



Soil Classification & Type

Soil can be classified into three basic types. Each type has its own unique characteristics affecting its overall stability, including its ability to stick together and support weight.

TYPE A – Cohesive; does not crumble, is hard to break up when dry & maintains significant cohesion when submerged. Soil that has been previously disturbed, is subject to heavy vibration, or is fissured can never be classified as Type A. Can be sloped up to 53 degrees. Examples include clay & hardpan.

TYPE B – Granular, cohesion-less soils. Soils that have been previously disturbed. Crumbles easily when dry. Examples include sandy clay and silty clay, topsoil. Can be sloped up to 45 degrees.

TYPE C – Minimal to no cohesion. Does not stick together when dry. Examples include sand, gravel, and sandy dirt. Can be sloped no higher than 34 degrees.

Competent Person

OSHA defines a competent person as, *“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.* **Contact Safe Workforce Development for information on Competent Person training.**

June is National Trench Safety month, and OSHA is participating by hosting a national stand-down for trench safety this week. Unfortunately, trench collapses and cave-ins are rarely survivable. Did you know that a cubic yard of soil can weigh up to 3,000 pounds! Cave-ins usually have no warning. However, with proper planning, and protective systems in place, tragedy can be avoided. Let’s review trenching basics:

1. Trenches must be inspected by a competent person before the beginning of every work shift, and after any change in soil conditions (ex. Rain).
2. At 4 feet and deeper, trenches must have a safe means of access and egress every 25’ laterally from a worker.
3. At 5 feet and deeper, trenches must have a protective system; benching, sloping, shielding, or shoring.
4. Protective systems for trenches 20 feet and deeper must be designed by a registered, professional engineer.
5. Air quality issues are possible. Always continuously monitor the air anytime there is a possibility of excess CO₂, low oxygen (below 19.5%), toxic substances are present, or you are near a landfill.
6. Trenches must be continuously monitored for water and vibration, the two main causes of cave-ins and collapses.

Trench Safety

**PLAN. PROTECT.
PREVENT.**

Water & Vibration – Most trench collapses occur due to unstable soil and improper shoring. Water is the number reason for a sudden change in soil stability. At the bottom of a trench, it undermines the walls and erodes the soil’s ability to support itself. From the top of the trench, water is absorbed by the soil. Saturated soil becomes more like mud and is unable to support itself.

A common misconception is that shoring and shielding are the same thing.

Shoring is a support system designed to give additional structure or stability directly to the trench walls. Many types include the use of hydraulic or mechanical jacks in conjunction with metal or wood panels.

Shielding is a protective system that is designed to protect the worker in the event of a collapse. These are commonly called trench boxes.

Trench boxes must always be installed using the manufacturer’s instructions. They must extend a minimum of 18” above the trench wall, and can sit no higher than 2 feet from the trench bottom. Workers are not allowed to be in, or on trench boxes as they are being installed, or moved vertically.

Fatalities from trench collapses do not have to happen. Have a PLAN. Always PROTECT your workers and your trench. PREVENT tragedy.