HDPE Pipe Helps Oklahoma Water District Protect Against Water Loss

Often the reasons for choosing one type of pipe over another are not black and white.

In one case recently in rural Oklahoma, the reason was blue.

Contractors and utility officials in Water District #10 in Delaware County, Okla. had always used PVC pipe for their water systems, in part because it was available in blue for easy identification in the ground. When a manufacturing member of the Plastics Pipe Institute (PPI) developed a solid blue high-density polyethylene (HDPE) pipe for potable water applications, the battle between HDPE pipe and PVC pipe was on.

And HDPE won.

"We looked at both HDPE pipe and PVC and decided that the best choice for the district for the long term was the polyethylene," said Tim McCrary, of Crafton, Tull & Associates, Inc. engineering firm.

Although the availability of the product in blue got HDPE in the game, the color of the pipe doesn't help pay back the district's loan – selling water does. And what the water officials in Oklahoma discovered was that the less water that leaked out of the pipes, the more efficiently they could sell it. And selling more efficiently pays the loan back faster.

"Environmental concerns were among the criteria we used to pick the pipe material," McCrary said. "When your only revenue stream is your water, you have to protect that as much as possible. There's been a big crackdown here on the issue of water loss. We concluded that the HDPE pipe gives us the best chance at protecting this valuable resource."

Unlike PVC, polyethylene pipe, in both solid blue and traditional black with the blue stripe, provides a leak-free system through its joining process – heat fusion – that produces strong, totally sealed connections. Further, polyethylene is a dielectric material and is frequently used as an insulating material for electrical conductors. Because it is a non-conductor, polyethylene is simply not subject to corrosion.

"Municipalities with traditional piping systems all have a minimum allowable 'unused water' percentage that they tolerate. This is the water that is lost out of the old, corroded pipes before it reaches the home or business," said Rich Gottwald, executive director of PPI. "In many municipalities, this water loss can reach 30 percent, 40 percent 50 percent or more.

"However, many municipalities are now using HDPE pipe to construct a leak-free and corrosion-resistant water distribution system to deliver water to their residents – and are avoiding the problems and costs associated with leaky systems," Gottwald added.

The other criteria Water District #10 used to evaluate PVC and HDPE pipe included:

- Cost
- Operational issues / performance
- Regulations

- Future development of the area
- Public and environmental concerns

HDPE scored equal to or better than PVC for this application in each of those categories, according to the engineers. The cost factor was tied into the long-term performance. Engineers conducted a study that projected leaks, breaks and pipe/joint failure over a 15-year period and calculated potential lost water. Again, HDPE pipe was predicted to save more money over that period of time.

Another factor in the decision was the success contractors in the area had with polyethylene natural gas lines. Polyethylene pipe is used for more than 90 percent of the fuel gas distribution piping in the United States because of its reliability, leak-free performance and resistance to corrosion.

“We’ve always encouraged water officials to learn more about HDPE pipe and its ability to provide the durable performance they want,” Gottwald said. “After all, if polyethylene pipe is trusted by the fuel gas industry to be leak-free, what’s stopping the water industry?”

With all the new construction happening in Delaware County, the sewer lines also will be a major part of the development.

“When it’s time for the sewer pipes to go in, we’ll be on the lookout for the solid green HDPE pipe,” McCrary said.

About PPI
The Plastics Pipe Institute is the major trade association representing all segments of the plastics piping industry. Member companies share a common interest in broadening market opportunities that make effective use of plastics piping for water and gas distribution, sewer and wastewater, oil and gas production, industrial and mining uses, power and communications duct and irrigation. More information is available at www.plasticpipe.org.

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