SUBSURFACE UTILITY MANAGERS

India is under an increased surge of urban development that is characterized by a population shift from rural communities to urban centers. The increase in urban development is accompanied by large scale civil works for infrastructure to support such population. A major portion of such infrastructure comprises of subsurface utilities networks. Such utilities networks like water supply lines, sewage disposal networks, gas supply & cable systems for power & communications are the backbone of the society. They represent a substantial social investment. Their development and management along with its safe removal therefore is vital for the society as we are not manufacturing surfaces as well as subsurface any more.

Normally a subsurface network is designed for an effective economic life of 60 years but it seldom survives so long. In most instances the effective economic life of such networks ranges between 10~12 years in India. A similar network is expected to last for 25~30 years in the United States. Canadian practice is to design for a useful life of 30 years and as per one of the recent studies it is found to be 37 years.

Usage, however at the other hand, exceeds 50 years in most of cases. In most of Indian instances the networks are being used for hundred years or more. Such cases are in Kolkata, Varanasi, Mumbai and several locations in other old towns.

Using such networks beyond the design period or in excess of capacity subjected to misuse and under inadequate maintenance leads to a rapid decline of their conditions. Subsequently, many Indian municipalities are currently faced with the need to renew extensive sections of their water and wastewater networks. The damages in some cases are also acute that emergency repair or rehabilitation measures have become a commonplace.

This leads to inappropriate fund application leading to a reduced return on investments on such networks. Further, unnoticed or ignored faults lead to consequential damages to the structure it self, surrounding environment in addition to the obvious failure of networks in rendering the required function.

It is therefore, vital that any subsurface asset, under creation or development, needs prudent approach for the best use of the subsurface space with the least possible damage to the environment, both natural as well as built.

On the similar lines, the issue of administration of such structures needs to be handled. This administration has three subsections, namely:

(A) Inspection & Condition Assessment
(B) Preventive Maintenance and Locational Rehabilitation
(C) Major Maintenance & Rehabilitation or Locational Replacements & Terminations.

The three subsections coupled with the issues of creation or development of network forms the basis of life cycle analysis of any structure, through which one can plan route, evaluate

the network, design different portions, construct them, manage them with minor or preventive repairs and finally terminate those networks who have outlived their effective economic life & repairs have become too costly.

Only when this complete life cycle analysis and adequate planning is conducted, the utilities deliver the best outputs and this analysis of working poses the need of Subsurface Utilities Managers (SUM).

SUMs are engineers/administrators charged with the responsibilities of developing and managing all such utilities laid underground.

Such managers are needed to perform the following activities:

1. Create & Develop subsurface utility networks
2. Inspect and assess condition of such networks
3. Conduct preventive maintenance including localized rehabilitation
4. Conduct major maintenance including localized replacement

While creation or development of networks may or may not be in a completely urbanized areas, other activities, in general will be more concentrated in urban areas where structures over the ground surface (roads, buildings or other structures) would already have been developed and therefore, conducting any one of the four activities pose substantial challenge to the Utility Manager. The options available to this person are two, conducting works by using the conventional (open cut or man entry methods) or by using the principles of subsurface Utility Engineering & Trenchless Techniques.

Trenchless Techniques and Subsurface Utility Engineering (SUE) help the managers in all the above four activities without disrupting or damaging the immediate environment and therefore, are needed to be applied by the Utility Managers as a viable option.

Both SUE as well as Trenchless Techniques are relatively new tools for Indian Utility Engineers and their awareness is still frugal. Net result being most civic authorities are now facing dearth of trained managers and the works are being done with engineers with hands-on experience. Need at this juncture is to channelize this experience with the aid of educational inputs and standardize this by uniform certification in Continued Professional Development (CPD) mode.

Indian Society for Trenchless Technology the apex body to introduce and promote the use of Trenchless Technology for the creation, development and management of subsurface infrastructure in association with Trenchless Technology Center, Louisiana Tech University, US has structured a formal training and certification system through which such managers are being trained to discharge these duties efficiently.

Trenchless Technology Center at the Louisiana Tech University, US is a university/industry cooperative research centre with its mission to advance trenchless technology by serving as an independent source of knowledge, research and education.

The structure of this training and certification system is as follows:

(a) Certification for Awareness of Subsurface & Trenchless Technology (SSTT)
(b) Certification for Subsurface Asset Inspection (SSAI)
(c) Certification for Subsurface Asset Development (SSAD)
(d) Certification for Subsurface Asset Administration (SSAA)
(e) Certification for Subsurface Asset Termination(SSAT)

Each component is made as a stand alone module with the complete set training the participant to manage subsurface utilities network & discharge the duties of a Subsurface Utilities Manager (SUM). By participating in these five modules Engineers/Administrators receive the certifications for participation with the relevant hours under CPD mode. With hours this accumulated and after appearing and clearing the final evaluation test participant receive diploma for Subsurface Utilities Manager (SUM).

Module coverage of these five sections is as under:

(a) Certification for Awareness of Subsurface & Trenchless Technology (SSTT)

This set intends to provide an overview to subsurface constructions and trenchless techniques. Total coverage includes the following subsections:

- New Installation
- Pipe Replacement
- Repair and Renovation

(b) Certification for Subsurface Asset Inspection (SSAI)

It is aimed to cultivate capabilities to establish and implement management strategies for the subsurface networks. Total coverage includes the following subsections:

- Pipeline condition assessment methods and their applicabilities in
- Identification and prioritization of work
- Needs trenchless method descriptions and selection
- Specifications and bid document preparation

(c) Certification for Subsurface Asset Development (SSAD)

This set aims to develop detailed knowledge for the installation of pipelines and other underground conduits. This set includes:

- Various techniques to create or develop networks
- Identification of user needs
- Recommendations for the most suitable trenchless technique suiting the end requirements
- Development of specifications and bid documents for new installations

(d) Certification for Subsurface Asset Administration (SSAA)

This set aims at developing detailed knowledge for managing the networks. It includes:

- Various techniques to conduct preventive maintenance and minor overhands
- Identification and prioritization of rehabilitation needs
- Recommendations for the most suitable rehabilitation technique suiting the end requirements
- Development of specifications and bid documents for rehabilitation projects.

(e) Certification for Subsurface Asset Termination (SSAT)

This set aims to develop detailed knowledge for the replacement of pipelines and other underground conduits. This set includes:

- Various techniques to replace the networks
- Identification and prioritization of replacement needs
- Recommendations for the most suitable trenchless technique suiting the end requirements
- Development of specifications and bid documents for project.

INDIAN SOCIETY FOR TRENCHLESS TECHNOLOGY

Calendar for the year 2004-05

Sl.No.	Dates *	Name of the Program	Location *
1.	26-27 July 04	Certification Program for Awareness of Subsurface & Trenchless Technology (SSTT)	Delhi
2.	19-20 October 04	Certification Program for Awareness of Subsurface & Trenchless Technology (SSTT)	MIT (Pune)
3.	14-15 December 04	Certification Program for Subsurface Asset Termination (SSAT)	Vidisha
4.	04-05 January 05	Certification Program for Subsurface Asset Inspection (SSAI)	Delhi
5.	07-08 February 05	Certification Program for Subsurface Asset Termination (SSAT)	Kolkata
6.	24-25 February 05	Certification Program for Subsurface Asset Inspection (SSAI)	Lucknow
7.	11-12 March 05	Certification for Subsurface Asset Administration (SSAA)	Mumbai
8.	21-22 March 05	Certification for Subsurface Asset Development (SSAD)	Kolkata

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* Dates & Locations subject to GC, INDSTT approval.