

CASE STUDY

GIBSONTON SEPTIC-TO-SEWER CONVERSION PROJECT BENEFITS FROM TRENCHLESS CONSTRUCTION AND SEGMENTAL PVC

The Hillsborough County, Florida Water Resources Department launched a comprehensive wastewater service improvement project in the Gibsonton, Florida area, located about 10 miles from Tampa. The service initiative will connect businesses and property owners to safe, reliable, and environmentally responsible wastewater services, transitioning utility customers from septic systems to the county's centralized wastewater collection and treatment system. It will prove to be one of Florida's longest 16-in. segmental PVC installations by horizontal directional drilling (HDD).

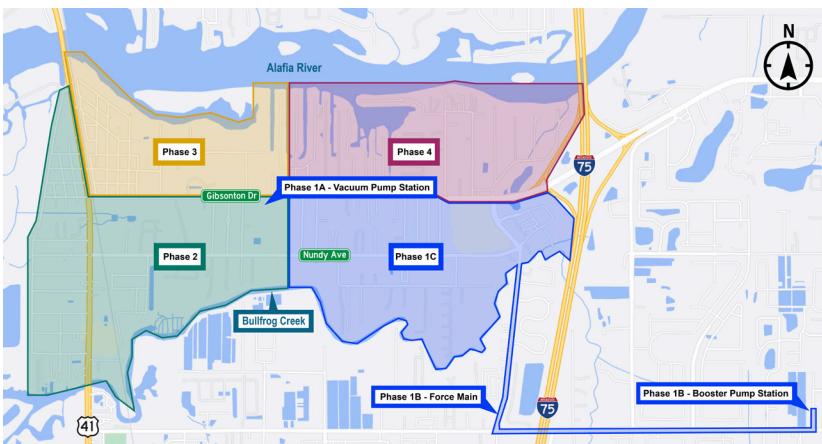
CHALLENGE

Known as the Gibsonton Septic-to-Sewer (S2S) Conversion Project, the effort is part of a countywide strategy to protect groundwater and enhance the quality of natural water systems by eliminating septic tanks and low-pressure sewer systems near Tampa Bay. The overall project, divided into six phases, includes the construction of new vacuum sewer pipelines, a new vacuum sewer pump station and effluent force main, a booster pump station, and replacement of water pipelines in the area. By modernizing wastewater and potable water infrastructure, the county aims to enhance services to support public health, economic development, and environmental stewardship in Gibsonton. The project improvements will enhance fire protection services and improve water quality by protecting local waterways—including the Alafia River, Bullfrog Creek, and Tampa Bay. This article will focus on Phase 1B, a force main connecting the new vacuum sewer pump station to a new inline booster pump station.

APPLICATION

The Phase 1B project involved installation of approximately 18,000 LF of primarily 12-in. and 16-in. PVC force main, including seven HDD bores totaling approximately 6,300 LF. The project corridor consisted of three two-lane county roadways: Nundy Avenue, East Bay Road, and Symmes Road. Key challenges included two Bullfrog Creek crossings near adjacent bridges, an overpass crossing of FDOT's I-75, and close proximity to dozens of high-mast electrical transmission poles. HDD was utilized primarily along Symmes Road, a major east-west connector roadway between US41 and US301.

This high-traffic roadway included a fairly narrow, varying-width right-of-way and significant utility congestion. HDD works well for space-constrained areas and allowed the contractor to install



Application:

Sewer Force Main

Installation Method:

Horizontal Directional Drilling (HDD)

Product Used:

16" AquaSpring® C900 Certa-Lok®
RJIB DR18

Owner:

Hillsborough County Water
Resources Department

Prime Consultant:

Wade Trim

Subconsultant (Phase 1b):
Hazen and Sawyer

Contractor:

Ric-Man Construction
Florida, Inc.

Driller:

Centerline Directional
Drilling Services, Inc.

Driller's EOR:

Diverse Engineering,
LLC

the pipelines with minimal impact to motorists, keeping two-way traffic open throughout construction. Unlike open-cut construction, which requires rolling lane closures, HDD uses stationary staging areas with lane shifts feasible at the drill entry and exits to reduce public disruption and enhance traffic safety. Symmes Road also features a significant number of intersections including many single-access neighborhoods. This meant that most of the HDD bores would not have the area available to stage long segments for pullback without costly provisions.



SOLUTION

The county has standardized PVC for HDD applications. Of the total seven HDD bores, five utilized Certa-Lok® PVC installed at a depth of 15 ft - 18 ft, while the other two HDDs utilized HDPE. The project was originally designed with 600 LF to 1000 LF Certa-Lok drills. However, during construction the contractor requested to combine two of these drills in order to increase efficiency and reduce traffic disruption. The planned 1540 LF HDD was modified on site by shifting the entry and exit points leading to the formation of a 1483.5 LF 16-in. diameter Certa-Lok PVC HDD, one of the longest segmental PVC drilled in this diameter in Florida. The owner/engineer agreed to the request, which included confirmation of pullback force calculations for the longer drill along with the indication that ballasting would be required.

The published maximum safe pullback force for 16-in. DR-18 Certa-Lok is 72,000 lb, which includes a base safety factor (SF) of 2.0. The longest drill had a calculated pullback force for the unballasted scenario of 69,000 lb. With ballasting, the calculated pullback force was reduced to 39,000 lb, which was well below the published maximum. The contractor utilized a Vermeer D60x90 drill rig, with a pullback capacity of 60,000 lb. The maximum recorded pullback force required during installation was 55,000 lb. The pullback was ballasted and was completed within nine hours.

Some of the project's Certa-Lok pullbacks were installed cartridge style with each pipe joint added to the pipe string sequentially during pullback. Where space allowed, multiple segments of Certa-Lok were staged in a longer pipe string, with intermediate joint assemblies occurring during pullback. Pullback for the longest drill included staging of four roughly 400 LF pre-assembled pipe segments, with

intermediate joint assembly during pullback. Ballasting was accomplished by pre-installing quick connect hoses within the pre-assembled pipe segments, with connections made prior to intermediate joint assemblies. Water from a metered fire hydrant was delivered into the end of the pulled segment, with the end of the hose located downhole of the overbend near the pipe entry. When pullback progress slowed excess water escaped the end of the pulled segment, allowing for confirmation that all downhole piping was ballasted.



In the Gibsonton S2S Phase 1B project, the strategic use of HDD with segmental PVC along congested and high-traffic corridors minimized disruptions to the community while ensuring the safe and efficient installation of critical force mains.

"This project demonstrates how trenchless construction can have significant benefits to the community," said Tyler Lirio, project manager of Ric-Man Construction Florida, Inc. "By

horizontal directional drilling with 16-inch C900 Certa-Lok PVC, we were able to successfully install a 1,483.5-linear-foot segment—one of the longest of its kind in Florida. Horizontal directional drilling with Certa-Lok pipe allowed us to minimize disruptions along heavily traveled roads, keep traffic moving, and safely complete a challenging installation. It's a great example of how innovative construction methods can minimize impact to the community while still delivering the necessary upgrades to our infrastructure."

The project successfully executed a 1483.5 LF, 16-in. diameter Certa-Lok PVC HDD segment. This was accomplished through proper planning and design along with coordination of ballasting and joint assembly logistics. All piping was installed comfortably below the manufacturer's recommended maximum safe pull force. As of August 2025, all HDD installations are complete, with open-cut piping and system tie-ins expected to be complete by the end of 2025. Upcoming projects in neighboring Florida counties are already underway with planning in progress to initiate HDD pulls of Certa-Lok as long as 2000 LF.