

In the Trenches

Trenching and excavation work are some of the most hazardous operations in the construction industry. With no reliable warning, a trench can cave in, leaving workers no time for a safe escape. Even a partial cave-in can be fatal. According to the California Occupational Safety and Health Administration (Cal/OSHA), 26 California workers were killed, and 207 workers injured in trench cave-ins over a five-year period. Fortunately the hazards involved with trench work are known, and preventable with the proper use of protective systems, and safe work practices.

Protection systems involve stabilizing trench walls to protect workers from cave-ins of material that can fall or roll into an excavation/trench. These methods of protection include:

- Shoring – Support structures are placed within the excavation and designed to prevent a trench from a cave-in.
- Sloping – Excavating the soil at an angle, making the top of the trench wider than the bottom.
- Benching – As the trench is excavated, the sides step down so the banks do not have to support more material than they are capable of.

The depth of the trench and soil type helps to determine the proper method of protection. Trenches 5 feet or deeper require a permit from the Division of Occupational Safety and Health (DOSH). Protection systems are not necessary for trenches that are five feet or less, *unless* there is a chance of soil movement. The stability of the soil could become compromised due to settling, changes in the weather, or vibration from machinery. Excavations greater than 20 feet deep need to be designed by an engineer.

Classification of the soil stability and selecting the appropriate protective system must be done by a Cal/OSHA defined *competent person* (one who understands soil classification, relevant Cal/OSHA regulations, is able to recognize any hazards, and is authorized to correct the hazards). The competent person must also inspect the trench, adjacent areas, soil conditions, and protective systems daily before work begins and throughout the day as conditions change (due to weather, earthquakes, etc.).

Employers should have a Trench Emergency Action Plan in place that outlines the steps in case of an emergency, along with contact information for Cal/OSHA, the fire and police departments. In addition to utilizing protective systems and having an action plan in place, employers must also educate their workers on safe work practices.

Employers should provide workers with proper training to be able to recognize the causes that could trigger unsafe conditions in or around the trench area such as:

- Being aware of parking heavy vehicles near the trench, the weight of the vehicle may compromise trench integrity.
- Digging a trench near a roadway, or where other construction operations have the potential to create vibration. Shoring/sloping design must reflect these conditions.
- Placement of waste dirt/soil within 2 feet of the excavation.
- Development of wet weather/water in the excavation.
- Coming into contact with utility lines.

- Entering a trench that does not have a protective system in place (if required), even for a short task.
- Knowing to immediately exit the trench and notify the competent person if there are any signs of problems with the protective system.

Working in trenches can be unpredictable and perilous. Eliminate the possibility of a cave-in or injury by utilizing the proper protection system. Remain attentive to changes in the condition of the trench and always follow safe work practices.

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