

THINKING OUTSIDE THE BOX



Clay Pipe Used in Connecticut Sliplining Project

By Sharon M. Bueno

When sliplining projects are planned, clay pipe doesn't come up on the radar of design engineers. Municipalities and engineers look to other pipe, such as fusible PVC and HDPE, to serve as the product pipe and can view clay pipe as an archaic choice.

But the pipe selection for a portion of the Logger Hill Road Sewer Main Rehabilitation Project in Waterford, Conn., called for something other than plastic pipe, and clay pipe fit the bill perfectly. That's right: clay pipe.

For the first time that anyone involved in the project was aware of, clay pipe was used to rehabilitate a sewer pipe through sliplining. "I'm not aware of clay pipe being used on a sliplining project so this would be a first," said David Gill, sales engineer for Mission Clay Products LLC/No-

Dig Pipe, which provided the 18-in. clay pipe used to slipline the existing 24-in. concrete cylinder pipe.

The Waterford Utility Commission had its engineering firm Wright-Pierce conduct a preliminary CCTV inspection and evaluation of approximately 2,400 lf of the sewer pipe on Logger Hill Road, which was installed in 1980. The pipes were made of pre-stressed concrete cylinder pipe (PCCP) and ranged in size from 24 to 36 in. The inspection was made to identify pipeline sections in need of immediate repair and to avoid any catastrophic pipe failures. The review showed that 1,420 lf of pipe were classified as having Grade 5 defects in accordance with current NASSCO standards for identifying pipe defects. These would need immediate attention as they exhibited severe deterioration of the interior walls due to corrosion, had decreased wall thick-

ness and areas of exposed steel cylinder pipe. The remainder of the pipe was classified as having Grade 4 defects. The inspections also noted that 10 manholes were in need of rehabilitation.

Wright-Pierce teamed with the Ted Berry Co., Livermore, Maine, to assist in reviewing and analyzing the trenchless options for the project. The Town of Waterford does not have a long history of using trenchless methods, doing its first project in 2010, which involved smaller scale lateral lining and spot repairs. This would be its first large trenchless project. Ted Berry Co. was brought in because of its extensive experience in trenchless technology. After reviewing the video inspections and all relevant material, sliplining using fusible PVC and HDPE was deemed the best option but there was a hitch: about 1,400 ft of the pipe

consisted of manhole drop connections and elevation changes, creating a hill that would require extensive excavation for insertion pits and basically negating the benefits trenchless technology offers in terms of disruption.

Enter clay pipe as the solution. Wright-Pierce project manager Dennis Dievert Jr. said the elevation changes at the manholes on this critical stretch were every 105 to 200 ft, disallowing for one long, continuous slipline of pipe. "Because of the drop connections, we would have had to set up insertion pits every 200 ft or so and that made no sense economically," Dievert said.

Ted Berry Co. vice president Matt Timberlake was the first to suggest the use of clay pipe for this 1,400-ft section, believing it was best option available. "I took a very hard look at the amount of disruption that it was going to take [for the insertion pits] using pipe typically used in sliplining," Timberlake said. "With the amount of excavation to use any other type of pipe in that section, it just made very good sense to use the segmented clay pipe."

Timberlake credited the Waterford Utility Commission for accepting his and Wright-Pierce's recommendation of using the clay pipe. "Typically with sliplining, you are able to take advantage of plastic pipe in long, continuous installations as the pipe is relatively inexpensive, easy to handle and can be inserted in long distances," Timberlake said. "But with this project, there was a section where the sewer pipe changed elevation at every manhole, like it was a set of stairs down Logger Road. There were going to be excavations needed at every single manhole along the way. They would lose the return of using trenchless. Using clay was going to be outside of what everyone was thinking but it was the best option.

"There was a leap of faith given by Wright-Pierce for presenting our recommendation and by the sewer commission in accepting it," he said.

Revoli Construction was contracted to handle the entire sliplining project, which involved three sections: 1,400 ft of 18-in. clay pipe, 1,000 ft of 20-in. FPVC and 750 ft of 32-in. HDPE for a 36-in. diameter section.

Obviously this was a first for Revoli Construction as well and the contractor had to adjust in us-

ing the clay pipe. Revoli president Shawqi Alsarabi said he initially had two concerns with using the clay pipe but they were relieved early on. First, he was concerned with the clearance between host and product pipe due to clay's outside diameter thickness and second, the host pipe's alignment.

"The challenge is to make sure that the pipe you are sliplining through is accurately straight otherwise the clay pipe or any other pipe will get jammed in the host pipe," Alsarabi said. "The line was CCTV to make sure it was straight and that there were no deflections that would hinder us in pushing the new pipe in it. That was one of the challenging things in the back of our minds when we bid the project because clay pipe does not have the flexibility that HDPE or FPVC has."

The clearance issue was resolved with the use of Mission Clay's 18-in. open trench pipe, which has an OD of 21 1/2 in., leaving a 2 1/2-in. clearance between it and the 24-in. host pipe.

Alsarabi said all three sections went smoothly, with the clay pipe sliplined in 105- to 200-ft sections. "We worked on the clay sections while the FPVC was being fused. There were a lot of manhole insertions [with the clay pipe] but the excavation was minimized and the project went well."

Both Dievert and Timberlake said that there is definitely a place for the use of clay pipe in sliplining projects, with the right conditions. "I was very cautious about bringing [clay] as a solution to [the Waterford Sewer Commission] because to someone who doesn't use trenchless a lot, saying you want to put clay in the ground, they won't be prepared to hear that," Timberlake said. "Most municipalities think of clay pipe as pipe that was used 100 years ago. That's the mindset."

"[Matt Timberlake] was the advocate of trying this and we thought it would be a good application," Dievert Jr. said. "This wasn't our only option but it was the option we chose. Clay pipe has been around for hundreds of years and it holds up well to hydrogen sulfide. It doesn't degrade or have corrosion issues."

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

Clay pipe has a place in sliplining projects, under the right conditions.

