

Trenching and excavation

Trenching and excavation work can be hazardous if not properly managed. The Occupational Safety and Health Administration (OSHA) has specific safety requirements to ensure the safety of workers engaged in these activities. OSHA regulations 29 CFR 1926.651 and 1926.652 identify the specific excavation and trenching requirements. Although these regulations pertain to OSHA's Construction Standard, they can be used in other industries, so taking the necessary precautions regardless of your organization is key to safe working conditions.

An **excavation** refers to any man-made cut, cavity, trench or depression in the earth's surface formed by soil removal. A **trench** is defined as a narrow excavation (in relation to its length) made below the surface of the ground. The hazards associated with both activities are dangerous, and many times can result in a fatality. Cave-ins are considered the most common due to the weight of the soil. In fact, one cubic yard of soil can weigh as much as a car (around 4,000 pounds or 2 tons)!! Other hazards associated with trenching and excavation include falling loads, hazardous atmospheres and incidents involving mobile equipment.

Here are some of the main safety requirements outlined by OSHA to help keep workers safe when trenching and excavating.

Protective Systems – Various protective measures have been developed and can be used by employers in order to help prevent cave-ins.

- Sloping – Cutting back the trench wall at an angle inclined away from the excavation.
- Benching -Excavating the sides to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
- Shoring – This requires installing hydraulics or other supports to prevent soil movement.
- Shielding—Shielding is the most complex, but it basically uses trench boxes or other types of supports based on soil analysis and conditions.

Competent Person – OSHA requires a competent person to be present at the worksite if trenching or excavation operations are to be conducted. The competent person must be knowledgeable to evaluate the work area for hazards, including:

- Conducting site inspections.
- Designing structural ramps.
- Classifying soil to recommend appropriate protective systems. Soil conditions are categorized as Stable Rock, Type A, Type B and Type C.
- Identifying existing, predictable or unsanitary risks such as monitoring water removal.
- Have the approval to take corrective actions or authority to eliminate hazardous conditions.

Access and Egress – These are steps OSHA requires organizations to follow for access and egress when projects require trenching and excavating:

- Employers must provide ladders, steps, ramps or other safe means of egress when working in trenches of 4 feet or more.

- The means of egress must be located so employees do not have to travel more than 25 feet laterally within the trench.
- Structural ramps used in trenches must be designed by a competent person and be uniform in thickness and joined in a manner to prevent tripping or displacement.

Other best practices and requirements to conduct before or during the excavation include:

- Contacting utility companies to locate and mark underground utilities.
- Perform daily inspection of trenches, excavations and protective systems before work begins and throughout the shift.
- Periodically check the trench for hazardous atmospheres such as low oxygen, hazardous fumes and toxic gases when depths are 4 feet or greater.
- Fall protection is required when workers are near the edge of an excavation 6 feet or deeper for construction and 4 feet or deeper for general industry.
- Performing training on trenching and excavation work, including recognizing hazards, properly using protective systems, PPE and emergency response procedures.
- Keep heavy equipment away from trench edges and do not work under suspended or raised loads or materials.
- Inspect trenches at the start of each shift, following a rainstorm or water intrusion and other occurrences that could have changed conditions in the trench.
- Keep excavated soil and other materials at least 2 feet from the trench to prevent cave-ins.

These are not all the OSHA requirements for trenching and excavating, but you can find them at 29 CFR 1926 Subpart P or <https://www.osha.gov/sites/default/files/publications/osha2226.pdf> for comprehensive guidance specific to your operations and locations. Local regulations may have additional requirements, so be sure to research those.

Because of the highly hazardous nature of trenching and excavation work, OSHA has developed a National Emphasis Program (NEP) which describes the policies and procedures for identifying and reducing hazards that cause or may cause serious injuries and fatalities during trenching and excavation operations (https://www.osha.gov/sites/default/files/enforcement/directives/CPL-02-00-161_0.pdf). If your organization performs work requiring these activities, review the NEP because it offers valuable information on keeping employees safe and your company compliant.

If you need help identifying potential hazards in your workplace, please contact Andy Sawan, risk services specialist at Sedgwick at andrew.sawan@sedgwick.com or 330.819.4728.