

A New Dimension in Land Surveying

By Will O'Hara and Anna Husa



If a person wants to hide something where no one will find it, that person will likely bury it in the ground. Think of buried treasures – or land mines. They are invisible and difficult to find once they are laid to rest. No one would complain about accidentally digging up a buried treasure, but the consequences of hitting a land mine are serious. Underground utilities can be viewed either as buried treasures or land mines, depending on whether you own them and bury them deliberately, or dig them up accidentally.

The Problem

There is an inherent tension between those who own and bury underground utilities on the one hand, and those who run the risk of accidentally encountering them on the other. AOLS members fall into the second category. They run the risk of putting iron bars in the ground and being electrocuted in the process. They could just as easily sever a fiber optic cable, or strike a natural gas line, causing property damage or loss of life to themselves or others.

These dangers are real. On April 24, 2003, Warren Bithulithic, an excavating company, was working along a portion of Bloor Street West when one of its workers struck a natural gas line. Gas escaped from the line and filled the basement of a small commercial plaza, causing an explosion. Seven people were killed. Several others were injured. Many homes and businesses in the vicinity were either partially or wholly destroyed. The accident has

resulted in quasi-criminal charges laid by the Technical Standards and Safety Authority (TSSA) and Ministry of Labour against the excavating company, the utility company, the underground utility locating company and at least one individual locator. It has also resulted in more than 35 civil actions, with a collective value in the millions of dollars. [In the interests of disclosure, we acted for one of the central parties to the litigation.]

A few years ago in Saint-Hyacinthe, Quebec a land surveyor drove an iron bar into the ground and struck a plastic gas line. Nothing happened at the time but the following winter a snowplough hit the same bar and a nearby house blew up. The land surveyor had not obtained a locate report.

The Effect of the Common Law

Under the common law doctrine of *Rylands v. Fletcher* a defendant involved in a dangerous activity will be strictly liable to a plaintiff without proof of negligence. This doctrine has long been part of the law in Canada. The list of dangerous activities includes dealing with gas, water, electricity or sewage. The doctrine evolved as a way of putting the risk of loss on the person involved in the dangerous activity. The common law doctrine can be displaced by statute where the dangerous activity is carried out for the public good. Statutes often protect municipalities and quasi-governmental authorities from the application of the doctrine.

There is surprisingly little case law involving damage to utilities caused by surveyors driving stakes into the ground. Two cases were referred to in the recent Underground Utilities Task Force Report to the AOLS. The cases do not refer specifically to the duty of the utility companies that have buried dangerous equipment underground to warn of the presence of those underground utilities.

The two decisions considered whether a surveyor has a duty to call for a locate report before driving a bar into the ground. In *Hydro Mississauga v. Rady-Pentek and Edward Surveying Limited and Maltmans*, where the land surveyor struck a hydro cable, the court found that there was a duty to be careful when driving bars into the ground but no absolute duty on the part of the surveyor to call the electrical utility for a “stake-out” before hand.

In *Bell Canada v. Harry R. Whale Inc.* the court found that the surveyor who struck a Bell Canada cable with a survey bar was not negligent. There was no duty in the circumstances to request a locate report from Bell Canada. The court appeared to recognize a duty on the part of Bell Canada to “warn people of the buried cable.” Both of these cases were heard in the Small Claims Court. Although they are comprehensive and well reasoned they have little precedent value.

The Effect of the Technical Standards and Safety Act

The Ontario government has grappled with the dangers associated with

underground gas lines. In 2001, the Technical Standards and Safety Act ("TSS Act") and related regulations came into effect. Section 9(1) of Ontario Regulation 210/01 (Oil and Gas Pipeline Systems) made under the TSS Act makes it an offence to "dig, bore, trench, grade, excavate, or break ground" without first ascertaining from the utility the location of all pipelines in the vicinity. The sanctions for non-compliance with the regulation are stiff: individuals face a maximum fine of \$50,000, one year of imprisonment, or both. For corporations, the maximum fine is a cool one million dollars.

Assuming that land surveyors "break ground" when driving iron bars into the earth, they may be caught by this provision in the same manner as excavators - and may be subject to the same penalties. The TSSA has served notice that land surveyors will be charged under the TSS Act if they fail to obtain a locate report before driving iron bars into the ground and if they damage a gas line in the process.

The mandate of the TSSA, as set out in section 1 of the TSS Act, is to "enhance public safety." Presumably, the obligation imposed by the TSSA to request utility locate reports prior to "breaking ground" is meant to avoid catastrophes similar to the Bloor Street explosion from occurring. The assumption seems to be that once a utility locate report is obtained, accidents can be avoided because the location of underground utilities will be accurately determined. Unfortunately, this is not always the case.

