Locating private utilities in the public right-of-way, Minnesota adopts SUE

Bob Cockriel, Utility Superintendent, City of Bloomington, Minnesota
Shawn O'Keefe, P.E., Civil Engineer III, City of St. Paul, Minnesota; Chair, APWA Utilities & Public Right-of-Way Committee

Why is subsurface engineering so useful in Minnesota?
It is said that Minnesota has two seasons: winter and construction! That may or may not be the case, but each construction season brings with it a new set of challenges and opportunities. It seems that there is too little time between the last of the snow melting along the roadways and the sighting of the all-too-familiar orange construction barricades and underground utility marker paint or flags.

Construction season in Minnesota usually begins in earnest around May 1 and runs through the end October for roadway and underground utility projects. Because of this shortened construction timeline, there is an overwhelming amount of competing activities occurring within the public right-of-way during any construction project. Oftentimes these activities result in damages to existing underground facilities, both public and private. Some of this damage could be avoided if accurate, and more complete, records existed, and if those records were available to the project engineers and excavators.

Several changes in the past few years have better positioned Minnesota to address these challenges. In order to address the quality and accuracy of the engineering drawings, many governmental agencies have adopted subsurface utility engineering (SUE). SUE is an emerging field within public works, and is routinely defined as an engineering process for acquiring, characterizing and managing the below-ground utility information that is required for excavation plans. It is billed as an industry Best Practice, and it results in cost savings through the avoidance of damage to private and public utilities.[1]

How does ASCE 38-02 relate to subsurface engineering?
In 2002, the American Society of Civil Engineers (ASCE) published a document for the purposes of conducting and standardizing SUE on excavation plans. This document is titled “CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.” Commonly referred to as ASCE 38-02, this guideline is a protocol for engineers to use in rendering a professional opinion about the quality and reliability of utility information depicted on excavation plans. In essence, ASCE 38-02 spells out a process for engineers to use to quantify the quality of the utility information that is plotted on excavation plans.

By following the process spelled out in ASCE 38-02, an engineer can quantify the quality of the utility information in terms that a lay person or non-engineer can understand. ASCE 38-02 defines four distinct levels of quality with respect to utility information. The quality of the utility information is ranked from the most reliable, Quality Level A, to the least reliable, Quality Level D. Excavation plans that adhere to ASCE 38-02 may contain any or all of these quality levels.

Background of subsurface engineering in Minnesota
In August of 2001, a group of representatives from the Minnesota Utility Contractors
Association (MUCA), which consists of private utilities and excavation contractors, teamed with the Minnesota Office of Pipeline Safety (MnOPS) and representatives of the Gopher State One-Call (GSOC) Board of Directors. The purpose of this effort was to review Minnesota’s existing excavation law, and to make recommendations for revisions to this excavation law, Minnesota State Statute 216D.

Under the guise of improving public safety, this newly-formed work group, the 216D Review Committee, set out to recommend changes to the statute. Many local public works officials felt that several of the proposed changes that came from the 216D Review Committee were to the benefit of the excavator and offered no additional protection to the public or the buried facilities. However, there were some recommendations offered by the 216D Review Committee that officials felt did improve the statute by updating definitions, clarifying responsibilities for certain items, eliminating redundant verbiage, and striving to improve the overall health, safety and welfare of the public potentially impacted by an excavation.

With that said, the most contentious recommendation to come from the committee was one that would essentially relieve the excavator of any responsibility to locate and protect private sewer and water laterals located within the public right-of-way (ROW), if they were not marked by their owners. Although everyone agreed that installation records for these private laterals are sometimes inaccurate, or even non-existent, representatives of the MUCA continued to lobby MnOPS and state legislators that Minnesota cities are in the best position to manage and mark these services, not the excavators. By recommending that cities be named as "operators" of these private laterals, MnOPS would be able to require cities to be responsible to research and acquire record drawing data for the private services, manage the records if they exist, and physically locate private services within the work area of a GSOC locate request ticket.

When these recommended changes were brought forward in a hearing at the legislature in 2003, it was tabled due in part to objections that were raised by numerous public works officials, industry professionals, and the League of Minnesota Cities (LMC), which represents over 800 Minnesota cities. In 2004, a revised version of the recommended statute changes, which contained many provisions supported by local government officials, was submitted by the 216D Review Committee, and was subsequently passed by the legislature. The revised 216D was signed into law by the Governor of Minnesota on April 26, 2004.

Because the issue of responsibility for private service laterals located in the ROW was not included in the approved changes to 216D in 2004, MnOPS once again teamed with MUCA representatives in 2005 to lobby for revisions to Minnesota Rule 7560 (the rule governing the enforcement of 216D). At a contested case hearing in front of an Administrative Law Judge, MUCA and MnOPS successfully argued that Minnesota cities should be made responsible for locating and marking the existing private service laterals located in the ROW. In addition, they were also successful in convincing the judge that cities be required to make all new services "locatable by means of a tracer wire or other equally effective means" and that cities obtain and manage construction record drawings of all new service laterals installed in the ROW after December 31, 2005.
**Current opportunities in Minnesota for subsurface engineering**

