underground Solutions] only had space to fuse an average of 400 ft of pipe at a time. As a result, they did not have the opportunity to stay onsite and fuse five to six runs at a time.” This slowed the process considerably, he says.

Heavy rain and 40 mph wind gusts also complicated the project. In late July and early August alone, more than 15 in. of rain fell in a one week period, overflowing all the flood-control reservoirs and causing major flooding citywide.

“[2006] has been the fourth wettest year in El Paso history. It was flooding all the time and raining like crazy,” says King, noting that Horseshoe ended up purchasing a steel clad wood frame building to enclose the fusion machine so fusiowork could continue. “The first few months were a real havoc just getting adjusted to the weather conditions, which are extremely different to the weather we are used to in Houston.”

Overall, King says that the sliplining aspect of the project has gone smoothly. Projected date of completion for the sliplining is Jan. 10, 2007.

Sharon M. Bueno is managing editor of *Trenchless Technology*.