

SECTION 4

Working Safely In And Around Trenches

The Competent Person

Soil Types

Soil Testing

WORKING SAFELY IN TRENCHES & EXCAVATIONS

- Have a plan in advance for working in trenches
- Safety cannot be improvised as “you go”
- Conduct job site analysis to identify hazards and potential hazards before work begins
- An employee working in or around an excavation must be trained (Minimum, Hazards & Protection)

THE COMPETENT PERSON

- A competent person must always be on site (usually a supervisor) and must have knowledge of soil sampling and excavation standards
- The competent person must be able to identify unsafe conditions and have the authority to stop work if they exist



- The competent person requires a greater level of training and experience than a regular worker
- All excavations over 5 feet require protection
- Some contractors require protection for excavations over 4 feet
- If excavations are made in stable rock, or are less than 5 feet deep, and a competent person has indicated that there is no risk of a cave-in then the protection is not needed
- Excavations deeper than 20 feet or below the base of an existing wall require protection designed by a professional engineer

Per OSHA Standard 29 CFR 1926 Sub Part P



- Finish excavations and trenching operations as soon as possible
- Barricade, protect, or cover an excavation or trench when workers are not present



Per OSHA Standard 29 CFR 1926 Sub part P

General requirements of the competent person

- Before digging the competent must evaluate the soil conditions
- There are 4 types of soil classifications
 - Stable Rock
 - Type A: Very good soil
 - Type B: Fair
 - Type C: Least stable
- The competent person must conduct 1 visual analysis and 1 manual analysis, visually inspecting and handling the soil

Soil Types

Solid Rock



Type A



Type B



Type C

Per OSHA Standard 29 CFR 1926 Sub Part P

Visual test of soil

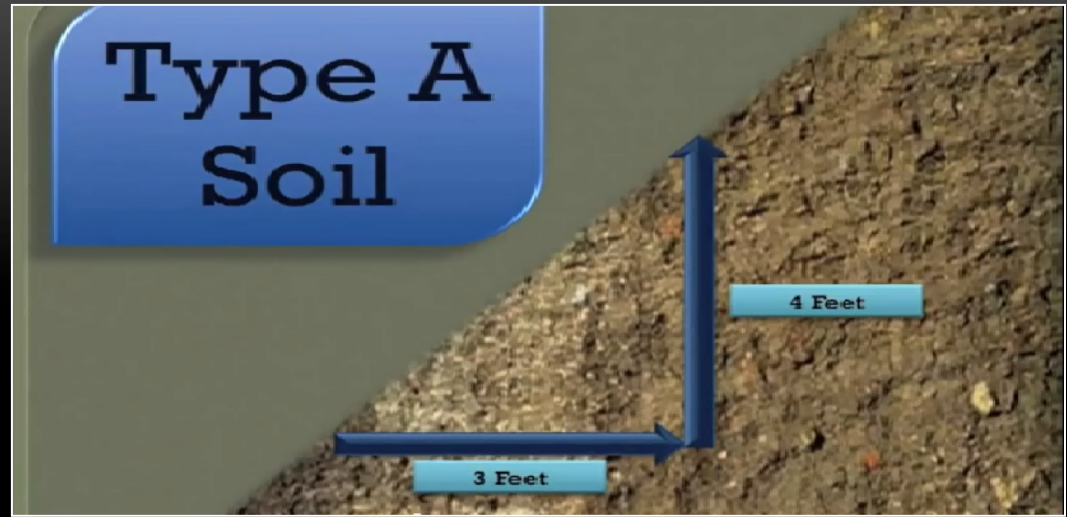
- Walk the entire excavation site at least twice
- Inspect soil adjacent to the excavation site
- Check for any signs of vibrations, fissures, or cracks, on the surface of the excavation site



Manual test of soil



- Thumb penetration test



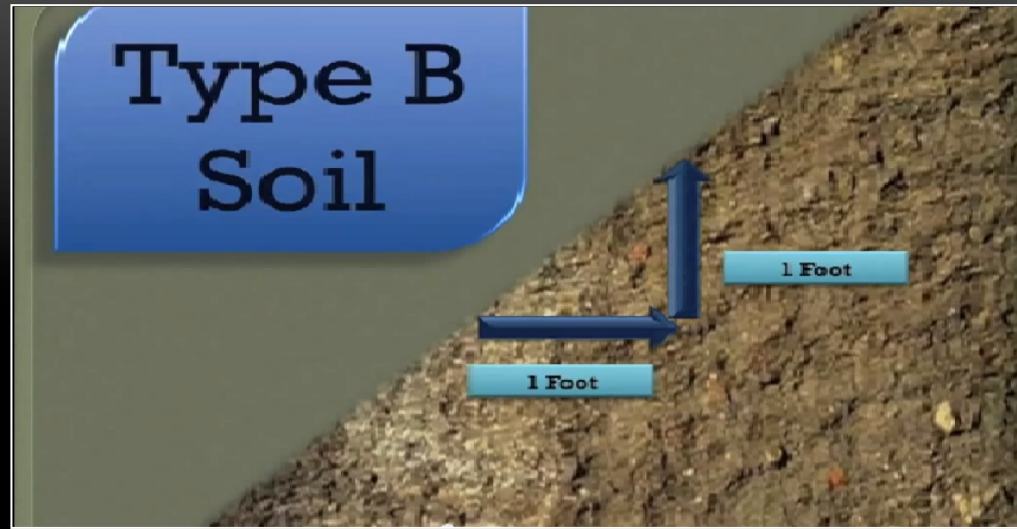
Thumb sinks in no more than $\frac{1}{4}$ inch = Type A soil

Slope of excavation can be no less than 3 feet horizontal for every 4 feet vertical

Manual test of soil



- Thumb penetration test



Thumb sinks $\frac{1}{4}$ - $\frac{3}{4}$ inch = Type B soil. Silt, sandy loam, or medium density clay.

Slope of excavation must can be no less than 1 foot horizontal for every 1foot vertical

Per OSHA Standard 29 CFR 1926 Sub Part P

Manual test of soil



- Thumb penetration test



Thumb sinks 2 inches or more= Type C soil.
Least unstable. Gravel, loamy sand, or soft clay

Slope of excavation can be no less than 6 feet
horizontal for every 4 feet vertical

Other soil tests

- Dry strength test
 - Crumble a sample of soil in your hands



Other soil tests

- Plasticity (wet thread test)
 - Attempt to mold a thin sample of moist soil into a thread 1/8 inch diameter by 2 inches in length



Other soil tests

- Pocket penetrometer



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