RISK OF HDD EXCAVATION: CROSS BORES

By: Dan Lucarelli, Pennsylvania One Call System, Inc.

CROSS BORE: An intersection of one underground utility or structure by a second utility resulting in a direct contact between the utilities.

A cross bore compromises the structural integrity of either the utility or the underground structure, and is created when a utility is mistakenly and unknowingly installed to pierce or pass through another utility, e.g., when a gas or electric line installed by mini-HDD, impact moling or plowing ends up passing through an existing sewer lateral.

Although HDD excavation to install underground utilities has many advantages (cost, installation time, reduced need to restore area to its original state), there are dangers. One danger is a cross bore: when an installed utility compromises the integrity of a second and existing utility within the area of excavation. The above photo depicts a sewer lateral compromised with the installation of a natural gas service line that was installed with HDD equipment and techniques. (Check this video link: https://vimeo.com/129108501)

The danger in the installation depicted may not be in the compromised sewer lateral. The sewer lateral appears as if it will still function. The real danger is not today, but tomorrow or next week or 5 years from now, when the sewer lateral eventually becomes clogged and needs to be cleaned.

The plumber who cleans this sewer lateral will typically use a rotating cutting tool snaked through the sewer lateral, to cut or grind through the blockage. The cutting tool can easily cut through a plastic gas line compromising its integrity, causing the escape of natural gas. Because natural gas is lighter than air, it will migrate upwards, or back into the house. The accumulation of natural gas in the house can be catastrophic when it finds an ignition point, such as a water heater pilot light or a light switch.

Prevention

Prevention of a cross bore during the installation of new underground facilities via HDD technologies is critical, and mostly involves common sense planning, observation and practices.

1. **Call 811 in advance of your excavation.** State and federal laws obligate excavators to notify underground utility companies of their intent to excavate. The national 8-1-1 three digit number is reserved for this use. Laws vary, but in general excavators are obligated to place an excavation notification 48 hours (Washington DC), two days (West Virginia), two business days (Delaware, Maryland, Virginia) or three business days (Pennsylvania and New Jersey) in advance of the start of work.

2. **Identify every facility near or across the proposed excavation path.** With the work site marked, every utility and service lateral must be identified and accounted for. HDD excavation does not follow an exact planned path, and it is critical to know what's below, above, around and across the proposed excavation path in the event the cutter head deviates from plan. Facility owners are a resource during the identification process – helping an excavator avoid damage is always safer and less expensive than repairing a damaged facility.

3. **Expose every facility near or across the proposed excavation path.** Vacuum excavation and hand digging (potholing) are used to expose every facility that may cross or is near the proposed excavation path. Without exposing the facility, the excavator will not be able to visually confirm that the new installed facility does not compromise an existing facility in the ground. Some facility owners may insist on having a representative onsite during the planning and excavation, to ensure their facilities are not damaged and that backfilling occurs according to their specifications.

4. **Adjust the plan as necessary.** The path or depth may need to be adjusted based on the location and depth of existing facilities

within the planned excavation path. Some facility owners may have clearance minimums between their facility and anything installed in the right of way near their facilities. When in doubt, a telephone call or face-to-face meeting with the facility owner is prudent.

5. **Use a spotter.** When the actual excavation takes place, a spotter should be used when the cutting head is anywhere near an existing facility. Visually check the drill head as it passes through potholes, entrances and exit pits.. The spotter should be empowered to halt the excavation at any time.

6. **Inspect existing underground facilities.** After excavation is complete and the new facility is installed, inspect the existing facilities before backfilling. If any facilities have been damaged (such as a nick, or a hole, or a crack, or a cross bore), the appropriate facility owner must be contacted for inspection and repair before backfilling is completed.

Resources

There are a variety of resources available to assist excavators in learning how to safely use HDD excavation equipment in the installation of new underground facilities:

HDD Consortium, "Horizontal Directional Drilling Good Practices Guidelines", ISBN 1-928984-13-4. This guide covers all aspects of Horizontal Directional Drilling, and is incorporated by reference in the PA One Call law. The third edition is available at https://www.nastt.org/products/13.

"Guidelines for Use of Mini-Horizontal Directional Drilling for Placement of High Density Polyethylene Pipe", Dr. Larry Slavin, The Plastics Pipe Institute. https://plasticpipe.org/pdf/tr-46-hdd-guidelines.pdf.

The **Mid Atlantic Society for Trenchless Technology (MASTT)** conducts seminars on trenchless technology. For a list of seminar locations, dates and cost, please see http://www.mastt.org.

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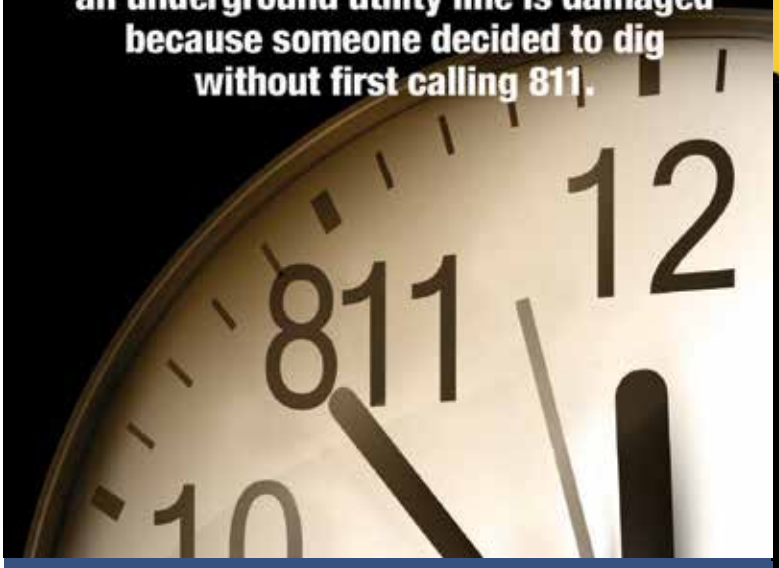
Every 6 minutes

an underground utility line is damaged because someone decided to dig without first calling 811.



Reduce

the chance of causing a damage to less than

1%

when you call 811 before digging.

Don't be a statistic. Call 811 before digging.

45 percent of American homeowners who plan to dig this year said in a recent survey that they would NOT call 811 beforehand, putting themselves and their communities at risk.

There's more than one football field's length of buried utilities for every man, woman and child in the U.S.

There are more than 100 billion feet of underground utilities in the United States, according to data compiled by CGA from various industry groups.

811®

Know what's below. Call before you dig.