



Operations and Maintenance Procedures

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O&M Section # 12.3	SCUD Task # 20
Section: Construction/Operations	Revision Date: 09/06/16

Excavation

SCOPE AND PURPOSE

This procedure is to ensure the safety of SCUD employees and the public while performing excavation activities.

RESPONSIBILITY

The Main Line Supervisor, Service Line Supervisor, Maintenance Supervisor, or other designee, is responsible to ensure that excavation is performed as described in this procedure.

PERSONNEL SAFETY (Where Applicable)

Ensure that the work zone/area is setup to protect SCUD employees and the public from danger. Ensure that all applicable safety equipment and traffic control is being utilized as per company policy.

EQUIPMENT AND MATERIALS

Mechanized equipment
Safety equipment
Sensit Gold CGI
Traffic control
Routine tools
Other equipment and materials as needed

OPERATOR QUALIFICATION

This activity is a covered task under the Operator Qualification Plan and may only be performed by or directed and observed by an individual who is currently qualified to perform this task. Refer to the OQ Plan for specific qualification requirements.

INSTRUCTIONS

SCUD classifies all soil as Type C

- Proper sloping or trench support shall be used when in an unstable trench or a trench deeper than 5 feet.
- Spoil piles must be placed a minimum of 2 feet from the trench edges.
- Trenches of 4 feet or deeper must have a man of ingress and egress every 25 feet.
- Air samples shall be taken with the Sensit Gold CGI before entering a trench 5 ft. deep or deeper. Oxygen levels must be between 19.5% and 23.5%

The angle of repose for type C soil shall be at an angle no steeper than 1-1/2 horizontal feet to 1 vertical foot (1.5H to 1V) or 34 degrees measured from the horizontal plane.

EXAMPLE: If the ditch is 6 feet deep and 2 feet wide, the sides must each be sloped back 9 feet. The total opening width will be 20 feet. $9+9+2=20$

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Why do cave-ins occur? Undisturbed soil is kept in place by natural horizontal and vertical forces of the adjacent soil. When earth is removed to create an excavation, these natural forces are no longer able to hold back the soil left behind forming the trench wall. With no support, eventually the laws of gravity take over, and the soil from the trench walls will eventually move downward and inward into the excavation. The result is a cave-in. Cave-ins occur suddenly-usually too quickly for a worker to react. Cave-ins are more likely to occur in unprotected excavations where:

1. The excavation is dug in unstable or previously disturbed soil;
2. Excessive vibration from construction equipment or vehicle traffic around the excavation is present;
3. A surcharge of loads is present near the sides of an excavation, most frequently from equipment or the excavated material too near to the edge;
4. An accumulation of water in the excavation;
5. Changes in weather conditions (freezing, melting, sudden heavy rain, etc.)

These conditions can be controlled by:

1. Re-routing traffic when possible, and keeping only the heavy construction equipment required near the excavation;
2. Keeping the spoil pile at least 2 feet back from the edge of the excavation;
3. Pumping water out of the excavation before anyone enters it;
4. Using protective systems when required (sloping or trench box).
5. Other hazards to be considered when working around excavations and trenches include accidental contact with utility lines, crushing and striking hazards posed by mechanized equipment.

REPORTING/NOTIFICATION

Complete documentation in accordance with Operation and Maintenance Manual

ABNORMAL OPERATING CONDITIONS

AOC Main Category (Examples of Specific AOCs)	Reactions to AOC, as appropriate	
Water	<ul style="list-style-type: none"> ➤ Protect life & Property ➤ Notify appropriate personnel ➤ Notify Fire/Emergency Responders 	<ul style="list-style-type: none"> ➤ Locate source/cause of AOC ➤ Use appropriate PPE ➤ Make repairs/eliminate AOC
Cave in	<ul style="list-style-type: none"> ➤ Protect life & Property ➤ Notify appropriate personnel ➤ Notify Fire/Emergency 	<ul style="list-style-type: none"> ➤ Use appropriate PPE ➤ Make repairs/eliminate AOC
Pipeline Damage <ul style="list-style-type: none"> • Coating Damage • Dents, Gouges, Scrapes, etc. 	<ul style="list-style-type: none"> ➤ Protect life & Property ➤ Prevent accidental ignition 	<ul style="list-style-type: none"> ➤ Locate source/cause of AOC



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<ul style="list-style-type: none"> • Gas Leak/Broke Line 	<ul style="list-style-type: none"> ➤ Notify appropriate personnel 	<ul style="list-style-type: none"> ➤ Make repairs/eliminate AOC
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RELATED PROCEDURES

- CONST013 – Installation of Steel Pipe in a Ditch
- CONST011 – Installation of Plastic Pipe in a Ditch
- CONST014 – Backfilling