



ENVIRONMENTAL & EXPLORATION GEOPHYSICS

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Subsurface Utility Engineering and Glossary of Terms

(From SO-DEEP Inc.)

DESIGNATING

The use of surface geophysical techniques to identify the presence and approximate horizontal position of underground utilities and related structures.

LOCATING

The exposure of a utility so that measurements regarding its precise position, and data regarding its character, can be obtained.

DATA MANAGEMENT

CADD and database management technologies and comprehensive quality assurance programs that are applied under the direct supervision of registered professionals that assure the quality, value, and usefulness of the collected data.

The standards for utility quality levels can be obtained from the American Society of Civil Engineers. "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data, CI/ASCE 38-02"

"QUALITY LEVEL D" – EXISTING RECORDS

Information that is derived solely from utility records, an unreliable source. Unreliable in this case means there is little, if any, confidence in the accuracy or completeness of the utility information that is supplied. Allocation of risk follows traditional contracting methods which typically treats utility information as an "unknown or differing site condition" requiring location by contractors during construction.

"QUALITY LEVEL C" – SURFACE VISIBLE FEATURE SURVEY

"Quality Level D" information is augmented by surveying and plotting visible surface utility features. The engineer or surveyor assumes risk for the accuracy of the surveyed visible features. Subsequent correlation of the "Quality Level D" data presumably requires application of the prevalent standard of care. Therefore, the engineer or surveyor may also assume some risk for their correlations.

“QUALITY LEVEL B” – DESIGNATING

These data are obtained through the application of appropriate surface geophysical methods to identify the existence and approximate position of utilities within the project limits. “Quality Level B” data must be reproducible by surface geophysics at any point of its depiction. This information is surveyed and reduced onto the documents. Risk is assumed by the subsurface utility engineer in accordance with the prevalent standard of care and any additional standards imposed by commercial indemnity clauses. Such indemnity typically includes an assumption of liability for losses caused by negligent errors or omissions.

“QUALITY LEVEL A” – LOCATING

These data are highly accurate and are typically obtained by actual exposure of the facility being measured. Accuracy is typically set at 15mm vertically, and to applicable survey standards horizontally. In addition to the applicable standard of care and any other additional standards imposed by commercial indemnity clauses, the accuracy of this data is also typically guaranteed. Other data typically characterized include material type, surface elevation, utility size/capacity, outside dimensions, and configurations.

Quality level expectations must be specified by the project owner. In other words, if the owner specifies lower quality information to his design engineer, he must be willing to pay for the associated costs in project delays, bid contingencies, change orders, unnecessary utility relocations, redesign, and perhaps utility damage and other problems. Most projects currently proceed by owner specification at “Quality Level C” whether or not they realize it.

On projects where owners specify a desire for the highest quality level of utility information, decisions and judgments must be made by the parties as to costs versus anticipated results. This will require a thorough knowledge of existing surface geophysical techniques, their costs, and their limitations. Engineers will recommend and apply appropriate techniques based upon owner budgets and expectations. Decisions and judgments must also be made as to where “Quality Level A” data should be provided. Finished plans may contain utility data with different quality attributes. All four quality levels may be represented.