



by Jeff Griffin ■ Senior Editor

## Contractor's Unique Trenching Process Speeds Remediation Projects

A small Michigan company has quietly developed specialized trenching equipment and service for several highly-specialized types of construction, primarily on environmental projects.

DeWind One-Pass Trenching Zeeland, MI, uses exclusive technology for the control and remediation of contaminated ground water to install groundwater extraction and collection systems, air sparging and for the construction of slurry walls, permeable reactive barriers and HDPE barriers.

The key to the DeWind process is a one-of-a-kind trencher built to the company's design and manufactured in Michigan using standard and proprietary components. The trencher is not for sale – company crews perform services for clients using the fleet of the DeWind One-Pass trenchers, says company owner Greg DeWind.

A 200,000-pound DeWind trencher looks similar to an excavator of comparable size with a long digging chain component mounted on the boom. It can cut trench from 12-to-36 inches wide to depths of 50 feet. DeWind says typical installations are from 15 to 35 feet below grade.

"The DeWind One-Pass system," he continues, "allows us to excavate, install and backfill simultaneously, significantly reducing time and costs while providing a much safer process where workers are never exposed to the hazards of open excavations or confined space. It also eliminates any need to remove and/or remediate contaminated groundwater and greatly reduces the soil cuttings generated."



Even though the one-pass trenchers have been in service since 1991, the machine, its capabilities and the services the company provides are largely unknown in construction circles – except among environmental engineers and their clients – many of them government agencies.

### One-Pass process

In describing the trenching process used to install horizontal remediation well screen, DeWind explained that the cutting boom excavates a trench by rotating the cutting chain until the boom has cut into a vertical position relative to the ground surface. The HDPE pipe or SDR-11 horizontal well screen is released and the trencher begins moving forward while simultaneously cutting the trench, installing pipe or screen and stone backfill.

A laser-guided system allows precise depth-control during installation. Horizontal pipes can be installed on grade as necessary, to depths of 35 feet. While the trencher performs the excavation and installation of the screen, backfill material is fed into a hopper that supplies the custom delivery system, which also serves to stabilize the sides of the narrow cut trench.

The backfill material is placed from approximately 6 inches below the horizontal pipe, up to near ground surface. The delivery system allows the operator to control the height or the sand or gravel.

The process continues for the length of the installation. The HDPE screen is converted to a solid section of HDPE pipe that is installed through the delivery system as the boom is lifted out of the ground. This provides a second access port to the horizontal well system.

Other environmental applications include:

- Installation of subsurface low-permeability soil-bentonite walls to restrict migration of contaminated groundwater. The digging chain homogenizes soils while the machine simultaneously injects bentonite slurry to create the barrier;
- Permeable reactive walls of various thicknesses can be installed in one pass and can be completed without shoring and dewatering; and
- HDPE barrier wall installation involves vertically unrolling sheets of HDPE behind the trenching machine as trench is dug. Multiple rolls of HDPE can be joined to create walls of any length.

### **Fast and efficient**

DeWind says that because the one-pass trencher excavates only the amount of soil required to make an installation, it often is the fastest and most cost-effective method of construction for many applications.

"Our installation rates," he says, "can accomplish in two days what conventional trenching would require more than two weeks to do."

"Traditional trenching involves a complicated, time-consuming and expensive process," he explained. "For example, to install a 300-foot-long collection trench 35 feet below the surface, it first would be necessary to drive in steel marine sheeting on each side of the trench location, probably at a minimum of 36 inches apart.

"Next, deep wells would be installed to dewater the area so you could excavate. Any contaminated water would have to be remediated so it would also be necessary to excavate a treatment lagoon for discharge storage before remediation.

"Once the ground was sufficiently dry to accommodate excavation, a trench would be dug out between the sheet metal walls, and the soil would have to be remediated. Any cuttings generated would have to be transported and treated.

Installation of such a system using traditional open-excavation trenching methods could take five times as long to complete and would cost at least four times as much as utilizing the DeWind One-Pass Trenching system. In addition, the conventional process could expose workers to a number of potential safety hazards."

DeWind says installation rates for flexible, slotted HDPE pipe range from 1,500 to 5,000 feet per day. For slurry walls, permeable reactive walls, and collection trenches the rate is 300 to 500 linear feet per day.

In addition to environmental applications, one-pass trenching equipment can be used for a variety of general construction applications, including dewatering, installing flexible pipe irrigation supply lines, soil stabilization and other purposes.

DeWind designed and developed the One-Pass trenching equipment and process.

"Our company started out in 1984 as a well repair and dewatering company," says DeWind. "We became aware of how trenchers were being used for construction dewatering and about the excavations required for environmental remediation. We did a few remediation jobs, and began to

design and build a trencher and the process specifically for these applications. This ultimately evolved into the DeWind One-Pass Trencher."

### *FOR MORE INFORMATION:*

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