



Trench Safety - Down And Dirty

Excavation and trenching cave-ins result in more than 100 fatalities annually in the United States. With little or no warning, an unsupported, improperly-shored or sloped trench or excavation wall can collapse, trapping workers below in seconds.

Dangers

- **There are an estimated** fifty related serious injuries. In addition to human losses due to excavating and trenching accidents, the financial cost can be staggering, due to property damage, work stoppage, workers' compensation claims, and other expenses.
- **Let's talk a little** more about the high cost of a cave-in. Have you ever witnessed a cave-in that buried a worker? Do you know that one cubic yard of soil weighs approximately 3,000 pounds (the equivalent of a Volkswagen)?
- **And do you know** what happens to a human body when 3,000 pounds of soil explodes onto it. It's too gruesome to describe, but we can tell you that within two seconds there is probably no life left in that body.
- **Most trench collapses** don't result in broken fingers, abrasions, or twisted knees. Most trench collapses take lives. The facts are that simple.
- **Before starting a job**, the following conditions should be considered: traffic, nearness and condition of structures, soil, surface and ground water, the water table, overhead and underground utilities, and weather.

Soils

- **OSHA's standards** describe three basic types of soils: "A" Soil, "B" Soil, and "C" Soil.
 - **"A" Soil** has compressive strengths of 1.5 tons per square foot or greater. It is very cohesive, and only has to be laid back at a ratio of 3/4:1 to maintain a safe working angle.
 - **"B" Soil** has compressive strengths of .5 to 1.5 tons per square foot. It is moderately cohesive, but must be laid back at a ratio of at least 1:1 to maintain a safe working angle.
 - **"C" Soil**, on the other hand, is so unstable (uncohesive), and has an unconfined compressive strength of .5 or less, and therefore must be laid back at a ratio of 1 1/2:1 to maintain a safe working angle.
- **Since the bulk** of the soil that all of us work in is "C" Soil, it means that we're constantly threatened with the dangers ever present in extremely unstable soil, where the slightest jar, vibration, rain/moisture, etc.,

can cause the side walls to collapse at the slightest provocation.

- **Therefore**, a competent person in our industry needs to have a thorough knowledge and understanding of the inherent dangers surrounding trenching operations, and must therefore apply the protective steps provided by OSHA in its 1926 (Subpart P) Standards.
- **Do you know the difference** between, “A” Soil, “B” Soil, and “C” Soil? Or do you simply assume that it is all “A” Soil, and therefore pretty safe? What’s “pretty safe?”
- **Do you know how** to not only measure or test the spoil pile in your excavation site but also how to visually inspect the trench walls for additional defects (fissures, freely-seeping water, surface cracks, roots, gradations (strata) of different types of soil, surface encumbrances, etc.)?

Do’s and Don’ts

Trench Shield: Has one role in life: To protect the workers in the trench system.

Ladder: To provide safe egress to and from a trench shield, that there be a ladder.

Inside Trench: The ladder must be immediately accessible to the workers in the trench (and must never be placed outside the shield system).

Hard Hats: A small pebble or hand-tool falling on a worker in a trench can cause concussions, skull fractures, death. Wear ‘em.

Locked in Place: Aluminum hydraulic shores, when expanded, must “lock” in place.

Improper Installation/Dismantling: Aluminum hydraulic shoring, as well as timber shoring must be assembled “from the top down,” and disassembled from “from the bottom up.”

Ramps: It’s okay to use “ramps” to enter and exit a trench, providing the ramp surface is compacted, is not wet, and can be accessed in an upright position.

Shoring hazards lead to many injuries or deaths. Why? Because too many times we make a misjudgement when we determine the type of soil we’re digging, and the selection of shoring systems.