

# HDPE Pipe Plays Major Role In City's Sewer Expansion

by Jeff Griffin, Senior Editor



The city of Garland, TX, is in the process of a major sanitary sewer improvement program that will expand its capacity and improve conditions for this community of 230,000 located just northeast of Dallas.

The Duck Creek Interceptor and Transfer Line Project includes installation of 48-, 60- and 66-inch gravity pipe, a 48-inch transfer line, and an 8-inch sludge force main, said Brent Erickson, wastewater operations manager, Garland Water Utilities.

The new sewer lines link the city's Rowlett Wastewater Treatment Plant to the recently expanded Duck Creek Wastewater Treatment Plant.

"At build out, both plants had the capacity to process 40 million gallons per day (mgd)," said Erickson. "The Rowlett plant was landlocked and could not expand, so the decision was made to limit it to 24 mgd and transfer as much as 16 mgd to the Duck Creek WWTP."

Work on the \$59-plus million project consists of three phases that include placement of approximately 25,000 linear feet of 48-inch outside-diameter (OD) raw wastewater force main; 17,000 linear feet of 48-inch interceptor sewer; 15,500 feet of 60-inch interceptor sewer, 24,500 feet of 66-inch interceptor sewer and 65,000 feet of HDPE sludge force main.

## First time

Erickson said the project was the first time 48-inch HDPE had been used by the city.

"The HDPE pipe is an important component in the overall scope of the project," said Erickson. "HDPE was selected because the fused joints provide less potential for leaks. It also offers lower surge potential, flexibility and internal and external corrosion resistance. Twenty-five thousand feet of 48-inch HDPE was installed from the Rowlett WWTP to a junction box for gravity sewer. The other 17,000 feet of 48-inch pipe was Hobas pipe."

Oscar Renda Contracting, Roanoke, TX, is the general contractor. The supplier of the HDPE pipe, Gajeske Inc., Houston, was the subcontractor who fused the 48-inch HDPE pipe and 65,000 feet of 8-inch sludge force main HDPE pipe. The HDPE pipe used on the project was manufactured by Performance Pipe, a division of Chevron Phillips Chemical Co. The Hobas pipe was supplied by Houston-based Hobas Pipe USA.

Cut-and-cover construction is being used to install most of the pipe, said Erickson. Trench is being dug by two Caterpillar 383 excavators. Depths of trenches ranged from 7 to 25 feet.

Pipe routes were along the right-of-way of a busy divided street and through open space in a park. Soils contained a high concentration of clay. Because drought conditions during construction had lowered the lake water level, water did not enter the 7-foot-deep trenches so by-pass pumping was not necessary.

To limit disruption of traffic, boring was used at street intersections. Even so, Erickson said, excavation this extensive does interfere with normal surface activities, and was complicated by "rubber

neckers" attracted by the large equipment and activity.

Before being placed in the trench, joints of HDPE pipe were fused together in typical lengths ranging from 500 to 800 feet. Sections to be installed in high-traffic areas were limited to 100 feet due to water, sewer and other utility easements crossing the median.

To handle HDPE pipe fusing, Gajeske personnel were on site for eight months, said Larry Lisowski, account executive/engineer. A McElroy 1648 MegaMc fusion machine was used for the large pipe, with multiple fusion units for smaller-size pipe. To join two sections of pipe, the machine shears ends of each piece of pipe and holds them together with two large clamps. The ends to be fused are subject to 500 degrees of heat applied while 1,000 pounds of pressure is applied to each segment of pipe. Pipe must cool before being moved. The complete process takes about one hour, then a crawler pulls the fused section of pipe to position for placement in the trench. To save time on pipe installation, many pipe sections were fused prior to moving to the project site.

### Using experts

Erickson said the benefit of using the pipe supplier as a subcontractor for fusing the pipe is that the company has certified personnel with experience and the equipment to fuse the large-diameter HDPE pipe.

Lisowski said his firm is performing fusing services more frequently and is seeing water and sewer service providers specifying large-diameter HDPE pipe more often than in the past.

One unexpected problem was getting pipe through the tunnels under road intersections. The solution was to drill holes two feet from the ends of the pipe to be pulled through the tunnels. Nylon strapping was threaded through the holes and attached to a rope which was connected to a vehicle at the other end of the tunnel, and pulled through.

Erickson said work began on the project more than a year ago to accommodate a housing development to be constructed along the route. The remaining section started at the Rowlett WWTP in October 2007 and will connect to the gravity section in September 2008.

The city of Garland is a regional provider of sewer services for the cities of Garland, Sachse, Rowlett, Sunnyvale and small sections of Richardson and Dallas. The service area is 68,450 acres with an estimated population of 338,000 and 113,000 connections. The expansion to the interceptor and force

mains will handle system requirements to developed area build out, said Erickson.

### FOR MORE INFORMATION:

- HDPE supplier/fusion: Gajeske Inc., (713) 688-2728, gajeske.com
- HDPE pipe manufacturer: Performance Pipe, (800) 527-0662, performancepipe.com
- Fusion equipment: McElroy Manufacturing, (918) 836-8611, www.mcelroy.com
- Hobas pipe: Hobas Pipe USA, (800) 856-7473, www.hobaspipe.com
- Contractor: Oscar Renda Contracting, (817) 491-2703, oscarrendacontracting.com
- Excavation equipment: Caterpillar, (309) 675-1000, catrequests@cat.com