

Safety In The Trenches

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Trenching is one of the most hazardous activities in construction. Yet, trenches and excavations are necessary for certain types of work, such as for the installation and repair of utility lines, water and sewer lines, television cable, to build roads, and many other jobs. Anyone whose work requires them to work in or around a trench or excavation site should be aware of the hazards.

A trench is a narrow channel made below the surface of the ground that's deeper than it is wide. An excavation is any man-made hole or trench that is made by removing earth. The greatest risk for both is cave-ins. With little or no warning, an unsupported, improperly shored or sloped trench or excavation wall can collapse killing or injuring workers. Cave-ins can be caused by:

- * Vibration of nearby construction equipment or vehicle traffic.
- * Weight of equipment that is too close to the edge of the trench.
- * Soils that do not hold tightly together.
- * Soil that has been dug in before is not as stable as undisturbed earth.
- * Water weakening the strength of the trench sides.

Prior to trenching or excavation activities, site plans should be reviewed to locate hidden obstructions like underground pipes or utilities that may affect ground stability. Obstructions should be physically located and either removed, clearly marked or protected from damage. Once work begins, a "competent person" must make a daily inspection of the trench or excavation and the protective systems. Inspections must also be made after rainstorms or any change in conditions which could weaken the trench. A "competent person" is one who knows the Cal/OSHA provisions relating to trenches, excavations, and earthwork with its related protective systems and is knowledgeable in soil analysis.

Every trench is a possible trap for hazardous atmospheres. Hazardous atmospheres may be generated as toxic gases can be released by the digging or accumulate in the bottom of the trench from machine by products or organic substances. The "competent person" should be able to recognize and test for hazardous atmospheres and have the authority to take prompt corrective action. They must ensure that workers can get in and out of the trench quickly. In trenches deeper than 4 feet, workers must have a way to get in and out (access and egress), usually a ladder, for every 25 feet of horizontal travel within the trench. If dangerous conditions are noted, all work should be stopped and not resumed until the problem has been corrected.

The trenching or excavation operations should include methods for protecting workers from cave-ins, from material that can fall or roll into an excavation or trench, and from the collapse of nearby soil structures. Protective systems include shoring, sheeting, shielding, sloping and benching. For trenches between 5 feet and 20 feet deep, protective measures are legally required. It is up to the planners of the construction project and the competent person on site to determine which systems will work best. If an excavation is greater than 20 feet deep, a registered professional engineer must design the protective system.

Even small trenching and excavation jobs can present serious safety hazards. Fortunately, most accidents can be anticipated and avoided with education, training, and good planning. For more detailed information on this topic, visit the website maintained by the Occupational Safety & Health Administration at

<http://www.osha.gov/SLTC/trenchingexcavation/index.html>