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Pre-Chlorination with Pipe Bursting

A Simple Technique to
Save Time and Money





Because the trenchless method was used, disruption was kept to a minimum.



Pre-Chlorination with Pipe Bursting

A Simple Technique Can Save Money and Time for Contractors and Public Authorities

BY APRIL GOODWIN AND B.C. MACAULEY

“It’s a shame that more water companies and contractors are not familiar with the pre-chlorinated pipe-bursting method,” says Andy Mayer, president of Murphy Pipeline Contractors, Inc. (MPC), based in Jacksonville, Florida. “It’s a real timesaver for the contractor, and it saves the water company money, too.” Mayer moved to the US from England, where the pre-chlorination method used with pipe bursting has been common practice for more than a decade.

U.K. water companies underwent a major privatization in the mid-1990s, when there were only 14 major water companies serving nearly 58 million people. At the time, many of the cast-iron water mains were leaking up to 30% of the water pumped into them, creating huge repair costs and revenue losses for water compa-

nies. (We have the same problem in the US, with a loss figure as high as 40% in some communities. That’s water on which much money for purifying has already been spent.) The water companies made a large-scale investment to install new mains, to recover water loss and reduce costly leaks. Today, nearly 90% of all water mains in the U.K. are replaced using the pre-chlorinated pipe-bursting method; Mayer says a single contractor typically bursts up to 80 miles of water main annually.

Mayer moved to Florida in May 2000, recognizing that the U.S. market was literally untapped. By November of that year, the Florida Department of the Environmental Protection Agency had approved the method of pre-chlorination and pipe bursting for water mains. Since then, MPC has installed more than 50,000 feet of water

main using the pre-chlorinated pipe-bursting method. In addition, Mayer has served as a consultant on major projects throughout the United States. By working with the American Water Works Association (AWWA) in Florida to spread the word about the benefits of employing the pre-chlorinated pipe-bursting method, Mayer has been able to help Florida water companies accept the method as an acceptable means of water main rehabilitation. “I believe, in the next five years, that pipe bursting with pre-chlorination will be the preferred method for water main replacement in North America,” observes Mayer.

The Pipe Bursting Technique

The chief advantage of the pipe bursting method is that contractors can replace pipeline without having to dig up the old main. It is ideal for urban applications where an existing pipeline has exceeded its useful life; it can be used beneath buildings, roads, rivers, or bridges. It avoids traffic delays and minimizes inconvenience to residents and businesses. Pipe bursting is one of the most cost-effective methods of replacing pipes or upsizing them to meet increased demand in the community. The pipe is shattered into small pieces and pushed laterally into the surrounding earth. The original pipe diameter is replaced or upsized using an expander, and the replacement pipe is then towed into the new borehole.

Using this method on water mains costs less than traditional open-cut or relocation methods, one reason being that pre-chlorinated pipe-bursting systems use existing utility location and easements, lowering design and engineering fees associated with a utility relocation design. Pre-chlorinating and pre-pressure testing the HDPE water main above ground, prior to installation, provide significant cost savings and are key to the overall process, as they eliminate the expense and disruption of providing homeowners with a temporary water supply.

An Application in Florida

MPC recently completed a pre-chlorinated pipe-bursting project in Fort Pierce, Florida, during which Mayer's team replaced about 13,000 feet of water main in eight weeks. A crew of six handled the project on Indian River Drive, classified as a scenic state highway. When they learned the water main was more than 65 years old, Fort Pierce Utilities Authorities began looking into replacing the 6" cast-iron pipes with 6" HDPE pipes. "There

Mayer's crew burst an average of 400 feet of pipe each day in about two hours each day.

was a history of complaints related to water pressure and clarity associated with the water main," explains engineer David Mellert. "We realized this project would require special attention beyond the industry standards because the area had limited working space, high-end homes with expensive driveways, and heavy traffic. Because of easement issues, open cutting in the road was not an option. We evaluated different options to find the method most compatible with our needs."

When Mellert talked to Mayer about employing the pre-chlorinated pipe-bursting method, he saw it as a viable, cost-cutting alternative. In addition, the system Mayer described would cause less disruption to the prominent neighborhood residents. "After evaluating various alternatives, we selected the pre-chlorinated system of MPC because the price, technology and method most

closely meshed with our requirements," comments Mellert. "Using the pipe-bursting method saved Fort Pierce about 30% over an open-cut method in excavating and road restoration, as well as in permit approval and project time. And our customers' satisfaction is priceless."

MPC purchased a HAMMERHEAD HydroBurst® HB3038 Static Pipe-Bursting System for the Fort Pierce project because Mayer and his team had rented and used one successfully on a previous job. The HB3038 is a compact unit with 30 tons of pulling force ideal for bursting cast-iron, clay, or other fracture-prone pipe up to 6" in diameter.

Mayer's crew burst an average of 400' of pipe in about two hours each day. The rest of the day the crew handled restoration work, pre-chlorinating and pre-pressure testing pipes. *(Continued on page 14)*

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WRITE 3 ON READER SERVICE CARD

Pre-Chlorination with Pipe Bursting

(Continued from page 13)

"The main was cut and capped, on average, by 8:30 a.m. each day. Only the section scheduled to be burst was without water during that time," Mayer explains. "The rods were inserted into the de-commissioned main from the launch pit and pushed to the receive pit. The rods were then connected to the bursting blade, bursting expander and the pre-chlorinated pipe. The pullback started. By 10:30 a.m., the pipe was back in the launch pit and the bursting equipment was removed before lunch."

The new HDPE service lines to homes were installed with the aid of a 2" Hammerhead Mole. The mains were connected with a top tee or sidesaddle using an electro-fusion fitting. Next, the new service was connected to the main and flushed. After flushing the connection to the meter, a faucet was opened to expel any excess air, and then the water main was pressure tested a second time before putting it back in service.

"Our two weeks of planning the pre-chlorination process and excavation work around the residents' schedules, fire hydrants, and valve positioning always pays off," asserts Mayer. "Residents really like that we're generally only outside their house for one day instead of three or four weeks, as you'd see with a traditional open-cut method," he says. Fort Pierce Utilities Authorities also took measures to mitigate the disruptions to residents. "One of the things we did was to notify residents about the project and the minor disruptions it would cause," says engineer Mellert. "We also set up a hotline for residents to call in with their questions or concerns. Then, when we knew residents would be directly affected by the project, we sent an employee to their home to notify them that it would affect them personally. We wanted the residents to feel they were part of the solution, not part of the problem — and we even encouraged them to come watch the work in progress."

"Pleasing area residents was our first priority," says Mayer. And it showed. After the first two weeks on the project, homeowners were bringing the MPC crew cookies and drinks. One even invited them for a St. Patrick's Day party. "We had the best food: corn beef and cabbage — and Guinness beer," he said. "It was almost like back home." Mellert says it's true residents were happy with Mayer and his team. "They thought he was the greatest thing since sliced bread," he adds. ■