



TOOL BOX SAFETY TOPIC

EXCAVATION AND TRENCHING

Introduction

The OSHA Standard for Excavation and Trenching is found in section 29 CFR1926.651 and 29 CFR1910 and applies to all open excavations made in the earth's surface. Excavations are defined to include trenches. There are many hazards but most can be placed into four categories:

- Underground utilities
- Confined space hazards
- Cave-ins
- Overhead power lines

Underground utilities are of major concern if there is any possibility of natural gas or electrical lines. Cave-ins are the most common hazard associated with excavations. Cave-ins can be the result of unsafe work habits, changes in weather that affect soil stability, and/or vibrations caused by construction activity. You must always be alert for changing conditions.

PRE-EXCAVATION

- Verify that the One Call has been made and that utilities are marked and the depth is verified before the commencement of digging activities. (All personnel must know this has been completed for their safety.)



- Wear appropriate personal protective equipment (PPE) as required by the task being performed and as required per OSHA regulations.

OCCUPIED EXCAVATION

The competent person needs to conduct a visual and manual test to determine the type of soil once the excavation has been opened.

The definition of a **Competent Person**:

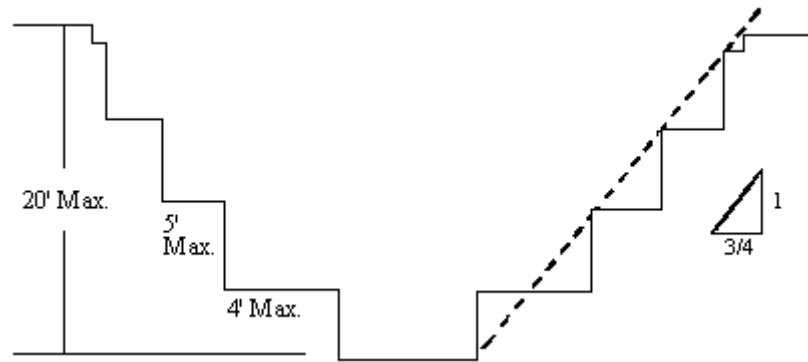
Competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Ensure that the following Best Practices are followed if the excavation is to be occupied.

- No employee shall enter any excavation until necessary protective system is in place and the competent person has determined that the excavation is safe to enter.
- Maintain a 2-foot lateral open area between the edge of the excavation and any material, equipment, and spoil.

- Assure that proper sloping, benching, or shoring techniques are utilized in excavations of five feet or greater in depth. Be aware of different soil classification and use the correct sloping for each classification. There are 4 types:

1. Solid Rock Vertical (90 Deg.)
2. Type A $\frac{3}{4}: 1$ (53 Deg.)
3. Type B 1: 1 (45 Deg.)
4. Type C $1\frac{1}{2}: 1$ (34 Deg.)



- Check for and remove any accumulation of water in the excavation.
- If the excavation is 4 feet or greater in depth, ensure a fixed means of proper egress within a maximum lateral travel distance of 25 feet.



- Ensure a spotter is used if there are overhead power lines, underground utilities, or tight working conditions in the work area.
- Ensure adequate ground cover of other utilities and crossings.
- Ensure that the competent person inspects and documents the excavation checklist at the beginning of each day, each shift change, and after every change of weather (i.e. rain storm)



- Protective systems for excavations of 20 feet or greater in depth must be designed by a registered professional engineer.
- Ensure that the public will be protected from all open excavations.

BACKFILLING

- Ensure all personnel, tools, and foreign materials are clear prior to backfilling.
- Comply with company specifications for backfilling.
- Ensure the protection and support of existing utilities and structures.

Excavation and Trenching Test Questions

1. Notification to utility owners (One Call) should be made before an excavation can start.
 - a. True
 - b. False
2. At a minimum, how far back from the edge of an excavation is the soil kept?
 - a. two feet
 - b. three feet
 - c. Four feet
3. When doing excavating you should do a soil test to evaluate the soil type.
 - a. True
 - b. False
4. A contractor wishes to use ladders, when necessary, to establish a means of entry and egress from his trench. At what depth are ladders, ramps and stairways mandatory?

- a. 6 feet
 - b. 5 feet
 - c. 4 feet
5. A contractor knows he will be crossing existing utilities with his excavation. Must existing lines be located before he begins his excavation?
- a. Yes
 - b. No
6. What is the maximum allowable lateral distance an employee can travel to reach a ladder or other acceptable means of egress in a trench excavation?
- a. 10 feet
 - b. 25 feet
 - c. 50 feet
7. OSHA calls a person who is capable of recognizing existing and predictable hazards, and has the authorization to make prompt corrective measures to eliminate or control them a?
- a. The Boss
 - b. Qualified person
 - c. Competent person
8. At what depth does OSHA require you to have cave in protection such as benching, sloping, or shoring?
- a. 5 feet
 - b. 8 feet
 - c. 10 feet

1-A, 2-A, 3-A, 4-C, 5-A, 6-B, 7-C, 8-A

Through the OSHA and American Pipeline Contractors Association (APCA) Alliance, APCA developed this Toolbox Talk for informational purposes only. It does not necessarily reflect the official views of OSHA or the U.S. Department of Labor. 03/2009

