



Pre-Chlorinated Pipe Rehab

Continues U.S. Growth

Most experts in the trenchless construction industry would contend that the process of bursting sewer pipe is still a relatively young technology. If that's the case, then bursting of potable water lines and replacing with pre-chlorinated pipe is in its infancy - at least in the United States.

The state of Florida, however, in concert with the driving force of the American Water Works Association (AWWA) Florida section and the Florida Department of Environmental Protection (DEP), has proven that the method (prevalent in Europe for the last 12 years) has the potential to be equally successful here.

Larry Ruffin, past chair of the AWWA Florida Section, says his interest in the pre-chlorinated bursting method started more than two-and-a-half years ago as his group prepared for a summer seminar in August 2000. The event's topic that year was trenchless technology. Ruffin and his colleagues wanted pipebursting on the agenda, and they wanted to address water as well as sewer. Bursting potable water lines was something few knew anything about, but it sounded viable to Ruffin.

"Logic told me," he says, "that if you flushed or chlorinated the line before the job, you should be able to replace the system with potable water pipe - assuming contamination could be prevented during the work." This could dramatically cut down the time otherwise needed to run temporary services while still satisfying the ever-important concern of safety.

Process intro

As Ruffin explored sources and speakers for the seminar, he became aware of Andy Mayer, a European contractor skilled and experienced in doing exactly what Ruffin had in mind. Mayer agreed to speak at the AWWA event, and organizers invited key personnel from the DEP, area utilities and various



Andy Mayer



municipalities and counties to attend the presentation as well as a roundtable discussion.

John Sowerby, a professional engineer with the Drinking Water Section of the Florida DEP, was one of those in attendance. After much discussion and investigation, following the seminar and a job-site demonstration, Sowerby wrote a letter in November 2000 stating that the pre-chlorinated pipebursting method would be a sanctioned practice in Florida.

"There were really two primary questions to be answered," Sowerby says. "First, can the pre-chlorinated method be used? Is it consistent with the existing AWWA standards for disinfection of pipelines and does it meet the health regulations that should be followed? The answer to that question was a resounding 'yes.'"

"Secondly, do contractors performing this type of work need a construction permit? Typically, we have not required permits for repair, and we do consider this type of work a 'repair.'"

This particular issue, Mayer says, is a major benefit to contractors that do rehabilitation work. It can take a great deal of time to obtain the proper permits necessary for new construction, especially work in environmentally sensitive areas. Because this type of pipebursting – as long as the upsizing is no more than two sizes – is not (under DEP regulations) considered "new construction," those permits and the time required to file for them are not necessary. Moreover, according to DEP regulations, the pipe must be installed in the exact location as the existing line. The only way to achieve this is with pipebursting methods.

Jim Hull with CDM Engineers and Constructors Inc., a consulting, engineering and construction firm that became familiar with Mayer and pre-chlorinated bursting during the seminars, also sees the permitting issue as a plus. "Not needing the permit certainly saves us having to go through the submittal process and the plan review time," he says. "Those days can add up to weeks."

With the DEP sign-off, the first pre-chlorinated job in Florida was completed in May 2001.

Process popularity grows

As Mayer and Ruffin joined forces in 2000, continuing their campaign to promote pre-chlorinated bursting in Florida, Mayer formed Murphy Pipeline Contractors Inc., based in Jacksonville, FL. Mayer completed four pre-chlorinated projects in Florida with



in two-and-a-half years. He has three crews working, and although the crew members are primarily European, Mayer and his teams are also training U.S. workers so they can expand the number of jobs and extend their geographic reach. As more Americans learn and perfect the method, the popularity may drive more states to sanction it.

According to Ruffin, word of the benefits is already spreading.

"I get calls daily from other states asking about the process," he says. "I'm happy to send them paperwork and photos from our projects. I'm also pleased to have people get in touch and meet with Miami Dade County, who has really taken the acceptance of this to the next level."

Initially, three pilot projects were done in Florida: one with Orange County Utilities, another in Jacksonville (United Water), and the third in Dade County. Officials from the state of Florida were invited to all three, one of which was done under a road, replacing pipe 80 to 90 years old. Dade County was so pleased that they subsequently purchased equipment so they could do the work themselves.

"We showed the people from the state of Florida that a 98 percent savings in time could be realized, along with a 75 percent savings in cost (compared to open-cut methods)," Ruffin says. That was no fluke. Ruffin describes the method as "getting better with each job," producing time and cost savings very consistently, if not a little better.

