

# Locating Is Key to Argentina Project

*Flowtex Servicios Urbanos S.A. rehabilitated a century-old port to 21st century standards using horizontal directional drilling*

by Siggie Finnsson

A little more than 6 miles (4 km) of century-old docks along the Rio de La Plata coastline near Buenos Aires, Argentina, were recently slated for major refurbishment that would turn dilapidated harbor sheds into a community consisting of luxury offices, condominiums, restaurants, and cinemas.

This high-profile project required several service networks to be installed, in particular the electrical power to conduct the refurbishment effort.

The scope of work was comprised of 16 parallel bores to house the special high-voltage dry cables, telemetry, and fiber optic communication cables in a narrow easement under a canal. Due to the temperature, dissipation constraints of these cables and the narrow easement, the separation between the cables required precise positioning. The line requirements called for the sixteen 19-in. (480-

mm) diameter bores to be placed about 6 ft (2 m) apart from one another (plus/minus 10 percent).

The length of each bore was specified at 578 ft (175 m) with a depth of 66 ft (20 m). The highly variable soil conditions further complicated this project because the tooling and product would have to pass through multiple layers of landfill, construction debris with sand, and very soft, sticky clay at the bottom-most strata.

Edesur, a private power distribution company, received the contract

to install the power lines under a very ambitious time schedule of 60 days. In October 1998, Edesur accepted a bid from FlowTex Servicios Urbanos S.A. proposing HDD as the construction method. Because HDD is fast and requires minimal surface disruptions, it was chosen over other proposed solutions, which included microtunneling and a gallery construction.

Due to the critical time schedule of



This project involved installing 16 parallel bores, each with a length of 578 ft (175 m) with a depth of 66 ft (20 m).

the project, FlowTex elected to use four HDS 12-ton rigs working concurrently. These machines have a pull force of 26,978 lbs (120 kN) and a torque rating of 3,171 ft-lbs (4,300 Nm). Due to the depth and the otherwise stringent accuracy requirements, FlowTex realized it would not be able to complete this project with its current locating system.

A steering tool was an option, but an expensive one. As a result, FlowTex contacted Digital Control Incorporated (DCI), based in Renton, Wash., and

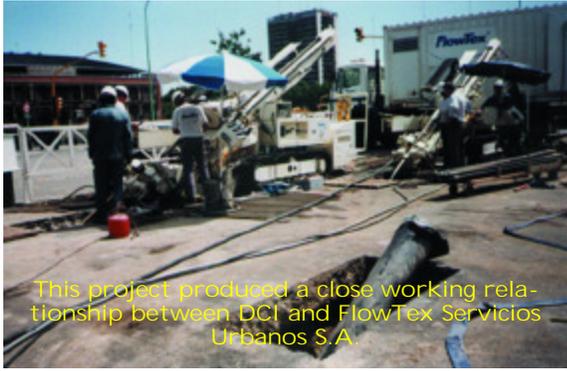
inquired about using the DigiTrak Mark 3 locating system. After reviewing the project requirements, DCI felt confident the DigiTrak Cable System would be more than adequate.

The specified depth range of this system was about 142 ft (43 m)—more than twice what would be required. As this would be the first time FlowTex used a DigiTrak system, DCI customer service manager Chris Weise agreed to travel to Buenos Aires to assist with training and start up of the project.

The FlowTex people, being familiar with steering systems (which give azimuth readings), were quite interested in seeing how a walkover system could successfully achieve the tight

alignment constraints. During a classroom session, Weise demonstrated the front and rear locate point concept. In essence, the DigiTrak locator allows operators to find points in front of and behind the drill head that determine the direction of the transmitter. Using this method, it is very easy to see the transmitter's alignment and to control the desired heading.

After the presentation, the FlowTex operators understood the concept, but the DigiTrak system still



needed to prove itself on the first pilot bore, which was to take place the following day.

After site preparations were complete, drilling began. Because of the time-saving potential, it was decided to try the first pilot bore using a battery-powered long-range transmitter. Since the planned depth (66 ft/20 m) was at the edge of this transmitter's range, it was decided it would be too risky to complete all the bores in this fashion.

However, the first bore was completed satisfactorily with this transmitter. All of the subsequent bores were completed with the cable transmitter. The strength of the cable transmitter's signal allowed for excellent directional control, and the fact the pitch and roll signal goes up the wire to the remote display made that information impervious to interference.

The FlowTex operators quickly became proficient with the DigiTrak cable system and all 16 of the bores were completed within the prescribed tolerances.

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FlowTex chose to utilize its four drill rigs in an assembly line fashion. The first rig would pilot hole, the second

would ream, the third would clean the bore, and the fourth pulled back the product pipe.

#### Conclusion

This particular project was challenging from both a locating as well as a logistical standpoint. On a particularly tight schedule, FlowTex was able—with detailed planning, careful equipment selection, and

very innovative use of its resources—to successfully complete the installation of more than 17,820 ft (5,400 m) of pipe laid in 16 parallel bores at depths of 66 ft (20 m).

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