

Reclaimed Water Transmission Main - Caloosahatchee River Crossing

This project included a record-length horizontal directional drill (HDD) installation of a single 7,630-lf fusible PVC pipeline drilled across the Caloosahatchee River in Cape Coral, Florida, which is managed by the Army Corps of Engineers. The project had several unique challenges, which added complexity. These challenges included the intersection of the pilot holes utilizing a wireline steering tool, installation of telescoping steel conductor casings on both ends using a combination of pneumatic pipe rammer and rotating an inner casing using the drill rig for a total length of 360 lf of casing on each side to protect against inadvertent drilling fluid returns.

Project Owner: City of Cape Coral, Florida

Engineer: Bennett Trenchless Engineers

Contractors: Amici Engineering Contractors LLC with Centerline Directional Drilling Service Inc. and Brierley Associates

Manufacturers/Suppliers: TT Technologies, Underground Solutions, North America Wireline, IMDEX, Cacique Utilities, M&A Welding and Fabrication, Seismic Surveys and Acoustical Control LLC

Value of Trenchless Project (US\$): \$11,669,690.60



The project also included the fabrication of unique centralizer casings and cutter modifications to facilitate swift removal and reinstallation at the end of every ream pass and pipe pullback. Finally, the pipe assembly and pipe stringing along a residential roadway required carefully elevating the PVC pipe at a critical road intersection to allow for traffic to pass under the pipe string during pullback. The pipe string layout also included an on-grade horizontal curve at the pipe entry point and utilization of three intermediate welds during pullback to maintain access for Cape Coral's residents.

Why This Project Is Outstanding

This project combined the efforts of a stellar drilling and design team to execute the installation of this record-length HDD for any plastic material pipeline, specifi-

cally a 7,630-lf long HDD installation of 24-in. DR 18 fusible PVC reclaimed water transmission main, according to project officials. The project was designed by Bennett Trenchless to reach an approximate depth of 125 ft deep with conductor casings on either end to ensure minimal risk of hydrofracture through this clayey sand formation. The Amici/Centerline team, in coordination with Brierley Associates, proposed modifications to the telescoping conductor casings installations to facilitate installation and maintain the desired fluid containment.

On the execution side, the team of Amici Engineering Contractors LLC and Centerline Directional Drilling Service Inc. and its subcontractors executed the drilling of this bore flawlessly. From Amici installing the 54-in./48-in./20-in./16-in. telescoping casings to within 0.1 degrees of proposed grade and alignment

utilizing TT Technologies Pipe Rammer, to Centerline completing the 7,630-lf pilot bore via a wireline steering system tracked by North America Wireline to intersect within a 50-ft overlap length they flawlessly completed the pilot bore within eight days. Drill mud and cuttings were closely monitored by Centerline with the mud experts at Imdex to ensure the borehole was clean and ready for a steady pullback, resulting in no more than 75,000 lbs of average pullback force for the 36-hour pullback. Amici worked closely with the experts at Underground Solutions to ensure careful pipe assembly and handling through the vertical and horizontal curves along the roadway. Custom rollers and centralizing casings fabricated by M&A Welding & Fabrications worked perfectly with the cutters modified by Centerline to facilitate entry and exit from the casings.