

Subsurface Utility Engineering for Professionals Workshop  
Utility Investigation School:  
Buried Utility Asset Management Institute-International; Colorado School of Mines;  
Utility Engineering and Surveying Institute of ASCE  
40 PDH December 16, 17, 18, 19 2019

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## Schedule and Annotated Workshop Outline

Course Lead Instructor:

**James H. Anspach, PG (r), Dist.M.ASCE**

President, ASCE Utility Engineering and Surveying Institute 2018

Principal Instructor, LA Tech TTC Utility Investigations School

Chair (emeritus), ASCE Codes and Standards Board Committee

Chair, ASCE 38

Instructor: **Andrew T.D. Sylvest, M.ASCE**

President-Elect, Subsurface Utility Engineering Association

ASCE Utility Investigation Committee

Utility Engineering Practice Leader- SAM Companies

Instructor: Matt Wolf, M.ASCE

President/CEO Impulse Radar USA, Inc.

UESI: Utility Investigations and SUE Committee Member

Instructor: Rob Martindale

Colorado DOT

Railroad/Utility Manager

AASHTO Utility Coordination and GIS Chair

Instructor: Ron Peterson, M.UESI

Executive Director, National Utility Locators Contractors Association

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Monday Dec 16

7:30-8 Check-in and on-site registration

8 -9 am Introductions, Course Objectives: Jim Anspach, Tom Iseley, Leonard Ingram

9-11 Utility Infrastructure in the US and CO: Andrew Sylvest

Types, amounts and complexity of utility systems and their interactions in rural, urban, and suburban settings. Materials, typical depths, installation methods...How utilities are local, regional, and national in scope and may differ regionally and locally.

11-12 Utility Existence and Location Uncertainties: Jim Anspach

Utility owner types of records, how records are made, discrepancies between records, differing site conditions case law and court decisions, common disclaimers, how utilities' locations can be determined

12-12:30 Lunch

12:30-4 Common Utility System Design/Construction: Jim A., Andrew Sylvest

Common types of utility systems encountered during an investigation. Water, gas, electric, telephone, sewer, and others will be covered. In particular, how these systems are constructed is fundamental to how they can be found.

4-5 Introduction to Utility Process Management: Jim Anspach

Introduction to how utilities, owned by others but occupying the public ROW, can be effectively managed throughout the Project Development Process

homework w/ quiz: SHRP2 R01, SHRP2 R15

Tuesday, Dec 17

8-9            What is Geophysics: Jim Anspach / Matt Wolf

Overview of the wide range of geophysical; methods that exist: gravity, EM spectrum (IR, GPR, TDEM, FDEM Visual), Elastic waves, Chemical, magnetics. How all of these methods are sometimes necessary to identify contrast between utility structures and the natural and built environment

9-12           Types of Tools Available to Detect and Map Utilities:

Jim Anspach / Matt Wolf / Ron Peterson

Pipe and cable locators	GPR
Magnetics	Acoustics
Spar	AM
TDEMI	exotics

Practical theory of why these methods work to find utilities. Limitations of methods. This is not a “how-to” but more a why all these tools are necessary to get results for a competent utility investigation.

12-12:30 Lunch

12:30-4            Definitions, Utility Quality Levels, & Prof Judgment: Jim A./Andrew S.

This session will provide details on ASCE 38 Utility Quality Levels and how these QLs are obtained in order to show the results of a utility investigation as an amalgamation of utility locational and existence uncertainty that allows the design engineer to make better judgments on avoiding unnecessary utility conflicts that cause redesign, contractor delays and change orders, and construction claims. It will highlight the significant differences between One-Call marks during design and construction versus QLB data on a deliverable. It will review a new pending model statutory language from UESI for One-Call “design” tickets.

4-5            Attributes on Deliverables: Jim Anspach

In addition to x,y locational uncertainty, there are also attributes of z, size, material, date of installation, condition, operational status, bedding details, cathodic state, etc. All of these attributes and the methods for determining them and their methods of depiction will be discussed, particularly as they relate to geophysical determinations

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Homework + quiz: FHWA 2017 Study

Wednesday, Dec 18

- 8-9 CO SB 167 Andrew Sylvest, Rep from CO Safety Commission (invited)  
[Genesis of CO SB 167; Implementation issues and challenges](#)
- 9-10 SUE for Municipalities: Prequal and Scope of Work Guide. Jim Anspach  
[Review of Document](#)
- 10-12 CDOT's Perspective on SB 167 and Utility Coordination. Rob Martindale  
[CDOT has developed procedures, policies, scopes of work for the implementation of SB 167 and SUE and UC](#)
- 12-12:30 Lunch
- 12:30- 2 Case Law and Settlements re Utility Investigations. Jim Anspach
- 2-4 Test
- 4-5 Test Review

Homework: Introduction to Locating Buried Utilities

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Thursday, December 19

8 – 3 FIELD Practicum

Hands on demonstrations of common geophysical equipment from equipment manufacturers. It will be outdoors weather permitting so bring appropriate clothing

Certificates for those attending all four days