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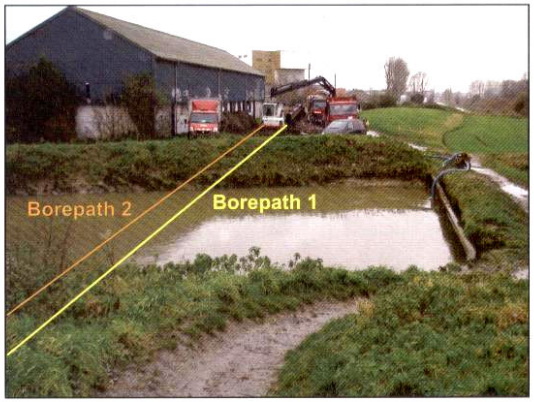
Eclipse® SST® System Gets the Job Done in Northern France

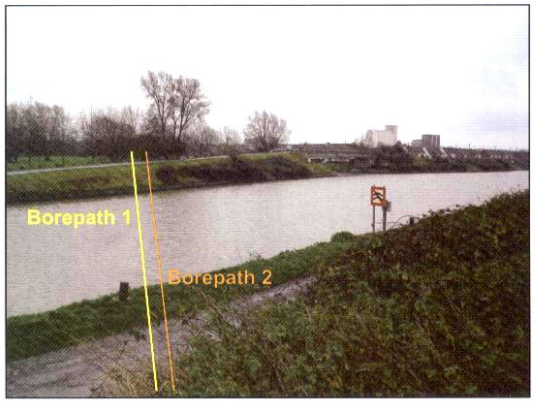
From the looks of the launch location on the other side of this small waterway, this crossing doesn't appear to be much of a challenge for an experienced horizontal directional drilling (HDD) company. The challenges that we do not see in this photograph, however, include the many different interference sources that these drillers actually faced on this job in the north of France.



Launch site for two-bore installation across two waterways

The installations would not only cross under two rivers with banks reinforced by steel pilings, but a portion of the bores was also adjacent to an energized rail line. In addition, a short but critical portion of the bore ran next to a steel building.

Couquart Forage Dirige, a family-owned and operated French drilling company that has been in the HDD business for 6 years, was selected for this project. The scope of work called for installing two parallel HDPE pipes—one for fresh water and one for waste water.



Exit site located across river (this photo was taken from the same location as in the above photo but facing in the opposite direction)

The pipes were 16 in. (406 mm) in diameter with lengths of 722 ft and 656 ft (220 m and 200 m, respectively), and they were to be installed at depths of 46 ft (14 m) while maintaining a separation of 5 ft (1.5 m)

Given the interference issues and the two rivers to cross, a walkover locating system did not seem like the best choice. Couquart opted to use their Eclipse® SST® system. This short steering tool is a magnetic guidance system that uses a magnetometer to determine the precise heading of the tool as well as its lateral position without the need for walking over the tool. All of the tool's data, including the position, are transmitted up a wire inside the drill string to both a driller's console and a laptop computer. Using this information, it is possible to guide the tool along the borepath without leaving the rig.

Because of the magnetometer inside the SST®

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transmitter, a special non-magnetic (non-mag) housing is required. Couquart used a Brewis 4-¾ in. (120 mm) housing plus a 15-ft (5-m) piece of non-mag drill pipe, often called a monel, before threading onto their drill string. Since the geology consisted of a soft sandstone overlaid by a meter of thick gravel with soft clay on the top, Couquart was able to thread a non-mag drilling tool directly onto the non-mag housing.

The SST® system uses a wire inside the drill string to do two things: power the transmitter and transmit data back up the wire to the drill rig. As anyone who has completed a wireline job knows, making butt splices and heat shrinks for every rod can be extremely labor-intensive. Couquart is no stranger to this aspect of wirelining, and not long ago they invested in DCI's CableLink® wire connection system. The CableLink® system eliminates the splicing process, because the drill pipes already have the wire permanently installed.

Installing non-mag housing, containing SST® transmitter, and monel on tool

The drilling commenced after the crew established the reference heading of the first shot and planned the profile so that they knew the pitch and depth of each rod. Using the SST® system's laptop, the crew was able to compare the planned profile against the actual profile as they drilled. Not only that, they were able to view the left/right deviation to ensure that they stayed within their easement.

After the first shot's pilot hole was completed, the 16 in. (406 mm) HDPE pipe was pulled in without incident. Then the crew set up their Vermeer D50x100 to shoot the second bore approximately 5 ft (1.5 m) to the right of the first shot.

In the end, Couquart faced only nominal setbacks due to ground conditions, which caused some difficulty in maintaining the trajectory. But, Couquart successfully completed the installation of the two pipes, and the French water company had the new waste water and fresh water pipes ready for hookup!