OVER 13,000 FEET OF 24-INCH PIPE INSTALLED USING HORIZONTAL DIRECTIONAL DRILLING

Minot, North Dakota utilizes trenchless Fusible PVC® pipe for a major water supply pipeline

Overview

The Sundre well field supplies Minot, North Dakota with two-thirds of its potable water supply. The fiberglass pipeline that previously conveyed this water for 40 years was nearing the end of its life. Additionally, the US Army Corps of Engineers planned on constructing levees in downtown Minot to prevent future flooding of the Mouse River. The existing line transected these yet to be constructed flood walls. The city asked Houston Engineering, Inc. out of Bismarck to review alternatives regarding the existing line and new options for the city's major water supply pipeline. The results of that effort determined that a new pipeline with a different alignment would cost much less than to try and piecemeal the existing line around the flood control project.

The new pipeline alignment went from the aquifer and well field through some very hilly terrain. The topography made open-cut installation not feasible in many areas. The total project required nearly eight miles of new 24-inch diameter pipe and one-third of this length needed to be installed using horizontal directional drilling (HDD) method. The project bid in the spring of 2017 and was estimated to cost $7.3 million. The bids received ranged from $7 million to $8.3 million. Wagner Construction was the low general contractor and was awarded the project. Wagner selected a local Minot company, CTI (Central Trenching, Inc.), who was later acquired by DRS Drilling, LLC, to perform the HDD work. The bores ranged from 100 feet to several in the 2,000- to 3,000-foot range.

Fusible PVC® pipe fusion set up to handle ever-changing weather conditions

Pipeline Details and Project Summary	
Project:	Sundre Raw Water Pipeline
Location:	Minot, North Dakota
Length and Pipe Size:	13,300 feet 24-inch DR18 Fusible PVC® pipe
Installation:	Horizontal directional drilling and cased crossings
Owner:	City of Minot
Engineer:	Houston Engineering, Inc
General Contractor:	Wagner Construction, Inc.
HDD Contractor:	DRS Drilling, LLC

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Fusible PVC® pipe has been used for more than a decade in Minot. The city was very comfortable with Fusible PVC® pipe, especially since the vast majority of their infrastructure is gasketed, bell-and-spigot PVC pressure pipe. Contractors were to bid on either a 24-inch DR18 Fusible PVC® pipe or a 30-inch DR9 high-density polyethylene (HDPE) pipe for the HDD portions of the project. Wagner selected Fusible PVC® pipe over HDPE for several reasons. The Fusible PVC® pipe option provided a lower installed cost. Because it has a significantly smaller outer diameter, it required a smaller borehole which includes less labor, materials and time to install. Also, Fusible PVC® pipe is almost half the weight of the HDPE section, has a higher safe pull force and the connections back to bell-and-spigot PVC pipe are straightforward.

Construction began in the summer of 2017 and the entire line passed pressure testing the following summer.

Fusible PVC® pipe ready for installation of a 3,000-foot HDD

Fusible PVC® pipe staged on hilly terrain

Horizontal directional drilling rig layout

Underground Solutions, Inc. provides infrastructure technologies for water, wastewater and power cable conduit applications. Underground Solutions' Fusible PVC® pipe products, including Fusible C-900® pipe and FPVC® pipe, 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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