



## DETENTION SYSTEM PROVIDES STORM WATER CONTROL FOR NEW MULTI-STORY PARKING GARAGE

KANSAS CITY, Mo. - For a new four-story parking garage here, an underground storm water detention unit had to be constructed that could hold nearly 2,000 cubic feet of water in a system with a footprint smaller than 1,500 square feet. Putting it underground was necessary to control runoff and also practical because it made the best use of the available land. The system was built using more than 230 feet of large diameter corrugated high-density polyethylene (HDPE) pipe in a rectangular configuration.



Part of the restored Webster House, a popular downtown Kansas City boutique shopping plaza and dining attraction built as the Webster School in 1885, the garage with 180 spaces also provides additional parking for the nearby Kauffman Center for Performing Arts. Retail shops are on the bottom floor of the \$6 million project.

In 2013, the owners of Webster House developed a neighboring empty lot into a multi-story commercial parking garage that required a strategic underground storm water management solution.

"Customized detention systems can be demanding due to the need for extremely accurate design documents," explained Daniel Currence, P.E., director of engineering, CPPA Division, Plastics Pipe Institute, Inc. (PPI). "Manufacturers' application engineers can provide highly detailed, precise system drawings which can be used by the engineer for submittal. For this system, the Prinsco team provided the layout design for the system and for the fabricated components, which the contractor then used for installation. These design and construction documents ensured that the system not only met the needs of the project, but was built and installed correctly. Because of the very nature of HDPE pipe, the design can be customized to exacting requirements for a specific underground water management solution such as this one." PPI is the major trade association representing all segments of the plastic pipe industry.



**Webster House**



The system used 231 feet of 36-inch diameter watertight Prinsco GOLDFLO® HDPE pipe with three cleanouts to allow access for vacuum truck or waterjetting hoses to periodically clean the system.



Two, 24-inch diameter risers, which were fabricated at the Prinsco plant, provide for inspection either by a crew or video camera. Two inline drains were also installed. The 17-foot-wide trench was excavated in the native clay soil to a depth of five feet, five inches. The system was backfilled with one-inch diameter clean aggregate before the final native soil fill was placed over the system.

"For this project," offered Kevin Pinkowski, project engineer, BHC RHODES Civil Engineering (Overland Park, KS), "polyethylene pipe was a clear choice for a list of reasons including lightweight, ease of construction, readily available pipe segments and parts, longevity, ease of maintenance, and overall competitive cost. The location of the installed system in a corner of the excavated site made the ease of handling and

construction more prominent on the list of benefits."



The garage was built by Kansas City general contractor McCownGordon Construction LLC (Kansas City, MO) and took about nine months. Helix Architecture + Design Inc. (Kansas City, MO) did the design which utilized brick, glass and metal to closely match buildings in this area known as the Crossroads.

Additional information can be found at the PPI website: [www.plasticpipe.org](http://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.