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REGINA OPTS FOR EASIER, CHEAPER WAY TO ACCESS DEEP SEWERS

Method provides safe and permanent access to mains up to 30 feet deep and will serve the city for generations to come

By Doug Day

There are spots in Regina, Saskatchewan, where sewer pipes are so deep that they can't be safely accessed with equipment owned by the city. Rather than renting excavators and proper shoring cages, the Department of Water Works developed an affordable way to provide permanent access to those locations.

Rather than installing typical prefabricated manhole structures, the department is using polyethylene pipe with a ladder welded inside. The pipe serves the same purpose, providing easy access to the sewer pipes far belowground. It is a lot safer than excavating at those locations and using shoring protection to prevent excavation accidents that

could be deadly for workers installing typical manhole sections.

"On our old trunk mains, the manholes are spaced too far apart to do proper inspection, televising or maintenance like lining," says John Ullrich, manager of Water and Sewer Construction. "We have a couple of locations where mains are in excess of 30 feet to the top of the pipe, and quite a few that range between 20 and 30 feet. We didn't have the ability to dig that deep because our backhoes only reach about 24 feet so we'd have to excavate a long ramp."

The department began working with the nearby Saskatoon office of Engineered Pipe Group that offers a lightweight Weholite pipe that is



certified for use at such depths. Water Works installed two of the pipes in 2014 and another in 2015 to provide permanent access to locations where it was needed.

“We drilled down 30 feet and then hydroexcavated to expose the top of the main, poured the concrete floor, set the pipe in place, cut it to the proper elevation, put a concrete cover on it, and backfilled,” Ullrich says. “It serves as a manhole structure for future inspection so we can work safely.”

More installations were expected in 2015 for a section of the sewer system being repaired. However, the pipes were not as deep as expected so normal excavation achieved the needed access. “We learned that it’s best to do a field check prior to any excavating because plans are not always correct.”

Ullrich still expects more installations in future years to improve the 450-mile sewer system that treats 18.4 mgd for the 70,665 water utility customers in a city with a population of 237,000 residents.

The Weholite pipe used by Regina has a 48-inch inside diameter, the same as many manholes, and is available in the typical 42-inch manhole diameter and also in larger sizes. The pipe, with the welded ladder installed, is delivered to Regina at a cost of \$18,000. With excavation and installation, the total cost of a finished access point is about \$25,000.

Mike Perrin, sales manager of Engineered Pipe Group, adds that rather than a huge excavation pit needed for a concrete manhole, using a single piece of pipe results in a very quick and efficient process.

“We didn’t even shut down the whole road,” Perrin says. “You drill the hole, drop in the pipe, and pour your cement the same day. Within two days, you have a fully operational manhole with nobody having to go down into the excavation site until it’s a complete manhole.”

Being HDPE pipe, adds Perrin, it is totally inert. “Sewer gas, water, salt, chemicals, nothing affects it,” he says. “So your manhole actually lasts forever. This was first developed for industrial applications such as mining sites for potash, which is a really corrosive material, and on uranium sites.”

Training

The planning and installation process has been heavily documented, including specifications for the pipe, risers, and field welding, and testing for leaks, infiltration, and exfiltration. There are individual task lists for each individual from the project supervisor and crew lead to equipment operators and laborers.

Department employees not involved in the installations were trained during the latest project. “Like many others, the baby boomers are retiring and we wanted to pass on this knowledge,” says Ullrich. “We might not have to use the process for another year or two. Our people will have expertise, exposure to it, and the material in place to be able to install it using this method. If we have to do it in another month, 18 months, or three years, the crews are trained and equipped and they can install it and pick up where we left off and do a fine job of it.”

Ullrich adds that they also wanted everyone to get experience working in such conditions, which are much different than a typical manhole.

“They’ve worked in 12- and 15-foot manholes before,” he says. “But when you go down 30 feet, it gives you a different feel when you’re in a 48-inch pipe looking up. It’s a little more intimidating. Just having the guys exposed to that, having a sense of confidence and a comfort zone was important to us.” ♦

