DIGGING YOUR WAY

Dug any good holes lately? How about a trench? Or an excavation? Or a lateral line to carry utilities into a building? Aren't they all the same, you ask?

Not in your wildest dreams! Dogs dig holes for fun. Excavations are, for the most part, for basements of houses and buildings. But trenches, now that's where the experts come in. ***OSHA'S SUBPART P*** *discusses in detail how to safely dig a "trench." The difference is night and day…and maybe even a number of lives. Let's discuss this further.*

A cubic yard of dirt (earth) weighs approximately three thousand pounds. Now that's a big chunk of mother earth, enough to smother you to death if it falls on you…or maybe crush every bone in your body…or maybe just squeeze the life out of you, slowly and painfully, as you lift one hand pleadingly to your rescuer. Only he can't get to you quick enough, and you breathe your last breath of life, only seconds away from rescuer.

LAST WORDS

- "I'll only be in the trench a moment…"
- "Just a sec., boss…"
- "I don't need a ladder…"
- "There's a foot of water down here…"
- "This pine two by four will hold this wall…"
- "Help me, help me, help me…"
- "I don't want to die, get me out of here…"

Why do we start this Tool-Box Talk on such a mournful thought? Can't we be a little more cheerful about this whole subject of trench safety?

Well, how can we be cherry when we're talking about a man trapped in a trench collapse? How can we be optimistic when we see a partially-collapsed trench wall, and a man screaming to get him out of there? How can we be upbeat when we see a fellow worker grasping for breath as the Emergency Medical Team scrambles to rescue him?

BOTTOM LINE: O.K. Let's get down to basics, and talk about trench safety, about soils, about excavators, about shoring trench walls, about using ladders to get out of trenches, about aluminum hydraulic shores, about wood timber shores, about steel trench boxes, about sloping of trench walls.

SOILS—HOW MANY TYPES? OSHA describes four types of soils, starting with STABLE ROCK. If it's really "Stable Rock," and there's no doubt about it, we really don't have to shore those walls. They aren't going anywhere.

The only problem is that out of ten thousand trenches dug, less the one percent is "stable Rock." So let us go to the next soil: CLASS A.

CLASS A SOIL means cohesive soils, with an unconfined compressive strength of 1.5 tons per square

foot, or greater. It means that we only have to slope the trench walls back to a ratio of ¾:1. But, if it's fissured, or has been previously disturbed (excavated), or is subject to vibrations from traffic, etc., it must be downgraded to either "B" soil, and probably "C" soil, the weakest, most dangerous kind.

What if it's CLASS B SOIL, with an unconfined strength of .5 to 1.5 tons per square foot? WE slope the trench back to a ratio of 1:1…unless it's previously disturbed soil…so we downgrade it to CLASS C SOIL.

So, now we're stuck with CLASS C SOIL, with an unconfined compressive strength of .5 tons per square foot, or lesser, and sloped at 1 ½:1. Didn't we say before that this is **the weakest, most dangerous kind of soil?** Yes, we did, so now were going to have to take strong precaution as we excavate this CLASS C soil trench, which is so uncohesive that it can collapse in a heartbeat.

Get out the heavy-duty trench boxes (rated for C soil)…or aluminum hydraulic shores (rated for C soil)…or timber shores (rated for C soil)…or slope the walls at a minimum of 1 ½:1 (rated C soil).

LET'S RECAP: This is a long story, but it tells a strong story. Most soil out there is "C" soil, extremely uncohesive, and will reach out and bite you at the slightest provocation.

If you'll remember this story, however, the next time you start to excavate a trench, and you accept the fact that it tests for C soil, you're going to bring in the heavy-duty shore systems, with ladders for egress to the trench, spoil pile back at least two feet from the lip of the trench, and we're pretty well on our way to safety excavating this trench(where we'll shortly be placing bedding material in the bottom of the trench, then pipe, then backfill, and finally compaction).

APPENDICES: OSHA's Subpart P (Underground Construction) tells you the whole story about safely working in soils of all types, and provides detailed data in **APPEDNICES A THROUGH F** about the sizes of the shore systems you select for your excavation projects.

These APPENDICES are finite numbers, and are easy to discern once you walk through a few exercises in "sizing" the shoring systems you elect to use in your next excavation project. The numbers are there for you, so you can't go wrong…unless you cut corners. REMEMBER, the majority of the soils out there are CLASS C soil, requiring the heavier shoring systems, the sloped walls, and the extra precautions taken with "dangerous" soil conditions.

TRAINING

As with most OSHA Standards, training to safely work in excavations relies on your ability to read through the OSHA Standards, to understand them, to apply them, and to double-check your calculations and decisions.

Each jobsite must have at least one "competent person" in soils analysis," who in turn can supervise and train (almost daily) his trenching crew (from the excavator operator, to the newest new-hire).

Without the OSHA Standards on Subpart P (Underground Construction), however, you will be lost in a maze of numbers, figures, calculations, soils classifications procedures, and equipment operations.

The underground construction industry is a strong fraternity of experienced craftsmen, steeped in the science of SOILS.

If you work in and around soils, listen to these men, learn from these men, and you'll go home to your family every night, your body in good condition, no injuries, and your head held high.