CASE STUDY

Canline pipeline solutions Ltd.

HDPE PIPELINE INSTALLATION

PROJECT OVERVIEW

INDUSTRY: Oil and Gas

PROJECT: HDPE Pipeline Installation, Fusion, and Pressure Test

PROJECT CRITERIA

The client approached Canline Pipeline Solutions to install, fuse, and pressure test a temporary, above ground, HDPE service pipeline located alongside an active railway, as well as oversee all aspects of project coordination. The purpose of this pipeline was for the transference of water to support upcoming drilling and hydraulic stimulation programs in the northern Panhandle field area in Brooke County, West Virginia, primarily between the Ohio River and the West Virginia/Pennsylvania border.

PROJECT CHALLENGES

The project coordination was complex, requiring engagement and collaboration with stakeholders, regulatory bodies, community members and construction partners. The pipeline route required traversing three existing railroad bridges, along the active railway. Additionally, positioning the pipeline so it remained stable next to the active railroad tracks was an arduous task. Challenging fluxtuations in temperature, made it difficult to establish consistent pressure during strength testing to confirm the pipeline's integrity. HDPE pipeline is black, which expands in hot temperatures, decreasing the pressure; this affects the ability to maximize the overt pressure required during a strength test.

PROJECT SNAPSHOT

Canline's expert HDPE and PVC team was required to oversee the complex project coordination and installation of a temporary water service pipeline.

TIMELINE OF PROJECT

Two months for completion of the approval process, fusion, on-site installation and pressure testing.

PIPELINE DETAILS

12" SDR 11 High Density Polyethylene Pipe with a maximum working pressure of 200 psig.

CASE STUDY

HOW THE CRITERIA WAS MET

Canline's HDPE and PVC technical team's expertise was relied upon early on during project planning to ensure the correct permits and insurance certificates were attained, local labour laws were understood, and positive relationships were built with stakeholders, regulatory bodies, construction partners and site crew. Canline stayed true to its commitment to hire local talent and utilize regional resources where possible. Companies with pipelines located near the worksite were informed of the project, providing reassurance that their pipeline integrity would not be jeopardized. Community engagement was prioritized so those affected by the pipeline installation in their own backyards received reliable and up-to-date communication. Initial on-site visits scheduled during Canline's pre-job coordination process helped determine the best approach to minimize the environmental impact and determined the equipment needed for all aspects of the job.

Other considerations such as train schedules, train trestles, private properties, active roads, land slopes, bend configurations and weather conditions were also revealed. A strict safe work program was initiated by Canline with training provided by a Track Safety Marshall. Daily safety meetings were conducted (Job Safety Analysis, Field Level Hazard Assessment, Tailgate Safety Talks), along with weekly safety reviews. Canline collaborated with the service railroad construction and maintenance company, energy service provider and the paving company to execute the project.

The pipe was mainly prefabricated in stringers at a workspace near by, allowing the pipe to be staged in advance of the stringer fusing (fabrication). The pipe was pulled into place with a truck mounted winch. Once in place, the pipe was fused together by accessing the fusion points off a railcar with a high rail mounted excavator and fusing machines. In most instances, the pipeline was laid on the surface at a minimum of 15-ft off the southern edge of the railroad track. 4-in diameter x 4-ft long pipe bollards were placed on the south side of the railroad track at intervals of no more than 100-ft along the route, to accommodate bends and prevent movement of the pipeline. Traversing the three existing railroad bridges along the pipeline route meant pipe supports needed to be attached to the existing railroad bridges' structural steel. 16" carrier pipe was installed to pull the 12" pipeline through the bridge crossings.

Horizontal Directional Drilling (HDD) was required to cross railroad tracks, which was outsourced to the primary underground construction contractor. This construction technique required drilling an underground tunnel in a designated area for pulling pipeline. 16" diameter bores with 12" HDPE pipe were slick pulled through the bores with drill string. The entire pipe length was prefused at each bore exit sight, hydrotesting the stringer prior to pulling. The pull back to the bore entry site with the drill string was completed in one continuous pull. Flanges were fused on each of the completed bore pulls to facilitate connection and future abandonment.

The residential paving company executed excavation and backfilling at 3 open cut crossing locations, which meant a trench was dug to lay the pipeline and then buried. As well, clearing, excavating, and backfilling entrance ways to access roads, pump pads and tank staging areas occurred.

Upon complete assembly of the entire pipeline, a charted hydrotest to 300 psig was performed on the pipeline to ensure integrity of the system. Canline conducted the hydrotest with a pre-approved hydrotest procedure. This was performed during optimal early morning hours to avoid the issues caused by temperature fluctuations, while still adhering to labour laws. A small amount of prefabricated piping and valving was installed to facilitate future operations of the pipeline.

Canline's knowledgeable team, dependable processes and systems, technology innovations, and proficient project management capabilities, were relied upon throughout this project. In all instances, their attention to detail and awareness of safety and quality assurance, helped mitigate unforeseen issues and resulted in the overall success of this project.