

The Key(hole) to Damage Prevention

BY MARSHALL POLLOCK

Knowing what is underground is an important first step in "Damage Prevention." Buried underground in Canada and the United States is a complex maze of more than 20 million miles of pipes and cables, much of which has never been accurately mapped or recorded. Some of this infrastructure was installed years ago when as-built drawings, if any existed, referred to surface features that have long since disappeared. As that buried infrastructure outlives its useful life and needs to be repaired or replaced with new communications lines, fibre-optic cables, or petroleum, natural gas, electricity, water and sewer lines, public safety issues arise as to how that legacy infrastructure can be located and accurately identified in order to avoid an excavation mishap that could result in significant damage, interruption of service, negative impact on the environment, serious injury and even death to workers or the public.

According to the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA), excavation damage continues to be a leading cause of all U.S. pipeline failures and is the single greatest threat to the safety, reliability and integrity of the natural gas distribution system. Despite PHMSA's strong efforts to reduce this damage, excavation activities accounted for more than 25% of fatalities resulting from pipeline failures in the U.S. between 2002 and 2011. Between 2010 and 2012, in addition to hundreds of millions in property losses, 21 people died and 145 suffered serious injury as a result of third party damage to pipelines.

Organizations like the Common Ground Alliance (CGA) do a great job of getting the message out to various stakeholders. These grass root organizations have grown over the past number of years, and have had an important influence on utilities and their contractors as well as federal, state and provincial legislatures and municipalities that are responsible for mandating and enforcing laws that establish and enforce safe excavation practices.

In fact, recent efforts of the CGA have resulted in almost universal coverage of "Call Before Your Dig" laws that require all utilities to belong to a state or provincial One Call system. Similarly, these 811 initiatives have seen excellent success in getting contractors and utilities to call before they dig. Those efforts have certainly contributed to a decrease in third party damage over the years.

An analysis of the latest data from the Damage Information Reporting Tool (DIRT), implemented by CGA to assess the effectiveness of these damage prevention efforts, confirms that when a call is made to the One Call center prior to excavation, 99% of the time there will be no damage. This suggests that the One Call system is working and that contractors and developers understand the importance of the need to call. But even with this marked advance in damage prevention awareness, there still seems to be a problem in getting locates that sufficiently verify the location of a buried facility to establish a safe zone where excavation can occur, and there still is a significant need for better and

safer excavation practices.

The most chilling number in the locating data is that 61% of the incidents, where the root cause of the damage was attributed to poor or inadequate locating, did have visible location markings, but those markings proved to be incorrect. This suggests that a requirement to actually expose and visually observe the buried infrastructure before excavation, as is the case with directional drilling in an number of jurisdictions, may be a better and safer practice to observe.

On the excavation side, the data shows that poor or insufficient excavation practices continue to be the largest root cause of underground excavation damage, accounting for 41% of the reported incidents.

While everyone agrees that getting a line marked on the surface indicating the approximate location of a buried utility has been made easier and more efficient by the coordinated efforts of the CGA, there is a growing recognition that the only sure way to avoid this kind of damage would be a requirement to safely expose and visually observe potential conflicts before commencing excavation.

The best place to start on this would be with trenchless procedures, like horizontal directional drilling, where "drilling blind" is already prohibited in several jurisdictions.

Trenchless technologies are here to stay. When trenchless methods are compared to open trenching, the winner is clear. Trenchless proce-

dures result in less disruption to the public and traffic flow. Environmental impact is also reduced as there is no need to haul excavation spoils to the dump. Because there are fewer pieces of equipment on site, carbon and other emissions to the atmosphere are significantly lower. Pavement restoration costs are minimal. All in all, for the right application, going trenchless results in a more convenient, cleaner job with faster results and lower costs to the utility and the contractor.

But when the appropriate precautions are not taken and those HDD rigs start drilling into unseen gas lines or piercing sewer laterals creating ticking time bombs known as "cross bores", one can safely assume there will be questions from the utilities, the municipalities and the public as to the actual advantages of trenchless technologies when people's lives are put at risk.

So, what would happen if every state followed the lead of some others and mandated that where a drill shot was expected to pass over or under a utility on route, that utility needed to be exposed and safe passage of the drill observed? And what if every utility and contractor embraced this approach and spot located every utility in the line of its bore?

Your answer might be, "If that is to be the case, why not return to open trenching, as this is no longer a trenchless procedure?" However, that does not have to be the case. With the advent of keyhole coring and core reinstatement 15 years ago, as a companion to vacuum excavation, you can "have your cake and eat it too."

VACUUM EXCAVATION



18-inch diameter keyhole core reinstated into pavement as a permanent repair.



HDD drill rod penetrates fibre-optic cable.



2-inch HDPE gas distribution line (yellow) cross-bored through sewer lateral.



Minicor skid-steer coring attachment cores inspection hole through pavement to allow vacuum excavation.

While “spot locates” or “daylighting” of utilities to confirm their actual location are not new, and especially not new to any responsible utility contractor with an HDD drill rod in the ground, the idea of incorporating a process such as keyhole coring and reinstatement may be.

Dave Ban of Ditch Witch Midwest says, “Ditch Witch is well known for their HDD drill rigs, and we have them working in every utility sec-

tor, from gas to water to electrical. It’s just a better, smarter, faster and more economical way to get plant installed in the ground. But when a contractor does not spot locate and visually confirm another utility’s location, they are just asking for trouble. Keyhole coring equipment and Utilibond for core reinstatement, go hand-in-hand with our HDD rigs and our vacuum excavation equipment. In my view, you can’t really get the job done safely

and properly without all of them working together.”

On the cost side, given the fact that an 18-inch diameter cored inspection hole can be cut and reinstated with no residual damage to the pavement for not much more than a smaller 8-inch diameter inspection hole, and provide more than five times the inspection and viewing area, any economic reason for the smaller hole evaporates in the face of

a significantly better chance of damage prevention and greater safety, as well as a better running and permanently restored road surface after the job had been completed.

And that can be a “key” element in damage prevention. **DP**

Marshall Pollock is the President and CEO of Utilicor Technologies Inc. (www.utilicor.ca). He can be reached at mpollock@utilicor.ca

UTA 1/2 AD