



LARGER SIZE CORRUGATED HDPE PIPE NOW BEING EVALUATED FOR ADDITION TO GEORGIA DOT PROJECTS

Downtown Drainage System Recently Upgraded
 Using 60-Inch Diameter Pipe

FORT VALLEY, Ga. -- The new storm water drainage system being installed here is using large diameter corrugated high-density polyethylene (HDPE) pipe to replace an old clay tile pipe system. According to the Plastics Pipe Institute, Inc. (PPI), this project represents the next step in the Georgia Department of Transportation's (GDOT) initial consideration of 60-inch diameter HDPE pipe for these types of projects. PPI is the major trade association representing all segments of the plastic pipe industry.

"The GDOT has long approved the use of corrugated HDPE pipe in smaller sizes up to 48 inches in diameter for culverts and under-road drainage systems," stated Tony Radoszewski, president of PPI. "Just as other state DOT's have done, Georgia has consistently been expanding the approval of HDPE pipe products. This growing momentum in confidence is due to the numerous independent industry studies and the successful long-term use of HDPE pipe."

Located southeast of Macon, Georgia and with a population of 9,700, Fort Valley embarked on rehabilitating its storm sewer system in September 2013. The \$8.5 million project consists of replacing the terra cotta pipe, curb and gutter, and sidewalk along SR 49 between SR 96 and the CSX Railroad. In addition, the drainage system extending from SR 49 to near College Street and the culvert near the intersection of SR 96 and US 341/SR 7 is also being replaced. The new roadway will be three 11-foot lanes with a 5-foot concrete sidewalk between East Church Street and SR 96 and two 12-foot lanes with variable width shoulders and 5-foot concrete sidewalk between the CSX railroad and East Church Street. The project is scheduled to be completed by the end of April 2014.

"This is the main road that goes right through the downtown of Fort Valley including city hall and the town square," explained Tom Barwick, P.E., vice president of Heath & Lineback Engineers (Marietta, Ga.) and who did

the system design, "so this pipeline is going right through the middle of town.

"Fort Valley badly needed drainage improvement," he continued. "The existing pipes couldn't handle the capacity and in some spots they were collapsing, undermining the streets. There were two parallel runs of clay pipe for storm water that were 24 inches in diameter each and right in the middle of the road. We designed a whole new system with better design values...we went to a five minute time of concentration from 10 minutes. The HDPE pipe fit that need and would be able to handle the additional flow criteria due to its size and hydraulics. HDPE pipe is a lot smoother and you can push more water through it than you could with concrete pipe. It's wonderful that this is the first time that it's been used in a GDOT project. We've used the smaller diameters for a number of years."



For the initial run, 1,180 linear feet of 60-inch diameter NFlow corrugated HDPE pipe from Southeast Culvert, Inc. (Winder, Ga.) was used. "In addition to the favorable flow rates and strength, the pipe also has the ability to stand up to a wide range of pH values," stated Dan Currence, P.E. director of engineering for the PPI's CPPA division. "In this area of Georgia the soil pH has been recorded as low as 3.40. This extremely acidic soil would negatively affect other pipe materials such as concrete and steel."



Burial depth of the pipe ranged from 10 to 20 feet along the pathway using GDOT Class II material for backfill and a graded aggregate bed. Properly installed corrugated HDPE pipe can withstand AASHTO HS-25 loads with at least one foot of cover for pipe 48-inches and smaller, or two feet of cover for larger diameter pipe. This allows for driveways, access roads, parking lots, and similar structures to be built above the system. The 60-inch pipe also meets the specifications of AASHTO M294 for dual-wall corrugated HDPE pipe. "Corrugated HDPE pipe is a flexible pipe system that performs well in both high cover and low cover applications," Currence stated. "Its unique ability to support and distribute live and dead load enables it to meet almost every installation condition."

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GDOT projects have been using corrugated HDPE pipe in sizes up to 48 inches for the past decade, according to the PPI. "During the past several years," commented PPI's Radoszewski, "the specification and use of dual wall corrugated HDPE pipe for storm water drainage has increased dramatically based on factors such as the pipe's strength, durability, joint integrity and long-term cost-effectiveness. High-density polyethylene is one of the most chemically inert of all plastics and therefore is extremely chemical and corrosion resistant. The pipe's life-cycle savings over alternative drainage systems are significant - users can expect a minimum service life of 100 years in many typical drainage applications. The soil and water tight joints mean that what's inside the pipe stays inside the pipe, and what's outside stays outside. This ensures that communities,

citizens, ground water supplies and wildlife are safer and more secure in their environment. These integral joints meet the stringent standards mandated by the EPA and comply with ASTM and AASHTO specifications."

The HDPE pipe material selection allowed for Fort Valley to minimize the inconveniences for travelers as well as local businesses. "There are a lot of businesses there," said Barwick, "and we told them that digging up the streets was a necessary evil, but they still didn't like it. Using the HDPE pipe, however, cut down the time of the installation. I can imagine that really helped them out with getting that it in and getting the streets back in action pretty quickly."

PPI technical bulletins along with the PPI Corrugated Polyethylene Pipe Design Manual and Installation Guide can be found at: www.plasticpipe.org.

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About PPI:

The Plastics Pipe Institute Inc. (PPI) is the major trade association representing all segments of the plastic pipe industry and is dedicated to promoting plastics as the material of choice for pipe applications. PPI is the premier technical, engineering and industry knowledge resource publishing data for use in development and design of plastic pipe systems. Additionally, PPI collaborates with industry organizations that set standards for manufacturing practices and installation methods.