TerranearPMC Safety Share

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It is indeed unfortunate, but the fact is, even today, with modern technology (especially in the United States), accidents involving excavations still occur. And it seems that at least once a year, a tragic story makes the major news networks that describes an event where a person or persons are killed when the walls of an excavation collapse. The main cause of fatalities due to an excavation collapse is suffocation. Other times a person gets severely injured from the weight of a piece of a heavy equipment that was placed too close to an excavation edge, thereby landing on top of those in the excavation. Some people may even believe that if a wall collapses on them, they can dig their way to the surface. The fact is, 1 cubic yard of dry dirt weighs approximately 2,000 lbs. And, as is typically the case, this weight will increase significantly when the soil is wet. Sand and gravel can tip the scales at upwards of 3,000 pounds per cubic yard.

Excavation and trenching are among the most hazardous construction operations. 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 defined as a narrow underground excavation that is deeper than it is wide and is no wider than 15 feet (4.5 meters).

Data from the U.S. Bureau of Labor Statistics (BLS) as well as multiple national databases by NIOSH researchers found that trenching and excavation hazards have resulted in hundreds of deaths in recent years. A review of these incidents indicate that sixty-eight percent of fatalities occurred with companies with fewer than 50 workers. Forty-six percent of the deaths occurred in small companies with 10 or fewer workers. Hazards associated with trench work and excavation are recognized and preventable, yet injuries and fatalities associated with these hazards continue to occur. Regulations and consensus standards describe engineering controls, protective equipment, and safe work practices to minimize hazards for workers during trench work and excavations. Based on these statistics, one can deduce that larger companies, with personnel that are dedicated to S&H, implement appropriate controls for workplace hazards (including those associated with excavations) as they have been given the authority to perform S&H tasks per management accountability. However, as these number suggest, even companies with a dedicated S&H are not immune to excavation hazards. Then the question to ask, is why?

Recently, in El Paso, Texas, OSHA cited a construction company for failing to protect its employees from trench collapse hazards. The company currently faces penalties of $190,642. While this may seem like a substantial sum, how does this amount compare to a family losing a husband or father – or for that matter mother and wife? The truth is, there is no amount of money that can truly compensate such a loss. This is the reason why OSHA and the S&H industry strive for prevention.

The reason for OSHA's citation stems from the company's failure to 1) provide employees a safe means of entering and exiting a trench, 2) not protecting employees against cave-ins, and 3) for failing to train employees in safe work practices. As it turns out, this particular company has a history of not maintaining appropriate hazard controls associated with excavations, as OSHA cited the company four times in 2017 for failing to protect employees from trench collapse hazards.

The fact is, cave-ins pose a great risk and are much more likely than other excavation-related accidents to result in worker fatalities. Other potential hazards include falls, falling loads, hazardous atmospheres, and incidents involving mobile equipment. Trench collapses cause dozens of fatalities and hundreds of

injuries each year.

Trenches 5 feet (1.5 meters) deep or greater require a protective system unless the excavation is made entirely in stable rock. Trenches 20 feet (6.1 meters) deep or greater require that the protective system be designed by a registered professional engineer or be based on tabulated data prepared and/ or approved by a registered professional engineer.

There are different types of protective systems that can be used to protect workers from cave-ins. Sloping involves cutting back the trench wall at an angle inclined away from the excavation. Shoring requires installing aluminum hydraulic or other types of mechanical supports to prevent soil movement and cave-ins. Shielding protects workers by using trench boxes or other types of supports to prevent soil cave-ins. Designing a protective system can be complex because many factors must be considered: soil classification, depth of cut, water content of soil, changes due to weather or climate, surcharge loads (e.g. spoils and other materials to be used in the trench) and other operations in the immediate vicinity (for instance, operating a piece of equipment where exhaust emissions accumulate in the excavation – a serious potential for carbon monoxide build-up and/or oxygen depletion).

The OSHA standard requires that trenches be inspected daily and as conditions change by a **competent person** prior to worker entry to ensure elimination of excavation hazards. A competent person is an individual who is capable of identifying existing and predictable hazards or working conditions that are hazardous, unsanitary, or dangerous to employees and who is authorized to take prompt corrective measures to eliminate or control these hazards and conditions.

OSHA requires safe access and egress to all excavations, including ladders, steps, ramps, or other safe means of exit for employees working in trench excavations 4 feet (1.22 meters) or deeper. These devices must be located within 25 feet (7.6 meters) of all workers.

Other General Trenching and Excavation Rules mandated by OSHA

- Keep heavy equipment away from trench edges.
- Keep surcharge loads at least 2 feet (0.6 meters) from trench edges.
- Know where underground utilities are located.
- Test for low oxygen, hazardous fumes and toxic gases inside the excavation before entry.
- Inspect trenches at the start of each shift.
- Inspect trenches following a rainstorm.
- Do not work under raised loads.

Under the *Occupational Safety and Health Act of 1970*, employers are responsible for providing safe and healthful workplaces for their employees. OSHA's role is to help ensure these conditions for America's working men and women by setting and enforcing standards, and providing training, education and assistance. However, it is important to recognize that the burden of safety rests not just with OSHA and the S&H community; but with each and every one of us. Bottom line: if you see something that doesn't look safe – SAY SOMETHING!

America's greatest strength has always been its hopeful vision of human progress - John McCain