Detection & Mapping of Subsurface Utilities
(Subsurface Utility Engineering)

Duration: 02 days workshop
Format: Classroom with Equipment Demonstration & Live Field Work
Venue: Hotel Star Grand Villa, East of Kailash, New Delhi
Dates & Place: March 7-8, 2014, New Delhi
Time: 10 AM to 5 PM

Introduction:

Having accurate knowledge of subsurface/ underground/ buried utilities (pipes/ cables/ drains etc.) is critical for any infrastructure project. There are many benefits which come from a well executed utility survey including: The safety of the workforce and public, Minimise utility damage, Minimise project delays, Save delay and damage costs, Designing and planning knowing the constraints, Saving costs with producing as built records, etc. The successful detection and mapping of buried utilities involves the combination of several techniques, the results of which are synthesised down to a single interpreted plot. The techniques and methodologies used will primarily depend upon the required outcome for the survey, the site conditions and the type of pipes or cables being targeted.

Subsurface Utility Engineering (SUE) is an upcoming field dealing with procedure and standards for detection and mapping of underground utilities, critical for any infrastructure/ construction project. It is a proven technique which has shown huge ROI (Return on investment). There is an urgent need to adopt SUE in projects in India keeping in view complex & congested underground utility networks and practically no systematic record keeping of utility data.

Objectives:

The workshop and training program will help you:

- Understand the concept of subsurface utility mapping
- Understand latest methods for detection of buried utilities/ objects
- Learn working mechanism of various related equipment like Ground Penetrating Radar, Cable & Pipe Locators (Induction Locators), Total Station, DGPS etc.
- Learn interpretation of GPR data to determine depth and location of buried pipes & cables
- Learn advanced techniques for using Induction Locators and congested utility areas
- Learn capabilities & limitations of various techniques and processes
- Understand how to collect 'optimum' information to meet project objectives
- Work as SUE engineer
- Better supervise work of utility mapping/ detection being done by a contractor
- Understand advances in the field of HDD like “As built Drawings”, Fluid pressure monitoring etc.
Who Should Attend:

This 02 day training program will help professionals, engineers and managers from entire spectrum of construction, infrastructure and municipal sector, including but not limited to:

- Water, electrical, telecom, gas and other utility companies
- GIS companies
- MES
- Construction/ Infrastructure organizations
- Trenchless companies
- Refineries/ factories/ plants
- Municipalities/ Municipal Corporations
- Utility repair/ rehabilitation organizations
- Airport Authorities/ planners/ consultants/ contractors
- Highway authorities/ planners/ consultants/ contractors
- Environment consultants/ contractors
- Fresh engineers planning to pursue career as SUE engineer
- Engineers/ managers conducting/ supervising utility detection projects

Benefits:

The program will benefit an individual or organization by reducing risks and costs involved while meeting an existing utility unexpectedly during construction. The program will also help organizations plan towards creating database of existing utilities in their area (refineries/ plants/ factories) for future reference/ expansion plans/ repair & rehabilitation. There is an urgent need for capacity building in the field of SUE, and program will also help participants to pursue career in this field.

Key Elements:

- Introduction to Subsurface Utility Engineering
- Utility Quality Level Attributes
  - Quality Level D, C, B, A
- Steps and procedures for QL-D data collection
- Survey procedures for collecting QL-C data (including use of total station, DGPS etc.)
- Field Procedure and Approaches for GPR Surveys
  - Antenna selection, frequency v/s depth
  - Various Antenna Configurations in various applications
  - Data acquisition, data handling
- Data Processing of GPR data
  - High pass, low pass filters, Ormsy bandpass filtering, Notch Filters
  - AGC, Move Out Correction, Terrain Correction, Migration, energy envelops
  - Time-depth conversion
- Data interpretation of GPR data
- Field Procedure and Approaches for EPL Surveys
  - Direct Connection Mode, Clamp Mode, Induction Mode
  - Choosing right frequency & locating in difficult cases
- SUE map preparation guidelines, including plan, L-section etc.
- Special session of SUE for HDD and Micro Trenching
- Risk Mitigation in HDD execution and planning

**Facilitators:**

**Dr. Sanjay Rana** is a geophysicist working in the field of engineering geophysics for last 23 years. Dr Rana passed out in 1990 from University of Roorkee, now IIT Roorkee, in M Tech (Applied Geophysics), as Gold Medallist. He also holds MBA and Doctorate qualifications.

Dr. Rana has been instrumental in bringing various technologies in India including Ground Penetrating Radar, High Resolution Tomography, and Passive Seismic Tomography etc. He pioneered the concept of Subsurface Utility Engineering (SUE) in India, dealing with management of underground utility infrastructure during construction projects, to ensure safety of utilities, personnel and public. He is also member of various working committees for development of Code of Practices and Standards.

Dr. Rana is invited regularly for training geophysicists on latest techniques by various departments and organizations. He is also invited as trainer for geophysics applications by companies located abroad, and has conducted trainings in Singapore, Saudi Arab, Bahrain, Kuwait, UAE etc.

**Mr. Ehteshamul Haque** is a Mechanical Engineer with Management degree from ISB Hyderabad (Dean’s List) and has been associated with construction equipment’s in Indian Subcontinent and Middle East for the last 16 years.

Mr. Ehteshamul Haque has been instrumental in promoting and advancing trenchless technologies in the region and has been a part of developing many “Trenchless Code of Practice” over the years. He has been instrumental in bringing “Digital Control Inc., a US MNC in HDD Locators” to India in 2006 and is heading its Indian Subcontinent and Middle East operation since then.

Mr. Ehteshamul Haque is invited regularly for training in practices of “Horizontal Directional Drilling” and he presented his papers on the subject in “Singapore”, “Dubai” and India over the years.

**Venue:**

The Star Grand Villa is a Centralised Air conditioned boutique hotel 12 km from Delhi Airports, located in proximity to various business and commercial districts in posh South Delhi. Address: E-8, East Of Kailash, Delhi 110 065, India, Near Lady Shri Ram College (South Delhi) Major Landmark - Kailash Colony Metro Station.
**Fee Structure:**

Rs 10,000 per participant, inclusive of training notes, morning & evening tea & Lunch. A discount of 20% for students and group booking of 04 or more participants from a single organization is applicable.

**Registration Process:**

Prior registration is must by sending email to info@aquafoundation.in. Fee to be paid through DD in favour of Aqua Foundation payable at Delhi. It can also be deposited in following account:

- Name of the Bank: ICICI Bank Ltd
- Address of the Bank: ICICI Bank, 9 A, Phelps Building, Connaught Place, New Delhi- 110001
- Name of the Account holder: AQUA FOUNDATION
- A/C no : 000701260885
- IFSC Code: ICIC0000007

**Contact Details:** Secretary General, Aqua Foundation, C-24, 1st Floor, Soami Nagar (North), Panchsheel Enclave, New Delhi 110 017 (India), Mobile: +91-9818568825, info@aquafoundation.in