Mayer's estimation, a bit more conservative but still quite impressive, is that pre-chlorinated bursting is 50 to 60 percent faster (than open-cut methods). "Obviously, the faster you go," he says, "the better your labor costs are."

Everglades test

Most recently, pre-chlorinated bursting was employed at Everglades National Park.

Spanning the southern tip of Florida Bay, the area is the only subtropical preserve in North America. Mayer and his Murphy Pipeline crew were subcontracted by CDM to replace 25,000 feet of 2, 4 and 6-inch water line near Flamingo, FL. Mayer believes this may be the largest pre-chlorinated bursting project undertaken in the United States, even though it's fairly common in terms of what he's used to doing in Europe.

"If we were trenching on this project, we'd essentially abandon the old pipe after trenching in a new line beside it," CDM's Hull says. "This process saved us a tremendous amount of time."

The Murphy Pipeline crew averaged installing 3,000 feet of line a week in Flamingo with their Hammerhead HydroBurst HB3038, a compact unit with 30 tons of pulling force that is ideal for bursting cast iron, clay, concrete or other fracture-prone pipe up to six inches in diameter.

But, Mayer says, one day they burst 2,900 feet. Even more impressive than the speed is the lack of disturbance. As one could guess, the National Park Service is quite particular about work being done in what Mayer describes as "living areas" – places where foliage and wildlife are abundant. In fact, the park is known for its rich bird habitat. And, it's the only place in the world where alligators and crocodiles exist side-by-side. According to the National Park Service, Everglades National Park has been designated a World Heritage Site, an International Biosphere Reserve and a wetland of international importance. In fact, the National Park Service diligently witnessed several demonstrations to ensure authenticity before they bought into the bursting process.

"Maintaining the environment was a primary challenge," Mayer says. "But, one reason the National Park Service is so pleased with this type of method is the minimal disruption. Essentially, we can come into an area on day one to set-up. Then, we have a day to

burst. On day three, we're restoring the few pits required. It's often very difficult to tell that we were even there."

Hull concurs. "This method pleases us most because it pleases the client," he says. "The disruption to the visitor's experience and damage to cultural resources with open cutting would have made the project considerably more intrusive. We didn't have that with pre-chlorinated bursting."

Mayer estimates that what took his crew just seven weeks to complete may have taken a contractor digging and trenching a few months, not including the permitting process. Temporary services would have had to be devised while pipe was removed and replaced. He believes the success of this job may lead to other National Park Service projects.

"There is talk of another three jobs right off the bat," Mayer says. "That's attributed to the work of a very experienced, diligent, hardworking crew using dependable equipment."

Future of pre-chlorinated bursting

Mayer credits Larry Ruffin for his vision and push to bring this method to the United States. Ruffin praises Mayer for his ability to sell the necessary personnel on the fact that pre-chlorinated bursting is practical and safe. They both commend officials like John Sowerby (Florida DEP) for their interest in continuing to find better methods that can cut time and restoration costs. And, they both believe that – although it may take some time – pre-chlorinated bursting is a process that will flourish in the United States.

"We are all creatures of habit," Ruffin says. "The simple fact that this is a different method that not everyone is familiar with is the primary reason that it's not done more often and in other states."

"As officials learn more about it and support it, there will be more pre-chlorinated jobs. And, there will be more states that sanction the process."

Mayer believes the type of pipe may have something to do with the relatively slow acceptance. "Pre-chlorinated bursting is done with HDPE, and we use electric fusion and couplings," he says. "There's no sense in using pipe good for 70 years and fittings good for 20 (as may be the case in other applications)."

Most areas in the United States, he says, have preferred to use PVC or ductile iron. "HDPE is primarily used in Europe, so we just need to sell the material before we can sell the method. But, engineers are catching on."

Mayer says he "stumbled onto" something that we did not have in the United States, and he immediately saw a lot of potential.

Ruffin feels good to have been a part of this new dawn of the U.S. trenchless industry. "Contractors go from doing a job that may have taken a year or more when you consider the time required to obtain permits and doing the construction with open-cutting, to getting it done in two weeks," he says. "That's an exciting change. The group that has really brought this to the forefront is the AWWA Florida section. They helped convince officials that came in with an open mind that this is a safe and better method."

