

Plastic Pipes Handle Pressure from RO Plant

System uses plastic pipe to provide efficient, high quality water

The El Paso County Water Authority was in need of a cost-effective pipe for its reverse osmosis treatment project to supply clean water. A competitive price won the attention of a Texas engineering firm to high density polyethylene (HDPE) pipe. HDPE's performance won some loyalty.

Seven miles of 20-inch-diameter HDPE pipe—nearly 37,000 feet—was specified for the plant. The pipeline carries drinking water to a reverse osmosis plant from four 250-horsepower vertical turbine wells that pump 1,000 gallons per minute with 400 feet of total dynamic head. The El Paso County Water Authority serves approximately 12,000 people in a 91-square-mile area east of the city.

Prior to the plant's construction, the solidity rate in the drinking water was approximately 1,600 parts per million (ppm). The U.S. Environmental Protection Agency (EPA) requires a maximum of 1,000 ppm. So, the project needed to be completed quickly.

The project's engineer selected HDPE pipe when the project was being specified because of its cost compared to some alternative materials. He said that even

though the prices have since evened out, HDPE would remain his first choice for future projects.

"After using HDPE pipe for this project, I would use it any time in the future for water projects," says David Goodrum, district manager for ECO Resources, a utility management company. "The wells always are turning on and shutting off. And the high pressure of emergency shut-offs is immense. Some other types

of pipes may not be able to handle that pressure. Now there is very little water hammer because the pipe absorbs that pressure and you can't feel it at the plant."

What the customers of the El Paso County Water Authority felt is the extra money in their pockets. Technicians from a Texas-based PPI member company were responsible for heat-fusing all seven miles of the pipe in the field. The heat-fused joints in the HDPE pipe have zero leakage. No leaks means no waste, and no

waste means customers are paying only for the water that comes out of their faucets, not the water that leaks through a faulty joint.

"Every municipality (even small) allows budgets for leaks," says ECO Resources district manager for the El Paso plant. "And it's not just the leaks, but the material that's literally sucked and siphoned into the pipe through the cracks in other kinds of pipe. The pipe

no maintenance whatsoever. The down time is zero. Also, the flexibility is a benefit. When you run into something like an 8-inch-high pressure gas line, it can be touch-and-go when you are trying to fit water pipes around that. But the flexibility of the HDPE and the ability to perform the in-ground fusion makes the job easier and completed faster."

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doesn't come apart because the joints are actually stronger than the pipe itself."

Gilbert Zuniga, a contractor from Camino Contracting, Inc., based in Texas, was the job superintendent. He reported just three months to heat-fuse all seven miles of plastic tubing into one continuous 39,960-foot length of HDPE pipe.

"I like this pipe because maintenance is low," Zuniga says. "If the pieces are fused together properly, there's virtually

in the water supply. That will exceed the EPA requirements. In a reverse osmosis system, the goal is not to separate the pure water from the salt and other contaminants. When the natural osmotic flow is reversed, water from the salt solution is forced through a membrane in the opposite direction by application of pressure. Through this process, pure water can be produced by screening out the solids.

"Construction went smoothly," Goodrum reports. "What made things so quick and easy was that every one of our high-pressure tests with the HDPE pipe passed on the first go with no leakage. We have to provide state-compliant drinking water to our citizens, and this was the best way we could efficiently do that."

This project's plant was designed to process four million gallons of water per day (gpd) and is expandable to eight million gpd. 

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Background image courtesy of Endot Industries, Inc.

Just the Facts

- Location:** El Paso County Water Authority, El Paso, Texas
- Problem:** High rate of solidity in drinking water; reverse osmosis plant needed piping to get it up and running quickly.
- Solution:** High density polyethylene pipe to flow water to reverse osmosis system.
- Results:** Consumer cost-savings, zero leakage, clean water, no waste, low maintenance, zero down time.