

LOCATING SUBSURFACE UTILITIES

By Don Gordon

A Commentary on Proposed Level of Care Standards

The American Society of Civil Engineers (ASCE) is developing a national consensus standard for designating and locating underground facilities.

The effort is supported by the NTSB, AGC, ACSE, FHWA, NRC and many other organizations. There has been no significant opposition, according to James Anspach of So-Deep, Inc., in his remarks made during the National Highway/Utility Conference in Louisville, KY, October 27-30, 1998. Mr. Anspach expects ASCE to adopt the new standards, followed by ANSI in 1999.

The proposal could cause confusion because of the different definition of "locating" used by subsurface underground professionals and by underground facility owners and their line locators or contract line locators.

The proposed standard establishes levels of care to be specified by a design engineer when underground facilities are potentially within a design area. The four levels of care are:

D. Contact underground facility owners to obtain copies of maps or records of existing underground facilities in or near the area of concern.

C. Use collected data, visit the site, note locations of above ground features that indicate underground facilities and prepare a two-dimensional record.

B. Utilize records as a general guide for an intensive examination of the area with multiple electromagnetic and geophysical devices to pinpoint the locations of all locatable existing underground facilities. The locations of those facilities are marked on the ground surface. A PE must certify this work. This level of care is called designating by subsurface engineering contractors (similar work, including marking the surface over existing lines is called locating when performed by a line operator or contract line locator).

A. Supplement the work described in level B with the excavation of small holes, usually using vacuum or other non-intrusive methods to determine the precise vertical location of existing underground facilities and to verify the lateral locations. A PE must certify this work. This level of care is called locating by subsurface engineering contractors.

This standard will be of value to the subsurface engineering process. It could be a disaster to the underground facility owners. The proposed standard parallels the damage avoidance process encouraged by many one-call systems and dictated by some damage prevention laws. The information gathering in level D is often referred to as design or planning information. Some one-call systems provide for such information. The designer is expected to correlate the information received with site ground features and to alter the design to avoid conflicts.

After the excavation design is complete, the excavator is usually required to request surface marks to indicate the location of underground lines. Where surface marks are in or near an excavation, the excavator is expected to excavate with hand-powered devices or other non-intrusive methods to expose the existing facilities before machine power is used.

If this standard is adopted as proposed, locating will require the standard's level of precision, certification and associated costs. Any other locates will be substandard and potential grounds for liability even if correctly performed. A similar situation could develop with the work done by excavators to expose existing lines in lieu of employing a professional to expose and certify the work.

The subsurface engineering process and the proposed standards are ideal for construction project sites and for major highway improvement projects.

They also may have application in the construction of major utility lines, or may be appropriate when any excavation is proposed near a high priority line of any nature. But are these levels of care appropriate for all of the thousands of

locating requests processed by one-call centers? Until technology takes us to the next era where all existing underground facility data is available electronically, interim mitigation of the proposed standards maybe appropriate. A subsurface engineering profession should not be necessary to locate lines for a homeowner's bush planting.

The proposed standards may be modified through the One-Call System Study process underway by the Office of Pipeline Safety. But they may not be changed unless significant negative reaction is generated. One-call system utility representatives should discuss these proposed standards with National Underground Locators Association (NULCA) members and/or ASCE members. ■

Don Gordon is a member of IRWA's Wisconsin Chapter 17.

From a handout provided by James Anspach of So-Deep, Inc., following his remarks at the National Highway/Utility Conference

Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data

The American Society of Civil Engineers (ASCE) has undertaken the task of developing a National Consensus Standard titled Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data. This National Consensus standard (NCS) is following the legal procedures for adoption as not only an ASCE standard, but also as an American National Standard Institute (ANSI) standard. The Justice system holds these standards in high regard and courts and lawyers use these standards to assist in both defining a professional's standard of care and in adjudication of blame.



The standard committee's executive steering group was selected by the ASCE Board. It consists of Bob Stevens (Morrison Knudsen), Paul Scott (FHWA), Jim Anspach (So-Deep) and Tom Iseley (Iseley Enterprises). The other 10 members represent other governmental agencies, the engineering profession, the construction profession, academia and project ownership. Meetings are open to the public and are announced in Civil Engineering and Civil Engineering News magazines. A formal public comment period will be held soon.

The National Transportation Safety Board also wants to tie this standard into a national damage prevention strategy, which will involve the utility owners. The four players involved in utility information (project owner, engineer, constructor and utility owner) currently have an ill-defined role and allocation of risk. This results in increased project costs, lawsuits, damages project delays and other bad stuff.

The intent of this standard is to present a system of classifying the quality of existing subsurface utility data. Such a classification will allow the project owner, engineer and constructor to develop strategies to reduce risk, or at minimum, to allocate risk due to existing subsurface utilities in a defined manner. This document, as a handout or as part of a specification, may assist engineers, owners and contractors in understanding utility quality level classifications and their allocation of risk.

The standard will closely follow the concepts already in place in the subsurface utility engineering profession. Several state DOTs are therefore already in "compliance" with this standard through their use of SUE (Subsurface Utility Engineering) consultants, or their inclusion of SUE specifications in their engineering contracts. Most states with

current SUE programs will probably want to modify them to be more closely in synch with the standard and states with no program will probably want to protect themselves by including this standard by reference in their contract documents.

In general, the standard will say:

- The engineer will advise the project owner of utility risks and recommend an appropriate quality level of utility data for a given project area at the appropriate time within the project planning and design process. Such advice will take into account such items as type of project, expected utilities, available rights of way, project timetables and so forth.

- The project owner will specify to the engineer the desired quality level of utility data.

- The engineer will furnish the desired utility quality level to the owner in accordance with the standard of care.

- The engineer will be responsible for negligent errors and/or omissions in the utility data for the certified utility quality level.

The NTSB AGC, ACSE, FHWA NRC and many other organizations are firmly behind this standard development and implementation. So far, there has been no substantive opposition. It is anticipated that this standard will be in place by the close of 1999 and that case law will be cited within the following two years.

A Response to Don Gordon's Commentary

By C. Paul Scott, PE; James H. Anspach, PG; and Thomas E. Iseley, Ph.D., PE

Don Gordon's statement that "a subsurface engineering profession should not be necessary to locate lines for a homeowner's bush planting" is 100 percent correct. It is not the intent, nor the proposed content, of the standard to require this action. Unfortunately, Mr. Gordon is wrong in many of his other concepts, statements as facts, assumptions and definitions of this "work-in-progress" standard. This is a standard for the civil engineering professional; it has no relationship to, or intended effect on the National Underground Locating Contractors Association or the One-call (call before you dig) industry.

We would like to emphasize that ASCE code and standard committees can produce mandatory and non-mandatory standards. This standard will be a non-mandatory standard, which means that it will serve, for the most part, as a guideline. Therefore, Mr. Gordon's statement that "locating will require the standard's level of precision, certification and associated costs" is simply not true. It requires the design engineer to apply professional judgment in the application/use of this standard.

In our opinion, a guideline that addresses locating and depicting existing underground utilities is long overdue. We certainly do not need to delay this effort "until technology takes us to the next era where all existing underground facility data is available electronically." A consensus professional guideline will drive the development of technology. We encourage underground construction industry groups to support this very important activity. Your involvement is critical to insuring that the final document represents the best practices.

Paul Scott, James Anspach and Thomas Iseley represent the ASCE standards committee executive membership.