



Methods including open trench, HDD, sliplining and pipe bursting can replace old pipelines with HDPE pipe.

Replacing Flint's Pipe

By Steve Cooper

Proposing plastic as a means of repair

The water crisis in Flint, Mich., has placed a spotlight on underground infrastructure issues for municipal leaders and the citizens they serve.

Tony Radoszewski, president of the Plastics Pipe Institute (PPI)—a Dallas-based non-profit association—said Flint broadens attention to concerns that can be solved by advanced pipe solutions readily available today.

“The aging water pipeline infrastructure of our country has been talked about for well over two decades,” he said. “Some communities, such as Madison, Wis., have successfully implemented programs to replace their lead water service pipe. But most, including Flint, have not.”

Cataloging the Crisis

In Flint, as in many other cities across the country, the addition of certain chemicals to the water

prevents the lead in water service pipe, and the solder used to sweat the joints in older copper pipe, from leaching into the water. It also helps to protect the iron transmission lines from corroding. When the city changed its water source from the city of Detroit to the Flint River, it failed to modify the water chemistry, resulting in rapid corrosion of the metal pipe.

“In very short order, the protective patina that had coated the inside of the pipe came off and people were seeing brown cloudy water coming out of the tap. It also raised the level of lead, greatly exceeding EPA [U.S. Environmental Protection Agency] limits,” Radoszewski said.

With the major source of lead coming from the service lines connecting the water main to houses, the city started plans to replace the 8,000 known lines with copper pipe at an estimated cost of nearly \$4,000 each. This does not include almost 13,000 other properties, including 11,000 residences, whose service lines are of unknown composition.

A Proposal

In February, JM Eagle Inc., a manufacturer of plastic pipe, offered free replacement of all the lead lines connecting water mains to residences where contaminated drinking water created the health crisis in Flint. The offer is still under consideration.

“The offer from JM Eagle cannot, at this time, be accepted because the high-density polyethylene (HDPE) service lines—the product most likely to be used—are not approved by the city,” Radoszewski said.

Another aspect of the Flint story is the condition of the pipe mains that move water throughout the city. They have deteriorated to such an extent that it will be extremely difficult to attach the new service lines, further impeding the repairs.

According to PPI data and industry studies, HDPE water pipe cannot rust; is resistant to acidic and alkaline soil conditions; is not prone to tuberculation caused by the combination of iron oxide precipitation and iron bacteria that attach to the inside of other kinds of pipe; and does not contain any heavy metals. There is no need to add special chemicals to modify water chemistry.

HDPE pipe can be installed by methods such as open trench/cut and cover, jack and bore, sliplining, horizontal directional drilling, Swagelining and pipe bursting.

Water Loss Prevention Potential

Lead in water is just one threat: “It’s not only water quality. Water loss is another preventable problem,” Radoszewski said.

HDPE pipe showed benefits in the early 1960s, when gas utilities started replacing failing iron pipe with HDPE pipe. Because of its performance, 95% of all new gas distribution systems installed today are polyethylene pipe.

“Gas utilities quickly realized two key features of HDPE pipe systems—they don’t rust and because they are a totally fused system, they don’t leak. This is extremely important since when gas leaks, either because of loose joints or holes in the pipe due to corrosion, the outcome can be devastating to the health and safety of the local population,” Radoszewski said.

Public water systems serving more than one million people in the U.S. average a loss of 17%. New York City pegs its loss at 10%; its daily water use is more than 1 billion gal. The world loses about 33% of its drinking water each year. The cause is old, rusting and leaking pipe.

Time-Tested

As a tested material, HDPE pipe’s performance has been documented and is validated through

ongoing laboratory research and decades of “in-field” service. Its physical attributes enable the pipe to be used in virtually any underground utility application, including storm water management, drainage and sewer systems, fiber optic and telecom undergrounding, and green building cooling and radiant heating systems.

