



CONTROLLING K.C. STORMWATER RUNOFF

System at New Gas and Convenience Store
Also Helps Neighborhood

KANSAS CITY, Mo. – An underground system was installed at the QuikTrip® here to capture stormwater runoff not only from its own 1.7 acre site but also from the area around the convenience store and retail gasoline operation. In addition to being able to collect nearly 200,000 gallons of stormwater, the structure enabled the site to have more space for parking.

At this major road junction, the system gathers stormwater through curb inlets, catch basins, roof drains, and other inline drains to convey water from the commercial building and parking lot areas. It also captures considerable runoff from the row of stores behind it. This water is treated and stored within the system, slowly releasing over time into the existing city stormwater lines, so as not to tax the city's system.

Consisting of two units, one using 48-inch diameter corrugated high-density polyethylene (HDPE) pipe and the other using 60-inch diameter HDPE pipe from Prinsco, Inc. (Willmar, MN). Additional pipe ranging from six to 36 inches was also used adding up to a total of 2,381 feet of pipe. Originally specified as Corrugated Metal Pipe (CMP), the decision was made to use HDPE pipe because it could be fabricated to accommodate a variety of property features. More than half of the components for the jobsite were made with custom fabricated lengths, stubs, reducers, inspection ports, and risers that required no additional modifications on the job site. There

were 31 custom parts and a total of 115 parts designed and made by Prinsco for the job completed during the summer of 2017.



Kat Excavating, Inc. (Bates City, MO) was familiar with the benefits of corrugated HDPE pipe and proposed using it as an alternative solution specified in the plans. Justin Hibler, project manager for Kat Excavating stated, "We've worked with Prinsco before and knew that Prinsco's GOLDFLO WT® was the product we wanted to use on the QuikTrip project and was approved as an alternative to CMP. The corrugated HDPE allowed a safer work environment with no sharp edges or rough connections. The coupling options also allowed us to reduce the overall installation time by a third without sacrificing product integrity. The product goes together quickly and easily with the bell and spigot watertight joints."

"This detention system was designed within the tight project constraints around curb inlets, control structures, and access points while avoiding light poles," stated Dan Currence, P.E. director of engineering for the corrugated pipe division of the Plastics Pipe Institute, Inc. (PPI). "This system is perfectly positioned out of site under the parking lots and green spaces



with minimal cover of 12 to 18 inches. It also meets AASHTO H-25 loading requirements. And by meeting requirements set by ASTM and AASHTO, the Prinsco pipe is approved in many applications where CMP or Reinforced Concrete Pipe (RCP) is also specified." PPI is the major North American trade association representing all segments of the plastic pipe industry. Prinsco is a member company of PPI.



The large diameter HDPE pipe was offered as an alternative instead of CMP because it allowed easier coupling options, product functionality, and would not require any on-site alterations. Additionally, typical soil-tight CMP couplers utilize nuts and bolts to fasten the joint while HDPE pipe connections use a gasketed connection in the bell and spigot water tight joints. The manifold tees and 90 degree elbows were also easy to assemble onsite with Prinsco's GOLDLOCK Couplers.

At the Prinsco facility, each component was fabricated exactly to detail enabling the contractor to install the system quickly and easily.



"Prinsco's engineering team did a great job of drawing up and submitting shop drawings that matched my original drawing perfectly," stated Ronald Cowger, vice president, AGC Engineers, Inc. (Liberty City, MO). "Plus, Prinsco was able to deliver every part needed, from sticks to couplers, directly to the jobsite labeled to match the approved plans."

Corrugated HDPE pipe has notable corrosion and chemical resistance, making it ideal for projects looking for an expected 100-year service life. As roadways salts, gasoline, and oils from constant traffic and other harsh chemicals migrate with stormwater from the parking lot, the HDPE material will not be affected. Cowger added, "I feel like the GOLDFLO WT pipe and couplers will give QuikTrip a long lasting and dependable underground detention system."

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"This QuikTrip project is a prime example of using a variety of HDPE pipe capabilities to create two custom systems using the pipe's ability to adapt to a unique site plan and provide the desired end result," offered PPI's Currence. "The detention system encompasses many factors that are seen in a variety of different applications including traffic loading, fabricated fittings, and connecting to new and existing lines. Although the system will hide underground for its expected 100-year existence, its contribution to stormwater control for this area will live beyond a lifetime."

For additional information, go to the Plastics Pipe Institute's website at: www.plasticpipe.org.

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About PPI:

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