Locate reports may be inaccurate for a variety of reasons. Underground utility locators are not, for the most part, professionals. They are technicians with on-the-job training. The quality of their work product - the locate report - varies greatly from company to company. Furthermore, many utilities are still located conductively by following the path of a "tone" which is picked up by a hand-held receiver. In places where the tone from

a particular utility is hard or impossible to obtain, a locator must rely on visual cues and historical records to ascertain the location of the underground utilities. Visual cues can be misleading. Historical records kept by the utilities that buried the equipment are often incomplete and inaccurate. Even an experienced and diligent utility locator can chart an underground utility's location incorrectly based on the information available.

Under the new TSS Act regime, surveyors who have requested locate reports may be able to deflect liability for accidents arising out of damaged underground utilities onto the utility locators responsible for creating those reports. However, the overall effect on the rate of accidents will be minimal.

Sanctions for interference with a natural gas line have already been legislated upon. Presumably, sanctions for interference with other underground utilities - be they telephone, hydro or fibre-optic cables - will soon follow.

Report of AOLS Task Force

The question arises whether imposing an obligation on surveyors to request multiple locate reports before breaking ground is an effective strategy. Is it realistic to expect land surveyors to obtain locate report each time they drive a survey pin into the ground? Is it an effective means of preventing accidents? Such issues were explored in detail in the Underground Utilities Task Force Report issued earlier this year.

The Task Force concluded that a fine of \$1,000,000 for failing to order a utility locate report would be fatal to most surveying firms. It also determined that the act of obtaining a locate report will not necessarily eliminate the danger to public safety. The Task Force identified a number of problems facing not only surveyors but also the general public. It noted the problems with inaccurate or inadequate locate reports, slow response time to locate

requests, a shortage of locators to respond adequately to locate requests, and a lack of incentives in place to manage the consistency, quality and currency of available data as to the location of underground utilities.

Among the recommendations of the Task Force were the development of strategies to improve the quality of records and the creation of interconnected databases of the underground utilities, as well as an increased involvement of Ontario Land Surveyors in certifying the location of underground utilities.

The Role of AOLS Members in Solving the Problem

The question of AOLS members obtaining locate reports before breaking ground must be viewed in the context of the thousands of miles of hidden and dangerous utilities buried throughout the province, many of which were buried by the utility owner without a record. AOLS members are caught in the morass created by the various utilities that bury equipment in the ground without providing adequate notice of the location of the hidden equipment. The present system of calling individual locators to a dig site to divine for the various underground utilities that might be in the dig area and having each locator paint the (approximate) location of the utility on the ground with colours is an archaic system, fraught with problems. The Bloor Street disaster is only one example of the many problems that flow from this archaic system. The cause of public safety articulated by the TSSA does not need a more comprehensive system of sanctions to deal with the aftermath of accidents. What is needed is a complete overhaul of the underground utilities systems to bring them into the present century with the goal of avoiding accidents in the first place.

This would best be accomplished by the creation of an accurate and


easily accessible database, showing the location of all underground utilities in a particular area. Any utility that owns or buries underground equipment that could be a danger to members of the public or members of land-related professions should bear the burden of recording this information in an integrated database. The database should be accessible to land-related professionals in the same way land titles can now be searched on line. The present system of locating underground utilities is in the same state now that land titles system was in twenty years ago. According to the Task Force Report, Japan is already developing a three dimensional database depicting the location of underground utilities. It is only a matter of time before this is done in urban Ontario. The question is: who will do it?

AOLS members have an opportunity to play a major role in this respect. Geomatics professionals are well equipped to certify the location of

underground utilities in a three dimensional, integrated database. Geomatics professionals have worked primarily with the surface of the earth. The time has come to add a new dimension to the profession - in the most literal sense of the word. This view was expressed in the Underground Utilities Task Force Report:

The task force determined that it is becoming essential for the survey industry to take a stand. There is a defined need for our particular skills. The surveyor's role in society is to establish boundaries and to contribute to orderly and sustainable development through the appropriate division of land and the structures thereon. Part of that role necessitates the accurate and objective portrayal of existing ground conditions. It is becoming necessary for us to become more involved with subsurface information both at the time of installation and subsequent location after backfilling. This is not to be seen as self-serving but as an oppor-

tunity to further provide a safety service to the general public. Our potential contribution will require dedication, training and technology on our part. It requires public recognition that we are the appropriate resource to provide this data.

In our view there is nothing self-serving about providing a badly needed service that will reduce the risks of further disasters resulting from accidental encounters with hidden utilities. This is an area where the AOLS can take a leading role and provide the services necessary to bring the existing system of underground utility locating into the present century. 

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