

Adhering to Safety Guidelines Reduces Risk

A trench is defined as a narrow channel dug below the surface of the ground that is deeper than it is wide. When an excavator digs a hole, he makes an excavation. When he makes that excavation deeper than it is wide and not more than 15 feet wide at the bottom, he has created a trench. Most trenches are dug to lay pipe or place man-holes, conduit runs or footings.

Statistically, trenching is one of the most hazardous construction jobs. Each year in the United States, trenching accidents account for more than 5,000 serious injuries and 100 deaths.

The majority of trenching accidents are caused when trench walls fail. Cave-ins can occur even in small trenches. Many workers think that if the cave-in is small, they can dig themselves out of a shallow trench. That is not necessarily the case. In a cave-in, a worker buried under only a few feet of soil can experience enough pressure in his chest to prevent his lungs from expanding causing him to suffocate in as little as three minutes.

Dirt, even small amounts, can be heavy. A cubic foot of average soil which is one foot wide by one foot front-to-back to one foot high can weigh as much as 114 pounds while a cubic yard can weigh more than 3,000 pounds.

Undisturbed earth stays in place because of the soils opposing horizontal and vertical forces. When a worker creates a trench, he removes the soil that provides the horizontal support. Soil behind the face of the unsupported trench will eventually move downward into the excavation. The longer the face remains unsupported, the more likely it is to cave in. Soil and rock characteristics also affect the stability of a trench.

Cave-ins can be caused by the vibration of nearby equipment or traffic, the weight of equipment that is too close to the edge of a trench, soils that do not hold tightly together and water weakening the strength of the trench sides.

Cave-ins are not the only hazard in excavation work. Lack of oxygen, toxic fumes, explosive gases and buried power lines may also be present. According to statistics from the Bureau of Labor, nearly 11 percent of trenching accidents involved workers struck by backhoe buckets or crushed and asphyxiated between trench walls or excavation equipment. Other documented accidents involved drowning in



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flooded trenches, being exposed to toxic conditions during excavation and workers falling into the trenches.

Because of the potential dangers, anyone working in or around a trench should be aware of the hazards involved. Digging a trench should be considered a very dangerous task. The best way to prevent an accident is good preplanning.

The federal Occupational Safety and Health Administration (OSHA) has established guidelines for minimizing the risks to workers in excavations. OSHA standards state that contractors must train employees about the hazards of trench excavation and how to protect themselves.

Unfortunately, many contractors who excavation work still think it is too expensive or takes too much time to provide appropriate safeguards. Contractors may take the risks because they have not experienced the consequences of a cave-in. For many workers it may seem easy to try to work fast in a trench and get out without taking the correct safety steps. Competition is an issue that contractors cite for not following trench safety guidelines. A company that breaks the rules works faster and cheaper than a company that follows them. Experts estimate that it can take several

man hours to prepare a trench. A backhoe or an excavator is needed to drop-in a dumpster-sized trench box. This allows some companies to underbid competitors and get the work.

Gambling with the lives of employees is not something that companies should consider given the fact that most if not all trench accidents are avoidable. According to OSHA statistics, 60 percent of workers killed in trenches had not received proper training about the dangers they faced. Of all the trenches OSHA inspected in a one year period, 64 percent were found to be in violation of federal regulations.

OSHA indicates the top five serious citations for trenching and excavation violations were: lack of proper protective systems used in the excavation including inadequate or no existing protective system within the trench, lack of site excavation inspections, lack of filed practices to control the existence of loose rock and soil, lack of a means of access and egress within a trench and worker exposure to vehicular traffic.

While some contractors may think of trench protection primarily as a government-mandated safety regulation, the fact remains that countless workers have been spared from serious injury or death because of the proper use of these products. **UF**