

# Safety First: Proper Operation of

**S**afety is everyone's responsibility. In the construction industry, machine operators need not only worry about injuring themselves, but also damaging utilities that might affect the public. Trenchless projects must deal with buried and hidden utilities every day.

As a result, safety is constantly on the mind of good contractors in the trench-

less marketplace. A good example is horizontal directional drilling (HDD), which utilizes many types of precautionary practices to find and locate underground utilities that might be in a bore path. One method of locating lines that is increasing in popularity is vacuum excavation.

But even vacuum excavation has its hazards. If not used properly, it can damage a utility or worse. So two directional

drilling manufacturers, Ditch Witch and Vermeer Mfg., who are now putting out their own lines of vacuum excavation equipment to complement their HDD production efforts, are giving potential buyers a little advice on keeping safe while operating their hydro vacuum excavation units.

Ditch Witch, based in Perry, Okla., recently released its FX30 Vacuum Excavation System. The company's No. 1 concern when training crews that purchase one of their machines is: Know what you are excavating.

"It's best to know what you are locating and the materials that surround it — the conduit or sheathing of a cable. You want to make sure that the pressure you use doesn't cause damage to the utility," explained Mike Lumbers, product manager in trenchless fluid management systems for Ditch Witch. "You can hold a test run on the piece of material to make sure that the pressure doesn't cut it. The pressure can often get high enough to damage the sheathing."

Lumbers suggests buying the exact same material and performing an above-ground test in order to confirm the pressure at which to locate certain utilities. Ditch Witch's hydro systems run at a 3,000 psi, but have a variable control to adjust pressure.

The company's units come with two notable safety aspects: 1) an emergency stop, and 2) a traffic safety light. The emergency stop is installed in every unit and can shut down the unit immediately for any reason whatsoever. The company's safety light emanates an amber glow to let passers-by know that the unit is working. These are things customers would learn in Ditch Witch's equipment training courses that accompany the purchase of a unit.

"We have courses that take (customers) over the complete operation of the unit. We show them the controls, how to work in traffic or congested areas, how to set up cones and tape and the apparel needed to be worn," Lumbers said.

As far as safety gear for crews, Lumbers suggests safety glasses, a hard hat, orange vest and dielectric boots and gloves for anyone operating the machine.

That need for dielectric boots and gloves was emphasized by Vermeer production specialist Tony Bokhoven. When using a water-based vacuum excavation unit like the ones Vermeer and Ditch

# Vacuum Excavation Equipment

Witch both manufacture, operators must be aware of the dangers of electricity.

"If you're on top of a power cable and you're running water pressure that can cut casing on a power cable, there is a chance you could receive an electric shock unless you are properly using the necessary dielectric gloves and boots," said Bokhoven.

Vermeer, based in Pella, Iowa, has approached the problem of using too much pressure on a utility in their own fashion. The company's Evacuator vacuum system line was designed to spray at 1,000 psi only, to ensure that crews don't have the need to adjust the stream's psi and hurt the utility. "Because if you even scuff the casing, you've got to replace it," stated Bokhoven. Also included are three different stationary nozzles which are sized to spray at 1,000 psi each. The nozzles are a way of regulating the pressure of the spray and the quality of the excavation.

Vermeer also gives instruction on how to use the potholing tool. "As you approach the utility when potholing with a tool with stationary nozzles, you want to be continually oscillating the tool so the water jet doesn't dwell at one spot on the cable. Everybody runs their tools a little differently and that's how we instruct customers to run ours," explained Bokhoven.

These tips and other safety information are given to customers when they purchase a Vermeer vacuum system. Buyers learn how to set up the unit, transport it, tear it down, properly use the tools and get the best performance out of the unit. "But

it's a pretty easy machine to operate," Bokhoven said.

But one of the most important things is making sure you have a heavy enough trailer, he added. Depending on what you're vacuuming and hauling, some spoils, like a full tank of sand, might exceed the trailer's weight limit and that can cause trouble.

Keith Gribbins is assistant editor of *Trenchless Technology*.

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