Subsurface Utility Engineering for Municipalities



Prequalification Criteria and Scope of Work Guide



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James H. Anspach, P.G. (ret.)

Subsurface Utility Engineering for Municipalities

Prequalification Criteria and Scope of Work Guide

James H. Anspach, PG (r), Dist.M.ASCE and C. Paul Scott, PE, M.ASCE

Sponsored by Utility Risk Management Division of the Utility Engineering and Surveying Institute of the American Society of Civil Engineers





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Preface

The purpose of this publication is to increase the awareness and use of Subsurface Utility Engineering (SUE) on public works projects. Every academic, state DOT, and federal study on SUE since the 1990s shows a significant return on investment to the public. This book is a resource of information for understanding and starting to bring the use of SUE up to date.

SUE incorporates emerging and existing technologies to reliably and comprehensively identify, characterize, and map underground utility facilities, as well as those overhead utilities that are affected by project design decisions. Its use is applicable throughout the project development process, and its benefits are greatest when begun in the planning phase. SUE includes dissemination of utilities information to the right people at the right time so that cost-effective design decisions can be made.

ASCE developed a national engineering standard in 2002 titled, ASCE/CI 38-02, *Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data*. This standard has been updated and is forthcoming in the near future. For purposes of this book, the updated standard will be referred to as ASCE 38. Use of this document is intended to be used in conjunction with ASCE 38. ASCE 38 is a major component of the practice of SUE.

The use of ASCE 38 is now considered a basic engineering service in EJCDC (Engineering Joint Contracts Document Committee) documents, which form the basis of many municipal contracts. EJCDC is comprised of ASCE, National Society of Professional Engineers (NSPE), American Council of Engineering Companies (ACEC) and more than 20 other participating agencies, including APWA, insurers, bonding companies, and American Bar Association, to name a few.

Thosedocumentscanbefoundathttps://www.asce.org/contract documents. The most applicable combination of documents for

SUE is E-520 and E-505, *Engineers and Owners Task Order and Short Form Contracts*. When combined with a scope of work and compensation, these predeveloped contracts can save some legal drafting time and expense and ensure a fair and balanced contract (see Appendix B for more information on EJCDC documents).

The incorporation of SUE into the project development process results in substantial savings to project owners, utilities, and taxpayers/ratepayers. It can help improve the quality of road and public works designs, avoid conflicts with underground utilities, improve safety, and leverage and actually save public funds. To gain the full benefits of SUE, it is important to understand what it is and how it can meet the needs of a public works agency.

This book answers some basic questions about SUE, such as

- What is it?
- Why use it?
- How to use it?
- What does it cost?
- Who provides it?
- Who uses it?
- What is its future?

This book also contains examples of agencies that have used SUE and then provides project benefits.

Chapters giving guidance on how to qualify consultants who perform these services, as well as a checklist of scoping items that will affect SUE costs and schedules are included.

More information about SUE is available on the FHWA website: www.fhwa.dot.gov/programadmin/sueindex.cfm

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Abbreviations and Acronyms

Chapter 1

1D, 2D, 3D	one-, two-, three-dimensional
BIM	building information management
CAD	Computer Aided Design
CCTV	closed-circuit television
EJCDC	Engineers Joint Contract Documents Committee
GIS	geographic information system
GPR	ground penetrating radar
ORFEUS	Optimizing Radar to Find Everything under the Street
QLA, QLB,	
QLC, QLD	utility quality level A, B, C, D
QLs	utility quality levels
ROI	return on investment
ROW	right-of-way
SUE	subsurface utility engineering
SUI	subsurface utility investigation
SUM	subsurface utility mapping
UE	utility engineering
UESI	Utility Engineering and Surveying Institute

Chapter 2

- CDFcontrolled density fillDBEdisadvantaged business enterprise
- EMR experience modifier ratings
- LOI letters of interest