

STORMWATER

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Simplifying Pipe Repair

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No Longer a Pipe Dream

Relining systems and using lightweight pipes make underground pipe repair easier.

BY JANIS KEATING

A pipe's age, along with normal wear and tear, can cause systems to break down. During the winter of 2013–14, record cold temperatures across much of the nation also caused pipe failures, often in water mains. At such times especially, it's important to fix the problem quickly—not only to resume service, but also to keep crews in dangerous weather for the shortest time possible. Many cities these days are finding a variety of solutions to help get the job done.

Taking Care in Tight Spaces

Even in good years, winters in Maine can be long and difficult, so projects must be completed quickly between April and November. During that period in 2012, the city of Lewiston continued its combined sewer overflow (CSO) separation initiative along Oak Street. The challenges piled up: Crews had to work around a massive rock ledge, old buildings sat virtually on the edge of the trench, and an existing sewer was found to be leaking.



“Although we usually hit clay, sometimes when digging we hit rock. Of course, in the earlier months, it was difficult to tell which was which, as the frost line here goes down to about four feet,” says Jeffrey D. Beaulé, P.E., project engineer for Lewiston Public Works. “The existing pipes were already fairly deep. Water mains are five-and-a-half feet down—nothing’s situated less than that. We had to use a big jackhammer on the excavator, because the houses were right there behind the sidewalk—there was not enough room to blast safely. The rock was very hard and didn’t want to break up very easily. We made some test holes every 25 feet to know how deep the rock was.”

The city’s in-house engineering department used flexibility in permitting and designing the project. Local engineers were used for construction inspection, as well as trusted local contractors who were very familiar with the city’s infrastructure. Locally manufactured products were also sought to address all challenges—within the project’s budget and timeline. “I designed the plan myself at the city engineering office,” says

Beaulé. “Gendron & Gendron did the work, and E. J. Prescott was the pipe supplier.”

The pipe supplied was Hilliard, OH’s Advanced Drainage Systems SaniTite HP pipe.

“The city of Portland had used ADS pipe the year before. Another engineer had consulted with the City and knew of the product, so SaniTite sounded like a good idea. Concrete pipe would’ve been more expensive, as well as taking more time to install,” says Beaulé. Another advantage of the ADS pipe: it can be used in any soil type; it stands up to 1.5 to 14 pH.

Of course, once excavation began, there were more problems than just sewer separation. “Electric wires aren’t underground, but the phone lines are, which were laid in concrete, but some in very old tile, which broke apart easily when you got near them,” continues Beaulé. “But that’s not to say the electric lines didn’t cause difficulties. Gendron had to buy a special excavator, a Volvo 305 with no rear counterweight, so the machine could get past the buildings. They dug down three feet into the street, so the excavator could sit in the



hole and reach everything. Even at that level, if the operator opened the excavator's roof, he'd hit the overhead wires. Then, of course, we found a large sewer that had to be relined with SaniTite, because it was leaking."

The Oak Street project had some deep cuts—down 25 to 30 feet in certain areas. Maneuvering the pipe was difficult, especially since one city block was only 40 to 50 feet across. In such a congested area, dug-out material had to be loaded into dump trucks and sent off for storage; there was nowhere to store it onsite. Once the installation was completed and compacted, material was hauled back in to reconstruct the roadway. With such a complicated install, it took a six-member crew eight months to install 800 feet of pipe. Typically, a "normal" project of this size would take just a few days.

However, the ADS pipes made the job easier in many respects. Joints, bends, and "Ts" could be made to spec, which was a boon, since the pipe trails were very complex. The system included 90-degree and 45-degree connections, and some 22-degree bends; ADS even made a pipe that came up at a 45-degree angle, and back at another 45-degree angle.

"The CSO project was very challenging and time consuming. When the crew got near a more-than 50-year-old, 60-inch concrete transmission sewer main, they found the joints were leaking—there were no

gaskets in the pipe—so they had to install another 400 feet of 48-inch SaniTite HP pipe to segmentally slipline and rehabilitate the sewer pipe," explains Beaulé. "With the effluent pouring into the trench, it was decided that we needed to do something quickly, and sliplining seemed to be the best option since we already had a big hole opened. We didn't have to bypass the flows; the crew just pushed the new pipe through. We would have had to set up more bypass pumps if we'd had to replace the pipe."

Work continues on Oak St. "Other separation work is being done around the city. Three other contracts are wrapping up this year. We have been working on stormwater and sewer separation for the last 15 years—this is the final year of a \$30 million plan," concludes Beaulé. ♠

Janis Keating is a frequent contributor to Forester Media publications.

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