

PENNSYLVANIA TURNPIKE COMMISSION ALONG WITH BFMA USES TRENCHLESS METHODS

Installation of new water main

Overview

The Pennsylvania Turnpike, which officially opened on October 1, 1940, featured new concepts of superhighway design and created a tolled thoroughfare through the heart of Pennsylvania. While planners predicted that 1.3 million vehicles would use the turnpike each year, actual early usage figures were in the 2.4 million vehicle range with as many as 10,000 vehicles per day being recorded at times. When the Pennsylvania Turnpike opened for business on October 1, 1940, stretched 160 miles between Carlisle and Irwin. By 2000, the original route was expanded to 514 miles and supported more than 156 million vehicles a year.

In recent years, the Pennsylvania Turnpike Commission (PTC) began work on an interchange improvement project at "Exit 13-Beaver Valley," near Beaver Falls, Pennsylvania. Grade adjustments associated with the interchange improvements drove the Beaver Falls Municipal Authority (BFMA) to relocate and lower an existing potable water main which crossed the Turnpike within the grade adjustment impact areas. Installing the new water line using open-cut construction methods was not permitted by the PTC. The proposed location of the PTC cut and fill slopes also ruled out jack and bore construction methods. This meant that installing a new water line crossing via horizontal directional drilling (HDD) methods was the most viable course of action.

"The Fusible PVC® was ideal to use in this application because of the long pull through the casing. There was no worry about a possible joint coming apart. Underground Solutions was great with their instructions on pipe handling and the challenges associated with pipe fusion during the pull-in operation."

Scott Kilgore, VP of Operations
H & H Enterprises

Pipeline Details and Project Summary

Project:	PA Turnpike SR 18 Crossing
Location:	Beaver Falls, Pennsylvania
Length and Pipe Size:	1,100 LF 10-inch DR 14
Pressure Test:	200 psi
Installation:	HDD
Owner:	PA Turnpike Commission & Beaver Falls Municipal Authority
Engineer:	Michael Baker International
Contractor:	Allison Park Contractors Inc. and H & H Enterprises

The crossing was completed by directional drilling a new 1100 LF 16-inch steel casing pipe under the road construction site and then inserting a new 10-inch DR 14 Fusible C-900® carrier pipe inside the installed casing.

HDD methods use a steerable boring technique to create the casing and carrier pipe alignment under the interchange. Drilling from one side to the other kept the work depths manageable at either end while allowing for 70 feet of depth for the alignment under the Turnpike. BFMA selected Fusible C-900® pipe as a corrosion and joint-free solution to avoid any future costly and difficult line work or maintenance.

PROJECT PROFILE: HDD INSTALLATION FUSIBLE C-900® | FUSIBLE C-905® | FPVC®



200 ft. sections of 10" DR-14 Fusible C-900® pipe are pre-fused and staged during the insertion, intermediate fusion joints are performed to join these lengths together as the pipe is pulled into the 16-inch steel casing



The north end of the 1,100 ft. long 16-inch casing pipe is set to receive the new 10-inch Fusible C-900® carrier pipe



H & H Enterprises places casing spacers on the 10-inch Fusible C-900® pipe as it is pulled into the 16-inch steel casing

Consulting Engineer Jim Culler with Michael Baker International mentioned, "With the high tensile strength of the Fusible PVC® pipe and joint, we felt very comfortable with the long-term capability of the product for this application. Though this was not the first or last Fusible PVC® pipe application for BFMA, it was the longest to date. The work was completed without any construction issues."

The general contractor for the PTC project was Allison Park Contractors, Inc. of Gibsonia, Pennsylvania. They contracted with H & H Enterprises, a specialized drilling firm with expertise in directional drilling long shots through dense rock formations based in Andover, Ohio, to perform the HDD work.

Underground Solutions, Inc. provides infrastructure technologies for water, wastewater and power cable conduit applications. Underground Solutions' Fusible PVC® pipe products, including Fusible C-900®, Fusible C-905® and FPVC®, utilize patented technology to produce a fused monolithic, fully-restrained, gasket-free, leak-free piping system ideal for trenchless (horizontal directional drilling, pipe bursting and sliplining) or conventional "open-cut" installations and are available in 4-inch to 36-inch diameters. The combination of standard fittings and lower weight with higher flow for a given pressure class versus other thermoplastic pipes ensures that Fusible PVC® pipe brings greater economy to most pipeline projects.



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