Washington Office
1275 K St., NW, Suite 750
Washington, DC 20005
202-408-9541/Fax 202-408-9542

Guidance Position Statement

ASCE 38-02 Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data

Statement of Purpose

The American Public Works Association (APWA) seeks to inform elected officials, regulators, policy-makers and decision-makers and the public at-large of its stated position related to the American Society of Civil Engineers (ASCE) Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data.

Statement of Position

APWA believes that the public interest is best served when governmental agencies follow the guidelines for subsurface utility engineering (SUE) described in the ASCE Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data (ASCE 38-02). SUE is a means to better characterize the quality of subsurface utility information and to manage the risks associated with construction activities that affect subsurface utilities.

Background and Rationale

Underground utility construction activity is required to provide new services for new development, installation of new technology such as fiber optic cable, repair of aging underground infrastructure, and separation of sanitary and storm sewer systems. As construction activity in the right of way increases and we attempt to fit more services into the available underground space, the likelihood on conflict between utilities increases.

It is dangerous and expensive to manage utility conflicts in the field during construction, and therefore desirable to identify and solve conflicts prior to construction. The quality of available data identifying the location and attributes of existing subsurface utilities varies greatly. Accurate as-built location information may or may not have been recorded. To manage potential conflicts during the design phase, and the unnecessary relocation of utilities, the horizontal and vertical location of existing utilities and the level of accuracy of this information should be determined.

Coordination between utilities, one call centers, and public agencies is also of paramount importance during the design phase. Coordination meetings can provide forums that represent the interest of local governments and utilities, while facilitating the transfer of knowledge, information and best management practices with respect to public and private construction activities in the public rights-of-way.

ASCE 38-02 advocates a standard method of identification of the accuracy of subsurface utility data on plans depicting existing utilities. ASCE 38-02 establishes quality levels A, B, C, and D for utility data. Quality level A, the most accurate level, denotes data in which the horizontal and vertical location of utilities is known by the actual exposure and surveying of the utility. Quality level D, the least accurate level, denotes location data derived from existing (unverified) records or from oral recollections. While it does not recommend specific symbology to be used to depict utility data, ASCE 38-02 does advocate following some standard nomenclature to depict utility data on plans.

When practical, APWA supports the use of minimally invasive key-hole technology to facilitate utility exposure or day lighting. Keyholes are 12-18" diameter circular utility cuts. The pavement is cut, removed, and salvaged with the use of a circular core cutter. The soil between the bottom of the pavement and the utility is removed via vacuum excavation. Special tools are used to perform work on the facility. When the utility work is complete, the removed soil is replaced with a self compacting aggregate and the hole is then filled with a bonding agent and the pavement core is replaced. Keyhole technology has been primarily used by the natural gas industry but this technology has the potential for being utilized on drinking water pipelines and service lines. Keyhole technology also has the potential to be used by government agencies for subsurface utility engineering on urban reconstruction projects.

The identification of the quality level of all underground utility data shown on plans and the adoption of a standard nomenclature will allow clear communication between all parties involved in the design and construction of underground utilities, including designer, owner, regulatory agencies, and constructor. In addition, standard depiction of underground utilities will allow the design of future underground construction to be done in a more cost efficient manner.

The SUE practitioner must determine if the accuracy of available data is adequate to proceed with the design. In the absence of documented accurate location data for existing underground structures, the SUE practitioner may perform various types of field investigations to determine or verify the location of existing underground structures. There are several modern technologies available that may be used for gathering these data. ASCE 38-02 summarizes the technologies, which include pipe and cable locators, conductivity and resistivity measurements, metal detectors, ground penetrating radar, optical methods, keyhole technology, potholing, and vacuum excavating. The SUE practitioner must have a working knowledge of these technologies such that he may determine appropriate tools and methods to use in various situations.

ASCE 38-02 references two studies that support the notion that improving the accuracy of available subsurface utility location data improves the overall cost effectiveness of an underground utility project. One study[1] estimates a 10 – 15% total project cost savings by improving the data quality level to A or B from C or D. The other study[2] reports a savings of $4.62 for every $1.00 spent to upgrade the quality of data from C or D to A or B.

Sponsor
Engineering and Technology Committee
Utility and Public Right of Way Committee

1 – Stevens, R.E. (1993). Society of American Value Engineers, General Percentages of Cost Savings
2 – Lew, J.J. (1999). Purdue University Study