EXCAVATION SAFETY

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The term "Competent Person" is used in many OSHA standards and documents. An OSHA "competent person" is defined 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" [29 CFR 1926.32(f)]. By way of training and/or experience, a competent person is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation, and has the authority to correct them.

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The day started like any other day, I rose, prepared for the day ahead, hugged my wife and kids, then headed off for work. Little did I know this day would change how I looked at, and valued, life and safety. Working as a plumber doing a sewer connection for a new house in an existing development can have some challenges. There was no lateral, so the sewer main had to be excavated in the middle of the street, 14 ft down. Most of all, there was no "Competent Person".

I was young and invincible as I climbed down the ladder to expose and connect to the existing sewer main. The trench was 4 ft wide at the bottom 8 ft wide at the top, and 14 ft deep. I marked out the area to drill and proceeded to use a masonry drill to install the saddle.

OSHA describes soil types as A, B, or C, cohesive to granular. Type A soil is the most stable soil in which to excavate. Type C is the least stable soil. Remember, a trench can be in any combination of soils at any time. OSHA requires that a "competent person" determine the soil type. All trenches that are five feet or deeper must follow OSHA's rules. The appendices of the OSHA Excavation Standard show the various types of support systems that may be used, up to a maximum depth of 20 feet. Excavations deeper than 20 feet must use a protective system approved by a professional engineer.

My trench was not checked by a "Competent Person", I had never even heard of one. There was no support system in place. I was drilling my 3rd hole when I heard "Look Out" from above, then silence and darkness around me. I was buried alive.

"In the U.S., more than 800 construction workers die every year while on the job. One of the most dangerous types of construction work is trenching, which kills 40 construction workers every year. Workers can suffer death or serious injury within minutes of being caught in a trench cave-in. But these deaths can be prevented." (https://www.osha.gov/dts/vtools/construction/soil_testing_fnl_eng_web_transcript.html)

OSHA states that you should start with a "Visual Test" to determine if there are factors on site that will lower the strength of the soil. Look at the soil pile to see if the soil is cohesive or granular. Look for fissures or cracks. Be aware of signs of any previous excavations. Those of you performing maintenance or repair on any part of your water system will almost always be dealing with unstable, previously excavated soil, and of course, water. If you cannot use a "Trench Box", shelving or sloping is a must. Most municipal excavations are done in the "Right of Way" therefore shelving or sloping will not work. Every bit of soil that comes out goes back in, requiring compacting.

I was on my knees 14 ft in the ground holding an electric drill with at least 4 ft of soil on top of me. The vibrations from the drill and a fissure from a previous excavation caused the bank to tip over on top of me. All I could hear was the muffled sound of an excavator starting up. The company owner was on the excavator and attempting to dig me out. I felt 1 scoop, 2 scoops, the third was real close, the 4th a tooth of the excavator went up the side of my head removing my hardhat and taking away my little pocket of air. The operator seeing the red liner of my hard hat thought it was blood. I remember screaming then everything went black. Had my excavation been shelved, there would have been a 20 ft wide hole in the road, with an 8 ft trench box. It would have been a lot narrower. We had none of these in place.

Any employee who enters a trench must be protected from cave-ins by a protective system if the excavation is 5 feet or greater in depth, unless it is dug into stable rock. A protective system is not required if the trench is less than 5 feet in depth and examination of the ground by a "competent person" provides no indication of a potential cave-in. The types of tests that can be done, you should employ at least 2 of these tests at the excavation, plasticity test, or pencil test, as it is called in the field. Roll the soil between your hands into a 2 inch Pencil, hold it with 2 fingers, if it falls apart it is Class C soil. Thumbnail test, Type A soil, you will barely leave an imprint. Class B soil, you can push with effort to the end of the thumbnail. Type C soil, the thumb will push completely into >>>

the soil.

My soil as I have learned was Type C, for multiple reasons. It was non cohesive, in the area of a previous excavation, and under the influence of vibration from the masonry drill. The operator instantly started digging 2 ft over catching a water service that sprayed right in his face. Now we added water to the issue. After securing the water with a hammer, excavation continued. When my eyes opened I was uncovered to my waist, still on my knees with an oxygen mask over my face, people were franticly working to free me. I heard one of the EMT's holler, "He's Alive". So they said when they found me I was unresponsive and blue and feared dead. It wasn't my time. They say your life passes before you but the only thing I saw was leaving my family behind.

The third way of testing soil is with a "Penetrometer". Type A soil will measure at least 1.5 tons per square foot. Be aware, that you can't classify a soil as Type A if the excavation site didn't meet all the conditions of the visual test: if it is granular, near a source of vibration, or there are signs of previously disturbed soil, water seepage, or fissured soil. For Type B Soil, the reading will be between 0.5 and 1.5 tons per square foot. Type C soils are equal to, or less than, 0.5 tons per square foot. In our field of work I believe we will find soils that are mostly Type C in classification.

I climbed out of the hole under my own power, still clutching the electric drill. I had a lights and siren ride to the local hospital. I spent 4 hours in the ER, then was sent home. The next day I attended the extensive interview with OSHA. Their first question to me was, "Where was the drill plugged in" They wanted to be sure it was in a GFI outlet. My employer was not fined but was told to spend the money on safety equipment. A local welding shop built 2 very sturdy trench boxes. It was a long time before I would climb into one of those boxes.

Whether your soil is Type A, B, or C, we all have a responsibility to protect ourselves and those around us. Proper training of a "Competent Person" is a must. This person is not the guy in the trench, the excavator operator, or the Superintendent who occasionally stops on site to see your progress. It is an OSHA requirement.

I still have nightmares; a phone ringing will cause me to jump. I no longer wake in the middle of the night panicking unable to breathe. If you are in an elevator with me you will see white knuckles holding the rail. It has helped me through the years to talk about my experience. If I can be of any help on this subject, or others, feel free to contact me (holley@nyruralwater.org (518) 828-3155 X 24). I hope to see you in my travels throughout Western NY. 💧💧💧