



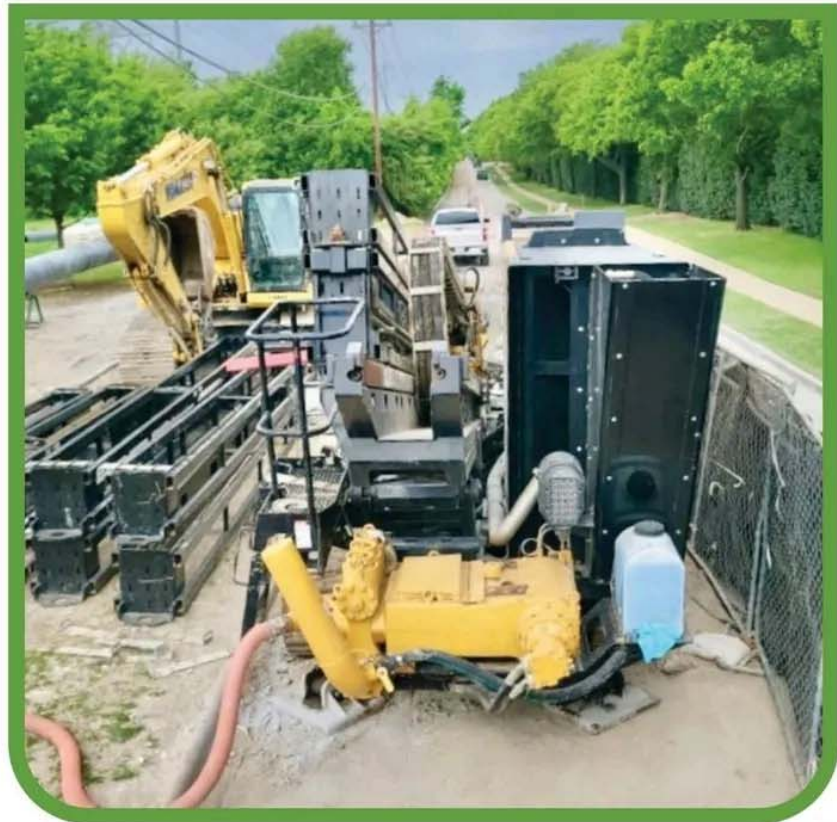
SPACE CONSTRAINTS: DRILLING IN PLANO, TEXAS

By John C. Wood

Recently, Lovelady Directional Drilling LLC undertook a project for the City of Plano, Texas, installing approximately 1,450 ft of 24-in. HDPE SDR 11 piping. This involved developing engineered plans tailored to the project's needs, ensuring the use of an appropriately sized drilling rig, and implementing meticulous safeguards for fluid handling, noise reduction, and bore accuracy

Founded in 2008 in Lufkin, Texas, Lovelady Directional Drilling has become a trusted provider of precision drilling solutions, serving industries ranging from oil and gas to utilities, renewables, and telecommunications. With a fleet of drills ranging from 40,000 to 100,000 lbs, the company delivers expert trenchless installation services across the continental U.S., adapting to all soil types.

General contractor Wilson Contracting awarded the project bid to Lovelady and then they collectively met with the City of Plano to address the aforementioned concerns. CCI Inc., located in Houston, Texas, was contacted to provide a bore specific plan that would put everyone's mind at ease regarding rig size and capability. Lovelady worked closely with CCI's Justin Taylor,



P.E., to engineer a plan that would not only succeed but also give a margin of error that would satisfy everyone. For noise cancellation we encircled all equipment with fencing and ECHO-BARRIER noise reduction matting to maintain the requested decibel level or below at all times. To provide adequate drilling mud management, a Tulsa Rig Iron MCS-355 reclaimer was utilized, as well as in-house 130BBL vacuum trailers for disposal.

