



U.S. Department of Transportation
Federal Highway Administration

IMPROVED
CONSTRUCTION
new strategies to enhance the quality
AND
MAINTENANCE
performance of highway operations
OPERATIONS

Subsurface Utility Engineering:

Enhancing Construction Activities

ENGINEERING PROCESS REDUCES UTILITY CONFLICTS, DELAYS, AND COSTS

Subsurface utility engineering (SUE) is an engineering process for accurately identifying the quality of subsurface utility information needed for highway plans, and for acquiring and managing that level of information during the development of a highway project.

Although SUE is primarily a preliminary engineering activity, the real benefits come during construction. Properly used, SUE prevents unnecessary utility relocations; eliminates unexpected conflicts with underground utilities; reduces contractor delays, subsequent claims, and redesign costs; and enhances safety.

MANY STATES USE SUE

All State transportation departments (DOTs) have been introduced to SUE. Many use it routinely in the development of highway projects. Those that are not using it are missing out on substantial time and money savings.

The Virginia DOT has been using SUE since 1984 and uses it on all projects. DOTs in Maryland, Delaware, Texas, Georgia, Florida, North Carolina, Arizona, and several other States are also big users. Many other States are beginning to use it.

Federal-aid highway funds may be used for SUE at the normal pro rate share for the project.

PURDUE UNIVERSITY GIVES SUE HIGH MARKS

The Federal Highway Administration (FHWA) commissioned Purdue University to find out how effective SUE is in reducing costs on highway projects. Researchers documented a savings of \$4.62 in avoided costs for every \$1.00 spent for SUE.

Free copies of Purdue's January 2000 report, "Cost Savings on Highway Projects Utilizing Subsurface Utility Engineering," Publication No. FHWA-IF-00-014, can be obtained from FHWA.



The engineer (not the contractor) is responsible. The engineer will furnish desired utility quality levels to the project owner in accordance with the prevailing standard of care, and will be responsible for negligent errors and/or omissions in the utility data at the certified quality level.

DESIGNERS CERTIFY QUALITY LEVELS OF UTILITY INFORMATION ON THE PLANS

The use of quality levels in the SUE process allows designers to certify on the plans that a certain level of accuracy and comprehensiveness has been provided. Project plans may contain any or all of four quality levels:

- Quality Level D information comes solely from existing utility records.
- Quality Level C involves surveying visible above-ground utility facilities and correlating this information with existing utility records.
- Quality Level B involves the use of surface geophysical techniques to determine the existence and horizontal position of underground utilities.
- Quality Level A involves the use of nondestructive digging equipment at critical points to determine the precise horizontal and vertical position of underground utilities, as well as the type, size, condition, material, and other characteristics.

AGC, ASCE ENDORSE SUE

At a public meeting on January 16, 1997, the National Transportation Safety Board recommended that the Associated General Contractors of America (AGC) “promote the use of subsurface utility engineering among its members to minimize conflicts between construction activities and underground systems.” The AGC immediately indicated an intent to comply with this recommendation, and has done so.

The American Society of Civil Engineers (ASCE) is developing a consensus standard entitled “Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.” This standard is expected to be approved in 2001. Copies may be purchased from ASCE.

SUE WEB SITE

Visit the SUE web site at

<http://www.fhwa.dot.gov/infrastructure/progadmin/sueindex.htm>

To learn more about SUE, contact your local FHWA Division Office or Roger McClellan

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