



Trenchless Upgrade

Booming Colorado city upgrades water system, saves money and heightens public perception

There are multiple ways to measure the success of an underground piping system installation — dollars saved, length of project, public perception, sticking to the course. All objectives are of critical importance, though surpassing any one goal can be considered a success. Should a company exceed all expectations, that's exceptional performance. And that's just what BT Construction Inc. (BTC) did when tasked with upgrading the water system of one of the Denver area's booming suburbs.

As one of the fastest growing cities/counties in the country, Broomfield, Colo., prides itself in forging a responsible growth plan that balances residential and commercial land use with generous open space, parks and natural areas.

As Broomfield grows, it is acquiring pieces of land on the perimeter of the city's limits, and sometimes these acquisitions include water systems. In 2003, one such piece of land was annexed, and the associated water system was in clear need of an upgrade. Unfortunately, the



BT Construction utilized a Ditch Witch JT2720 horizontal directional drill to bore the underground path of a new water line, then pull 8-inch Certa-Lok C900 PVC pipe through the bore. This was Broomfield, Colo.'s first experience with trenchless pipeline installation, and its success means the city will likely incorporate the process into future projects.

Since the Broomfield project was a reuse water line, purple Certa-Lok pipe was used for identification purposes. As the pipe was pulled back through the bore, additional lengths were added, and the couplings were applied out in the open where they were easy to complete.



water system was located near a major arterial roadway, which if disrupted could cause tremendous traffic problems. It was imperative the city make a responsible choice when deciding how to conduct the upgrade.

“What could have been a rather lengthy, messy project involving substantial impacts on surrounding communities, we turned into a quick, smooth installation using a trenchless method of installation,” said Steve Adams, project manager for BTC.

BTC, along with piping sales representative Ten Point Sales and piping supplier Hughes Supply, pitched the city an idea to install pipe using horizontal directional drilling — HDD. This method would allow contractors to lay pipe underneath the busy roadway without having to cut the road open. HDD would also generate a minimal social cost of excavation, including minimal impact on Broomfield’s traffic, surrounding communities and businesses, landscaping and roadways.

The city liked the trenchless concept but was cautious in pursuing the new method, opting to first complete a test run of 1,000 feet of pipe using HDD.

“From the start, Broomfield required us to use a C900 product for the project, so we chose 8-inch Certa-Lok™ C900/RJ™,” said Adams.

This particular pipe, manufactured by CertainTeed, meets all performance requirements of AWWA C900. Certa-Lok

C900/RJ Restrained Joint PVC Pipe and Couplings provide a restrained joint by utilizing precision machined grooves on the pipe and in the coupling. When aligned, a nylon spline is inserted, resulting in a fully circumferential restrained joint that locks the pipe and coupling together. Teflon-coated elastomeric seals (O-rings) in the coupling provide a hydraulic pressure seal.

“Among the most appealing qualities of this particular pipe is that it requires no expensive joint heat-welding equipment, making it quick and easy to assemble,” said Steve Gross, marketing manager for CertainTeed’s Pipe Group. “It is a great choice for work in congested areas where there is no room for bulky reels or stringing out hundreds of feet of pre-assembled pipe. It was optimal for the Broomfield HDD project.”

“Once the city saw the product being installed, they knew the HDD method was a winner,” said Adams. The project soon expanded from the 1,000-foot test run to a 5,000-foot installation. The city is now looking to incorporate the trenchless method into future potable waterline and reuse waterline projects.

Over and beyond a timely installation, HDD provided substantial cost savings to the city. Broomfield originally planned to install the new water system using traditional open-cut methods. This means that the major arterial roadway would have been cut open to lay the initial 9,000

linear feet of pipe. Traffic control would have been a major issue involving detours that would inconvenience drivers and surrounding residents for several weeks. By going trenchless, the city saved approximately \$100,000 in asphalt paving costs alone.

“Overall, HDD was more efficient, cleaner and more cost effective than the open-cut method would have been. The assembly went so smoothly that a few residents even asked the project foreman when the project was going to start after the project was already in the clean-up stage,” said Adams.

Aside from recommending the best method for the job and employing the most appropriate materials, BTC also worked to heighten public perception of the process through a public on-site demonstration. More than 50 municipalities, engineering firms and private owners were invited to see first hand how effective HDD is and how it could benefit future projects. BTC demonstrated the HDD process and explained its overall value to the community and the city’s water system.

BT Construction Inc. is a family-owned-and-operated business. Founded in 1980, BTC specializes in water, sanitary and storm utility construction and relocation; tunnel augering; pipe jacking; mechanical facilities construction; concrete flat-work and structures; horizontal directional drilling; and industrial vacuum excavation. The company is known throughout Colorado for its ability to take on some of the toughest projects. Currently, BTC has 134 employees including 15 office staff, 22 field supervisory staff and 97 field labor staff. To learn more about BT Construction, visit www.btconstruction.com.

For more information about PVC piping products for directional drilling, visit www.certainteed.com. ■

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