HDPE PIPE PROTECTS PUBLIC WATER AND ENVIRONMENT

Beaumont Completes Innovative Installation of HDPE Pipe to Improve Water Treatment

BEAUMONT, TX -- The city of Beaumont, Texas recently faced the problem of preventing contamination of their raw water source while at the same time protecting the delicate environment of the wetlands that surround their water canal. City officials put on their creative, problem-solving hats and embraced offshore techniques to accomplish both objectives. The innovative operation is drawing attention from other parts of the country that have similar problems.

Beaumont draws its raw water from the Neches River and transports it in a canal system to their treatment facility. The canal system was developed many years ago and the levees that protect the canal from infiltration have eroded making intrusion from outside sources a problem. Of the many non-toxic contaminants, the largest concern comes from the runoff of wetlands along with saltwater contamination during the hurricane season. By eliminating these impurities, the treatment plant will not only function more efficiently, it will also dramatically lower its operating cost.

The main problem the city faced was trying to perform construction operations in federally protected wetlands. The remediation process can take months and the expense can be staggering. The levees cannot simply be built back up because for every acre of wetlands that is disturbed, seven other acres of land must be turned into wetlands.

The city’s water supply is taken from the Neches River above a dam that is being constructed that will act as a salt-water barrier. The dam will be equipped with gates that can be shut when a tidal surge situation occurs.

During a tidal surge, saltwater drifts up the Neches River and the raw water harvested by the city is brackish. The canal runs parallel to the river for about 12 miles and then travels through a pipeline under the river to a pump station. From the pump station, the water

Flexible HDPE pipe is floated up a canal in Beaumont prior to submersion and installation with minimal impact.
travels 13,000 feet down the canal that has the problem of eroded levees.

The decision was made to install a 48-inch high density polyethylene pipe (HDPE) DR 32.5 pipe and pump the raw water the last 13,000 feet from the pump station to the plant. The old canal system would provide the path the pipe will take so that there would be no digging required and the wetlands would not be disturbed.

Butt fusion is the process of using heat and pressure to connect polyethylene pipe end to end. The ends of the pipe are melted with a heater and after it has become molten, the pipe ends are pressed together and held until the melt cools. The resulting joint is stronger than the pipe resulting in no need to reinforce the joint.

As the pipe was being fused together, one-ton concrete weights were attached to the pipe at 8-foot intervals before being pushed out into the canal. The pipe was capped on the end so it floated in the water as it was being fed, one section at a time, into the canal toward the treatment plant. When all 13,000 feet of pipeline was completed, the cap was removed, the pipe filled with water and sank to the bottom of the 20-foot-deep canal.

“The canal made the process simple because we could operate the fusion machine

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from one location,” said Phelps. “We didn’t have to worry about clearing a right of way for the pipe or digging a trench or boring it in. We simply pushed it down the canal.”

The canal has been dredged to grade and after it was in place, a scuba diver inspected the line to make sure it was resting on the bottom properly. The technique for sinking the pipeline was developed for offshore pipeline construction. It has been used a few times for long freshwater crossings in the U. S.

PE has been the standard pipe for the gas industry in the U.S. for about 30 years and is finally taking a foothold in the water market. Reports from the U.S. Environmental Protection Agency estimate a need of $138 billion for water infrastructure repairs, just to meet regulations. Since HDPE does not rust, corrode or leak at the joints, many experts feel that HDPE is the best material to solve U.S. infrastructure problems.

“A lot of people have lobbied to try to keep HDPE out of the mainstream of water pipeline construction but it is unquestionably the pipe of the future,” said Phelps.