TerranearPMC Safety Share

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Week of October 14, 2019 – Trenching and Excavation Safety

Once a year the Occupational Safety and Health Administration (OSHA) presents its top 10; that is, the top 10 S&H regulations for which US businesses are out-of-compliance. And over the years a definite pattern has taken shape, whereas the same regulations are constantly being violated and therefore, placing the American worker in harms way. Electrocutions, excavation cave-ins, falls from elevated heights, contact with heavy equipment are major conditions in which we see unfortunate outcomes year after year. And even though companies continuously receive citations and punitive actions, these workplace infractions remain. This may explain why the field of occupational S&H continues saying the same thing. It has been said that the definition of insanity is doing the same thing over and over again and expecting a different result. So maybe S&H professionals may need to address repeated safety infractions by using a different approach.

For work involving trenches and excavations, OSHA, over the course of many years, and through the aide of subject matter experts, has established regulations that are designed to protect workers while performing activities within and immediately outside of these work areas. And as many S&H professionals note, that accidents that do occur within trenches and excavations are due, not because of any shortcomings of the safety requirements, but rather because people continue to ignore these safeguards.

For instance, every year OSHA relays a story of someone losing his/her life because they enter an excavation after a trench shield has been removed and the worker feels the need to retrieve an item (left inside the trench) such as a shovel or even a pack of cigarettes. And at that very moment, the trench collapses.

People just seem to take chances without truly examining the potential consequences. Workers should not take the chance of going into an unprotected trench for any reason for any period of time. Cave-ins happen in a fraction of a second. You turn around and it's on you.

OSHA defines an excavation as "any man-made cut, cavity, trench or depression in the earth's surface formed by earth removal." A trench is "a narrow underground excavation that is deeper than it is wide and is no wider than 15 feet." The agency points out that 1 cubic yard of soil can weigh up to 3,000 pounds – approximately the weight of a small car. Therefore, it should be no wonder that when there is an excavation collapse, the results are catastrophic.

OSHA data shows that the fatality rate for excavation work is 112 percent higher than the rate for general construction, while employee injury from collapse is the primary hazard of excavation work. And the leading cause of worker injuries is a lack of protective systems. This is consistent with data showing that 23 workers were killed in trench collapses in 2016, surpassing the combined total from 2014 and 2015. No matter the nature of the work or depth of the trench, excavations are unstable.

The OSHA standard for trenching and excavation – 29 CFR 1926, Subpart P (650-652) – requires protective systems for trenches that are 5 feet or deeper, unless the excavation occurs in stable rock. Once a depth of 20 feet is reached, a registered professional engineer must design protective systems (or use approve tabulated data prepared for the system).

Key points in the OSHA standard include:

- The OSHA standard for trenching and excavation requires protective systems for trenches that are 5 feet or deeper, unless the excavation occurs in stable rock. Types of protective systems include sloping, shoring and shielding.
- OSHA also requires that a safe means of access or egress – such as ladders, steps and ramps – be located within 25 feet of all workers for excavations 4 feet or deeper.
- Preplanning is paramount in excavation work. The designated competent person leading the operation takes a central role by understanding OSHA regulations and recognizing existing and potential hazards

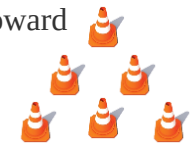
OSHA specifies the three methods to prevent cave-ins:

- **Sloping (or benching).** Cutting back the trench wall at an angle inclined away from the excavation.
- **Shoring.** Installing aluminum hydraulics or other types of supports to prevent cave-ins.
- **Shielding.** Using trench boxes or other supports to prevent cave-ins.

Even after protective systems have been implemented, daily inspections are mandatory as conditions can change daily while in many cases atmospheric hazards also might arise from work and could resemble those found in confined spaces. A job near an underground natural gas line, for example, would warrant air sampling while crews working near old landfills should be mindful of a possible exposure to methane gas or hydrogen sulfide: methine having an explosive range of 5% - 15% and hydrogen sulfide being a significant chemical asphyxiant.

Daily inspections need to be performed by an OSHA competent person. Important questions a competent person should ask during a site assessment include:

- Is the cut, cavity or depression a trench or an excavation? Is it more than 4 feet deep? Does it contain water?
- Are there adequate means of access and egress? Are there surface encumbrances or exposures to vehicular traffic? Are adjacent structures stabilized?
- Is equipment operating near the trench or excavation? Does the equipment have warning systems?
- Does the trenching or excavation work require sloping, shoring or shielding? If shielding is used, does the shield extend at least 18 inches above the surrounding area if it is sloped toward the excavation? Is the depth of the cut more than 2 feet below the bottom of the shield?
- Is emergency rescue equipment required?
- Is there documentation of the minimum daily excavation inspection?



And during the project as well as upon completion, getting feedback is crucial. Make notes on what went right and where improvements could be made can make a difference in upcoming projects. This process does not need to be lengthy. A five-minute discussion can prove to be quite beneficial.

The only man who never makes mistakes is the man who never does anything - Theodore Roosevelt