

SAFETY FACTS: TRENCHING AND EXCAVATION

HAZARDS TO CONSIDER BEFORE EXCAVATING

Obstacles Above Ground

Any object above ground that creates a hazard for employees (e.g. power lines) should be removed or supported.

Underground Installations

- Sewer, telephone, fuel, electric, water lines, natural gas lines, or any other underground installations must be determined before excavating begins.
- Utility Companies must be contacted before excavating begins. (Call 1-800-321-ALERT Statewide, or 260-1990 in Albuquerque).
- While the excavation is open, supported or removed as necessary to safeguard employees.
- Utilities shall be called 48 hours in advance, before digging- no more than 10 days in advance.

Undermining of Nearby Structures

- If the stability of nearby buildings, walls, sidewalks, pavements, or other structures will be affected by the excavation, support systems such as shoring, bracing, or underpinning shall be provided.
- Excavation below the level of the base of any foundation or wall that might be a hazard to employees only permitted when:
 1. A support system, such as underpinning, is provided.
 2. The excavation is in stable rock.
 3. A registered professional engineer has stated it is safe.

Materials and Equipment

- Materials and equipment used for protective systems must be free from damage or defects that might keep them from working correctly.
- Manufactured materials and equipment used for protective systems shall be used and maintained according to the recommendation of the manufacturer, and in a way that will prevent employee exposure to hazards.
- When material or equipment that is used for protective systems is damaged, a competent person shall examine the material or equipment and decide whether or not it is fit for further use.

Installation and Removal of Support Systems

- Support systems must be installed and removed in a way that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.
- Individual members of support systems shall not be subjected to loads exceeding those for which they were designed.
- Before temporary removal of individual members begins, additional precautions shall be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.

- Removal must begin at, and progress from, the bottom of the excavation. Members must be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.
- When possible, backfilling shall be done at the same time.
- Excavation of material to a level no greater than 2 feet below the bottom of the members of a support system is permitted, but only if the system is designed to resist forces calculated for the full depth of the trench. There must be no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.
- Installation of a support system shall be closely coordinated with the excavation of trenches.

Shield Systems

- Shield systems must not exceed the load for which the system was designed.
- Shields must be installed so that they restrict lateral or other hazardous movement of the shield.
- Employees must be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.

Standing Water and Water Accumulation

- Methods for controlling standing water and water accumulation must be provided and should consist of the following if employees are permitted to work in the excavation:
 1. Use of special support or shield systems approved by a registered professional engineer
 2. Water removal equipment, i.e. well pointing, used and monitored by a competent person
 3. Safety harnesses and lifelines used in conformance with 29 CFR 1926.104
 4. Surface water diverted away from the trench
 5. Employees removed from the trench during rainstorms
 6. Trenches carefully inspected by a competent person after each rain and before employees are permitted to re-enter the trench

Hazardous Atmospheres and Confined Spaces

- Employees shall not be permitted to work in hazardous and/or toxic atmospheres:
 1. Less than 19.5% or more than 23.5% oxygen;
 2. A combustible gas concentration greater than 20% of the lower flammable limit; and
 3. Concentrations of hazardous substances that exceed those specified in the *Threshold Limit Values for Airborne Contaminants* established by the ACGIH (American Conference of Governmental Industrial Hygienists).

For your Safety

- Slope or bench trench walls or, or
- Shore trench walls with supports, or
- Shield trench walls with trench boxes.
- Provide safe access through the use of ladders, ramps or stairways.
- Keep heavy equipment away from trench edges.
- Know where underground utilities are prior to digging.
- Keep excavated or other materials at least 2 feet back from the edge of trench.