FRISCO EXTENDS REUSE PIPELINE AND SEWAGE FORCE MAIN ALONG BUSY COMMERCIAL CORRIDOR USING FUSIBLE PVC® PIPE

Critical segments installed using horizontal directional drilling

Overview

Frisco is part of the growing Dallas-Fort Worth metroplex, located only 25 miles away from both Dallas Love Field and Dallas/Fort Worth International airports. Its location plays a large part in its growth - Frisco is one of the fastest-growing cities in the nation. In the 1990s, the northern Dallas-Fort Worth metroplex suburban development tide reached the northern border of Plano and spilled into Frisco. This marked the beginning of Frisco's tremendous growth. Frisco is home to significant corporate and entertainment entities, including the Dallas Cowboys, the Toyota Soccer Center, Toyota Stadium, Dr. Pepper Ballpark and it was recently named the future headquarters for the PGA. Rapid population growth coupled with recent drought conditions and limited overall water resource options intensified focus on water conservation efforts and infrastructure. Two recent projects utilized trenchless technologies next to a fully developed commercial area; the city's major thoroughfares were driven by these needs.

Thermal butt-fusion assembly of Fusible PVC® pipe

Pipeline Details and Project Summary	
Project:	Lebanon Road Improvements and Force Main
Location:	Frisco, Texas
Length and Pipe Size:	2,680 feet 20-inch DR18 Fusible C-900® PVC® pipe
Pressure Test Completed:	200 psi for two hours
Installation:	Horizontal directional drill
Owner:	City of Frisco
Engineer:	Freese & Nichols
Contractor:	Flowline Construction Inc.
Driller:	Dakota Directional Drilling

Pipeline Details and Project Summary	
Project:	Stewart Creek Water Reuse Pipeline
Location:	Frisco, Texas
Length and Pipe Size:	2,500 feet 12-inch DR18 Fusible C-900® PVC® pipe
Pressure Test Completed:	200 psi for two hours
Installation:	Horizontal directional drill
Owner:	City of Frisco
Engineer:	Freese & Nichols
Driller:	Dakota Directional Drilling

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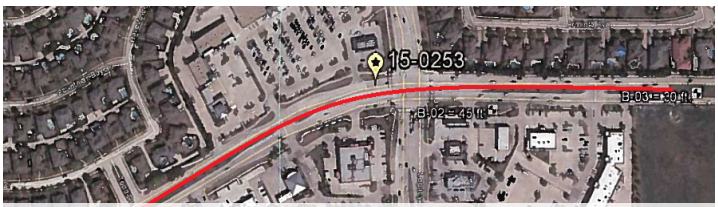
The first project was for a new reuse pipeline to convey treated effluent from Stewart Creek West Wastewater Treatment Plant (SCWWWTP). The design included a total of 10,000 feet of 12-inch reuse pipeline and a booster pump station. While most of the pipeline was installed by open trenching and conventional boring within the roadway median, one critical section of the alignment employed horizontal directional drilling (HDD) methods to bore 2,500 feet of the reuse pipeline under a busy intersection that could not be open-cut. Based on the reuse project's success, the city decided to install approximately 4,000 feet of 18-inch and 10,000 feet of 20-inch sanitary sewer force main along a similar alignment to convey raw sewage to the SCWWWTP. The second project required installation of a 2,680-foot portion of a 20-inch force main using HDD. Both installations required drilling and installation through hard rock formations along a compound curvilinear alignment.

Although other materials were evaluated, the project specified Fusible PVC® pipe for the HDD section of both the 12-inch reuse line and the 20-inch force main to match the characteristics in the rest of the system, which was made up of PVC pipe. Fusible PVC® pipe is compatible with all PVC piping systems and has the additional benefit of a low profile fused joint. Fusible PVC® pipe can be assembled into a single monolithic, fully restrained, gasketless piping system. The low profile fused joint, which reduces the friction during HDD pipe pull-in, coupled with the Fusible PVC® pipe's tensile strength, made it the material of choice for these long-pull trenchless installations.

Installation of buried infrastructure in an already developed corridor provides many challenges. The ability to utilize trenchless installation to mitigate overall impact was a highly effective way to solve the problem. The success of these projects were a result of solid planning, engineering and execution by all the parties involved. Constant communication between the owner, engineer and contractor allowed for seamless installations that minimized the overall impact to surrounding businesses and residents. Successful projects do not happen by mistake and the city of Frisco has been able to install two complex projects through a highly developed commercial corridor in the last couple of years. If the recent past is any indication of the future, they will be looking to trenchless installation methods to meet future utility demands going forward.

"We were very pleased with the coordination and construction of the Fusible PVC® pipe reuse line and force main. We were able to coordinate with local drilling contractors and the folks at Underground Solutions to plan, design and install two successful pipelines. Not only are we serving our community with these new facilities, but we were able to accomplish it with a cost reduction on the project. The assistance and coordination by Underground Solutions was a vital component to the success of the project."

Clayton Barnard, P.E., Design Engineer
Freese & Nichols



Horizontal directional drill alignment in plan

1) 2018 No Dig show, Palm Springs, CA
2) 2018 ASCE/UESI Pipelines show, Toronto, ON, Canada
3) 2019 UCT Conference, Fort Worth, TX

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Horizontal directional drilling rig

Fusion joining of Fusible PVC® pipe

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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