

CASE STUDY

FLORIDA COMMUNITY ENHANCES FIRE PROTECTION WITH WATER MAIN UPGRADE VIA HDD USING CERTA-LOK®

When the Midway Water System near Gulf Breeze, Florida needed to upgrade the water main along Hickory Shores Boulevard to support fire services, they were presented with a choice between using the originally planned trench excavation method or the horizontal directional drilling (HDD) method proposed by contractor Evans Contracting Inc.

CHALLENGE

With a customer base of 8,119 connections, the Midway Water System planned to retrofit older neighborhoods they serve with larger, more modern water pipes to improve fire protection for property owners. Firefighters had previously experienced reduced water volumes that were insufficient to support their efforts when responding to emergency situations involving active fires. Evans Contracting's bid proposed the use of HDD as a more cost-effective solution to install the new pipeline rather than the proposed open cut method. The Midway engineers evaluated the proposal during the bidding process to determine if HDD was a suitable alternative to the original plan and ultimately selected Evans Contracting to carry out the project using the HDD method.



APPLICATION

Evans Contracting's bid proposed the use of HDD as a more cost-effective solution, which in addition to a cost savings, provided other benefits. The HDD method maintained roadway access as well as protection and preservation of the trees, lawns, driveways, and fences in the surrounding area. This was especially important for Hickory Shore Boulevard, an area bordered by a large body of water, East Bay, and lined with a natural landscape and waterfront homes. The suburban beach-town environment posed additional obstacles that had to be considered.

HDD installation techniques traditionally limit excavation to the area surrounding the entry and exit locations, and overall, the use of HDD allowed for a more efficient and environmentally-friendly installation of the fire protection line, while preserving the surrounding landscape and minimizing disruption to the community. The principal construction featured new 6-inch PVC water lines, 11 tapping sleeves and valves, 14 gate valves, 18 fire hydrants, and 13 road crossings with steel casings. For the HDD project, the product selected was 10,955 feet of 6-inch DR18 Certa-Lok® restrained joint integral bell (RJIB) PVC pipe.

SOLUTION

The new water main project started in November 2021. With the pilot hole drilled using a Vermeer D24X40, a reaming pass was made and the bore hole was ready to receive the 6-inch pipe selected for the water line. To begin the pullback process, an initial 20-foot length of pipe was attached to the puller head and drill stem. As the driller began pulling the pipe in, the contractor utilized the cartridge style

Application:
Potable Water

Project Type:
Horizontal Directional Drilling (HDD)

Owner:
Midway Water System Inc.

Product Used:
Certa-Lok® RJIB (C900)

Contractor:
Evans Contracting Inc.

Engineer:
Fabre, a Bowman Company

assembly method to join the Certa-Lok one stick at a time as the drilling continued. This process continued for the entire project length of 10,995 feet using multiple drill shots with a maximum drill length of 2500 feet. The upgrade to the water main system included installing the 6-inch fire protection line beside the existing 2-inch and 4-inch lines. A fire protection line is a dedicated pipe that carries a large volume of water specifically for firefighting; the line is installed in specific locations and connected to fire hydrants providing a reliable source of water with water volume and pressure guaranteed. The contractor seamlessly upgraded the existing water system by incorporating a 6-inch fire line integrated with the pre-existing infrastructure through a series of valves and connections. With the utility company monitoring the project, they noticed how efficiently the fire line was being installed and expanded the project to install more fire protection lines down other roads outside of the original plan. To handle the expanded project scope, the contractor skillfully processed several change orders, allowing installation and connection of more 6-inch pipes than originally planned.



Typically, a fire protection line is designed with a larger diameter pipe, compared to the drinking water distribution pipes, to handle higher water flow rates. The pipes are connected or 'looped' through a series of valves and control points allowing the fire department to isolate the fire protection line. The looped configuration of the pipe ensures a constant water pressure and flow even in the event of high water demand.

Certa-Lok C900 RJIB, manufactured by Westlake Pipe & Fittings, was well suited for the installation method selected by Evans Contracting. Certa-Lok joints can be assembled in less than 1 minute per joint and the cartridge-style assembly engages each joint as the pipe is in motion working seamlessly with pipe pullback operations; the pipe is ready to go into service immediately and can be installed by pulling or pushing the pipe. The cartridge-style assembly also offers a contained assembly area allowing the contractor to maintain the flow of traffic, with some residents not being aware that construction was taking place. The complete pipe length was successfully pulled in each of the project construction zones.

"It was very nice to see the project with thousands of feet of new water line being installed and most places the only visible work was a new fire hydrant," said Cecil Jernigan, engineer at Fabre, a Bowman Company.

Originally specified for a traditional open cut method, the owner, engineer, and contractor saw the cost savings by installing the long sections of pipe by HDD instead of open cut. HDD minimizes surface disruption and eliminates the need for excavation, reducing the amount of time, cost, and resources required for site excavation.

"There were no issues with the product," said Keith Chavis, construction manager at Evans Contracting Inc. "There was no concern pulling the pipe to the maximum drill length of 2500 feet, no issues at all." Chavis further explained, "Construction time was also decreased and we were able to install the runs in fewer hours with less equipment than traditional open-cut technologies".



With the success of the project, Midway Water System has asked Evans Contracting to continue improving fire protection systems in other surrounding roadways with the installation of another 6000-8000 feet of Certa-Lok water main via HDD.