Once all questions had been answered, the Lovelady crew mobilized and set up drilling operations. Because drilling space was key concern, Lovelady chose a Vermeer 100x140 for drilling. The product pipe would weight in at over 106,000 lbs, but if done exactly to plan this wouldn't be an issue. After reviewing the geotech reports, we knew we would need to run a mud motor and called Aaron Potter at Horizontal Technology Inc., located

in Hockley, Texas, which provided a proprietary “sonde” motor that allows utilization of a Digital Control Inc. DigiTrak sonde. Lovelady used a DigiTrak Falcon F5+ with 19-in. long range sonde because of depth and interference, due to being installed under a concrete road that included rebar for the entire length of the bore. The mud motor was fitted with a 6.25-in. PDC bit that cut through the shale like butter.

Lovelady piloted the drill string and waiting anxiously for the bit to breach the wall of the exit pit. After measuring and painting a bullseye on the exit pit wall, the crew watched as the bit emerged 2 in. above it, while the drill sat 1,450 ft away. This answered the city’s concern regarding the accuracy of the “walk over” method. The city inspector was more than pleased, not only was it dead on but had saved them a tremendous amount compared to others who had suggested it could only be accomplished via wire line. Now that the pilot bore was complete, we removed the motor and changed tooling to a fly cutter style reamer. Before beginning to ream, we had to move our reclaimer to the exit pit. Once it was set into place, we rolled out 1,500 ft of 4-in. fire hose to pump from the reclaimer back to the water truck with a 3,000-gallon holding tank to supply the drill. This set up worked great as we never had to shut down during reaming.

The crew stepped up ream passes from 12, 18, 24, 30, and finally 36 in. This process took two weeks to complete and drilling mud was hauled off once it exceeded 10 lbs. and fresh mud would be introduced. All drilling fluids for this job were provided by DCS Fluid Solutions out of Graham, Texas. Don White with DCS has worked with Lovelady for many years, providing drilling mud and additives. After all ream passes were complete, two swab passes were made with a 34-in. swab to guarantee a clean bore, free of all cuttings.

As a result of the previously noted space constraints, we weren’t able to pull the product pipe from the position we had drilled from but needed to move to the exit pit and pull from the entry side to the exit side. The space constraints further complicated pullback as there was only room to lay out 500-ft sections of pipe. This made for two long

breaks during pullback while the pipe was fused together. Once the equipment had all been put in place and rigged up for pullback, Lovelady hooked up to the product pipe and began installing it. The first 500-ft section pulled into place with ease and the crew proceeded to fill the pipe with water, as per the engineered plan. After flooding the pipe with water, we sat and waited as the pipe was fused to the next section.

Now for the moment of truth.

As the driller eased back on what was now 1,000 ft of 24 in., the pipe didn’t hesitate and slid toward the rig with zero resistance. Another 500 ft of pipe was installed with no issues. Lovelady repeated this process again, with flooding the entire pipe and fusion, and eased back on what was now 1,450 ft of 24-in. HDPE. With water weight and pipe weight combined it was in the neighborhood of 260,000 lbs. The bore hole was flawless, the driller was flawless, and the average pullback pressure during installation was 34,000 lbs. As the swab pulled into the exit pit, it was quickly followed by the pullhead and 24-in. HDPE.

Success!

Results

The Lovelady team couldn’t have been happier with the results, and that opinion was shared by the City of Plano, as well as the general contractor. This job demonstrated many things we as a contractor already knew but are often overlooked. First, do not try to cowboy it — Have a great plan and stick to it, having no plan is a recipe for disaster. Second, there are a lot of very experienced people with specific tooling that want you to succeed, do not be too proud to ask for help. And third, great crews make it look way too easy, and we have great crews. Once installed, I could tell the onlookers were thinking “dang, we could have done that.”

Special thanks go to CCI Inc. (engineering) – Justin Taylor, P.E.; 215 Consulting (survey) – Micheal Delaney, P.E.; Horizontal Technology (drilling motor and bit) – Aaron Potter; DCS Fluid Solutions (drilling fluids and additives) – Don White; and Wilson Contracting (general contractor) – Weldon Wilson.

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