One of the more notable changes to State Statute 216D that was passed during the 2004 Minnesota legislative session with the support of the LMC and local public works agencies was that ASCE 38-02 was incorporated into the Gopher State One-Call law. In addition, the Minnesota Department of Transportation now requires the incorporation of SUE, in accordance with ASCE 38-02, on all design-build projects, and also encourages its use for other projects where numerous subsurface utilities may exist. The Minnesota State Statute 216D states the following with respect to plans for excavation:

"Any person, prior to soliciting bids or entering into a contract for excavation, shall provide a proposed notice to the notification center to obtain from the affected operators of underground facilities the type, size, and general location of underground facilities. Affected operators shall provide the information within 15 working days. An operator who provides information to a person who is not a unit of government may indicate any portions of the information which are proprietary and may require the person to provide appropriate confidentiality protection. The information obtained from affected operators must be submitted on the final drawing used for the bid or contract and must depict the utility quality level of that information. This information must be updated not more than 90 days before completion of the final drawing used for the bid or contract."

Furthermore, under Minnesota State Statute 216D, the utility quality level is defined as follows:

"Utility quality level" means a professional opinion about the quality and reliability of utility information. There are four levels of utility quality information, ranging from the most precise and reliable, level A, to the least precise and reliable, level D. The utility quality level must be determined in accordance with guidelines established by the Construction Institute of the American Society of Civil Engineers in document CI/ASCE 38-02 entitled "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data."

**Implementation of subsurface engineering in Minnesota**

As a result of the changes adopted by the Minnesota State Legislature in 2004 to 216D and in 2005 for Minnesota Rule 7560, including the requirement to assume responsibility for mapping and locating private service laterals within the ROW, the City of Bloomington has made several procedural and operational changes in managing their ROWs. One significant change to their ROW ordinance is the requirement that all utility owners, developers and private excavators are now required to submit a much more detailed plan set with their permit application. The following requirements are found in the Bloomington City Code:

1. Scaled drawings showing the location of all facilities and improvements proposed by the applicant. The applicant will be requested to submit in English measurement two (2) paper copies at 50 scale plans and one (1) copy in AutoCAD format (Hennepin County Coordinate system) with X, Y, Z dimensions to 1 foot accuracy electronic plan. The plans must be dimensional and show existing utilities, curb and gutter, sidewalks, bikeways, signal poles, driveways, boxes, and structures. If the applicant chooses to
submit this data in a different format, it shall pay to the City the cost to convert the data to a format currently in use by the City.

2. A description of the methods that will be used for installation.
3. A proposed schedule for all work.
4. The location of any public streets, sidewalks or alleys that will be temporarily closed to traffic during the work.
5. A description of methods for restoring any public improvements disrupted by the work.
6. Any other information reasonably required by the City.

In accordance with the requirement to incorporate ASCE 38-02 into their construction plans, the City now requires that excavation plans be prepared to Quality Level C. The typical wording recommended by the MnDOT on an excavation plan is as follows:

The subsurface utility information in this plan is utility Quality Level C. This quality level was determined according to the guidelines of CI/ASCE 38.-2, entitled "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data."

By characterizing the utility information as Quality Level C, the engineer of record for a particular project for the City of Bloomington has assured the City that he or she has at a minimum performed the following tasks:

1. Contacted all of the affected utility owners and informed them of the project.
2. Requested, obtained and reviewed all record drawings from all facility/utility owners.
3. Supervised a field visit in which all visible above-ground utilities have been surveyed.
4. Correlated existing utility record drawings provided by the utility owner, and the survey of visible above-ground utility facilities, such as manholes, valve boxes, posts, etc.

The ASCE 38-02 guideline provides an important communication tool between the project owner and the engineer. It affords the project owner with the ability to stipulate to the engineer how much risk is acceptable for a given project with respect to the often out-of-sight, out-of-mind buried utilities. A number of states encourage the use of ASCE 38-02 because of the cost savings being realized from the avoidance of redesign costs, delays, and inconvenience to the traveling public, change orders, and claims. Furthermore, AASHTO, FHWA, and Common Ground Alliance describe subsurface utility engineering and ASCE 38-02 as a "Best Practice."

For more detailed information on SUE, readers should visit both the ASCE and FHWA websites. The Federal Highway Administration (FHWA) has an entire website devoted to subsurface engineering, in which definitions for Quality Levels A though D are defined. In addition, the FHWA website has sample SUE documents and publications. The path to the FHWA Subsurface Engineering website is as follows: http://www.fhwa.dot.gov/programadmin/sueindex.htm. In addition, the ASCE 38-02 guideline is available for purchase on the following website: http://www.pubs.asce.org/pubshom1.html.

Lastly, the APWA Utilities and Public Right-of-Way (UPROW) Technical Committee has served as a longstanding example of APWA’s commitment to cooperation and coordination between all utility owners and the ROW owners/managers. In keeping with APWA’s
commitment to promoting subsurface utility engineering, look for an educational session on SUE and ASCE 38-02 at the 2007 APWA International Public Works Congress and Exposition sponsored by the UPROW and Engineering and Technology Committees.

Bob Cockriel can be reached at (952) 563-8774 or rcockriel@ci.bloomington.mn.us; Shawn O’Keefe, Chair of the APWA UPROW Technical Committee, can be reached at (651) 558-2121 or shawn.okeefe@ci.stpaul.mn.us.