

Subsurface Utility Engineer Qualification Programme

Trade Skill Evaluation at Competency level – 1

COMPETENCE:	TTOQP 1	SUBSURFACE SURVEY
BASIC COMPETENCE	SUO1.1	SUBSURFACE UTILITY ENGINEER

Background

Subsurface Utility Engineering (SUE) refers to the process that involves managing certain risks associated with utility mapping at appropriate quality levels, utility coordination, utility relocation design and coordination, utility condition assessment, communication of utility data to concerned parties, utility relocation cost estimates, implementation of utility accommodation policies, and utility design.

Subsurface utility engineer therefore should be conversant with various tools required to detect underground utilities, general utility layout practices, land surveying practices and CAD drawing aspects. Present document identifies a set of standards for a qualified professional working as Subsurface Utility Engineer. These sets of vocational qualification standards define the minimum technical qualifications one needs to possess for handling the process of subsurface utility engineering successfully.

PRIOR ACHIEVEMENT EVIDENCE

The geophysical operators should have minimum Diploma level qualification in surveying, civil, electrical, CAD or geoscience and must possess valid training certificate on use of technique from a recognized institute/training partner of IndSTT.

PERFORMANCE STANDARD

Qualified candidate should be able to display competence in the following sections of utility investigation:

- Ability to consider the most important basics of jobsite preparation when planning the complete project.
- Awareness of general safety precautions.
- Awareness of electrical safety precautions and ability to use them at site.
- Ability to understand maps, plans and reports on existing networks.
- Aware of the use of scientific/geophysical equipment.
- Ability for Field Data Acquisition
- Ability to use Computer software in geophysical investigations
- Ability to anticipate problems in equipment.
- Ability to carry out common maintenance and problem-solving measurements independently.

MINIMUM PERFORMANCE STANDARDS

While performing the subsurface investigation the operators need to display the following minimum qualifications:

1. Safety during work

- i. General precautions necessary for safety of the operators;
- ii. General precautions necessary for safety of equipment;
- iii. Necessary Aids for safety are used without fail;

2. Read working drawings / Sketches and proceed with work

- i. Given a set of drawings / sketch requirement of the equipment and related tooling worked out and the scope of work understood;
- ii. The work is executed as per drawings / sketches;

3. Knowledge and use of equipment and tooling

- i. Proper identification of equipment/tools.
- ii. Proper storage of equipment and tooling;
- iii. Proper use of tools.

4. Knowledge of machine operating procedure and sequence

- i. Equipment is properly connected to desired power points and all related accessories are connected properly.
- ii. Voltage, frequency, current potential, and polarity are checked.
- iii. Instrument is properly calibrated to get accurate reading.

5. Knowledge about defects, their remedy and acceptance limit

- i. Identified the defects of equipment.
- ii. Remedy to the defects is known.
- iii. Acceptance limit as per standard code is known.

PERFORMANCE EVIDENCE

1. Helmet, Hand Shields, Safety Goggles, Gloves etc. are used.
2. Operator's health is fit before he goes to job.
3. The geophysical operator identified the proper tools for work.
4. The geophysical operator knows the use of specific tool.
5. The work is done as per demand of drawings.
6. Operator knows how to make equipment/ instrument ready for use.
7. Proper earthing is provided.
8. Proper polarity is confirmed.
9. Loose connections are checked.
10. All the defects in different type of equipment/ instrument are clearly identified.
11. Possible remedy to the defects identified is given.
12. Variation allowed as per codes are very well known.

SUPPLEMENTARY (KNOWLEDGE) EVIDENCE

In addition to the prior achievement evidence a trainee needs to display the following supplementary knowledge evidence for the course completion and being permitted to operate the geophysical investigation equipment independently:

1. Reading and writing in vernacular language.
2. Ability to conduct area and volume calculations.
3. Understanding about subsurface investigation requirements.
4. Understanding about different types subsurface investigation techniques
5. Possession of knowledge of various basic construction norms;
6. Possession of knowledge of basic electrical hazard prevention methods;
7. Awareness about basic operator's manual for geophysical investigation equipment required for the job.