Furthermore, HDPE pipe is manufactured and installed in accordance with industry standards from organizations such as the American Water Works Assn., ASTM Intl., the Canadian Standards Assn., the International Assn. of Plumbing and Mechanical Officials and NSF. By following these standards, the manufacturer is assuring



Cracked and broken pipelines cause millions of gallons of water to be wasted each year.

customers that the pipe fully complies with the requirements of the standards, including the requirements on physical properties, joining and installation methods, thereby instilling more confidence in the community.

“Since 2014 there has been a new federal law on the books that in effect prohibits any amount of lead in a drinking water system,” Radoszewski said. “The Flint crisis ... has forced communities across the country to evaluate other options for the safe and long-term delivery of drinking water.” **w&wd**

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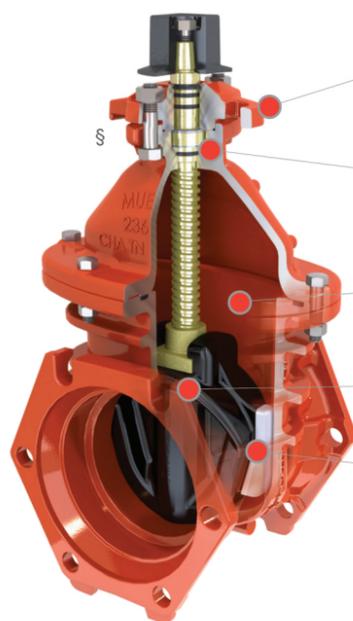
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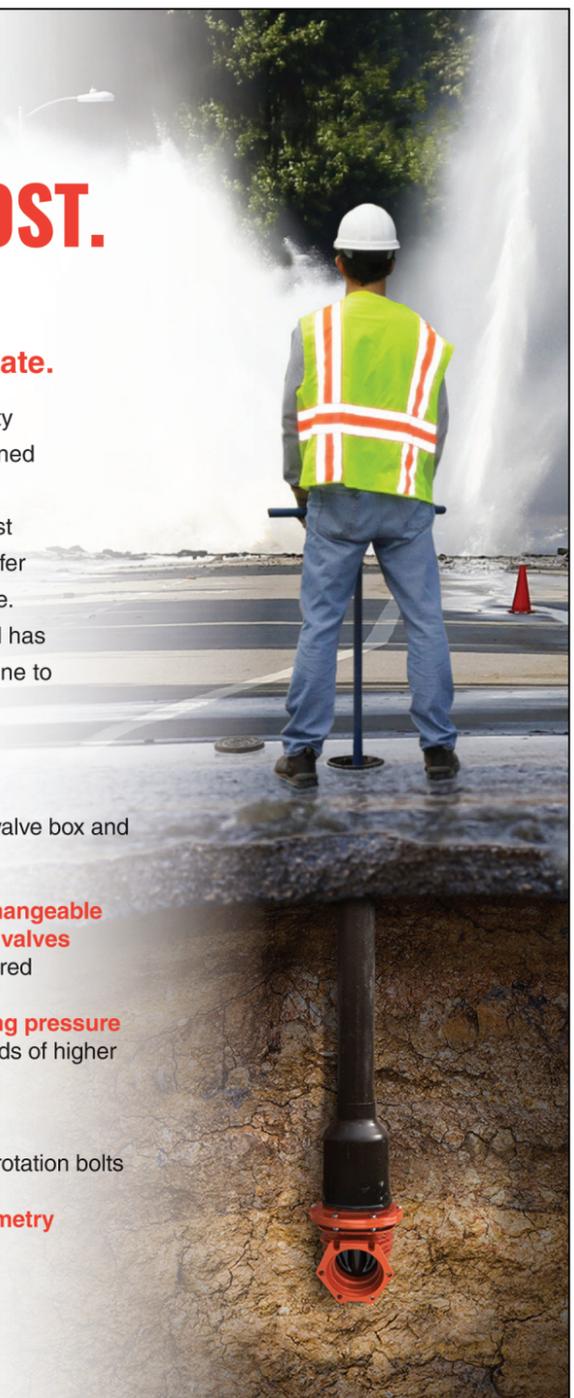
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