



## Best Practices for Trenching and Excavation

### Scope

The scope of this best practice consists of guidelines that a facility could use to develop their own detailed and specific procedures, specifications, or checklists for safe trenching and excavation. Applicable U.S. regulations include 29 CFR 1926, Subpart P.

### Key Points

- Have an excavation policy and an excavation permit for each facility
- Excavated soil (spoils) should be handled or disposed of properly. If the spoils are potential special or hazard waste, classification of the spoils prior to excavation will be of benefit.
- Competent person training should include both hands-on and course work and overseen by a safety professional.

### **Definitions**

OSHA defines an excavation as any man-made cut, cavity, trench, or depression in the earth's surface formed by earth removal.

A trench is defined as a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth of a trench is greater than its width, but the width of a trench (measured at the bottom) is not greater than 15 feet.

### **Hazards**

Trenching and excavation work presents serious hazards to all workers involved. Cave-ins pose the greatest risk. One cubic yard of soil can weigh as much as a car. Employers must ensure that workers enter trenches only after adequate protections are in place to address cave-in hazards. Other potential hazards associated with trenching work include falling loads, hazardous atmospheres, and hazards from mobile equipment.

OSHA generally requires that employers protect workers from cave-ins by:

- Sloping and benching the sides of the excavation;
- Supporting the sides of the excavation; or
- Placing a shield between the side of the excavation and the work area.

### **Pre-Planning/Permit**

Having an excavation permit can prevent incidents by considering important aspects of the work. Factors to consider may include:

- Identification of underground pipelines, cables, and other utilities. Best practice is to use ground penetrating radar and a good set of drawings showing underground hazards.
- Identification of overhead utilities and obstructions. If cranes are being used (e.g., pile driving), best practice is also to issue a crane permit.

- Notification of the Environmental department regarding plans to manage spoils and whether a land disturbance permit is needed for larger excavations.
- If excavation is >4 feet, determine means of egress and how the atmosphere will be monitored. Best practice is to treat the excavation as a confined space in this case.
- Traffic
- Proximity of nearby structures
- Soil classification
- Surface and ground water
- Quantity of shoring or protective systems that may be required if >5 feet.
- Fall protection needs (e.g., guards, barricades)
- Notification of excavation to personnel in the area
- Designation of Competent Person
- Keep excavated soil (spoils) and other materials at least 2 feet from trench edges.
- Keep heavy equipment away from trench edges.

### **Inspection**

Employers must ensure that a competent person inspects all excavations, adjacent areas, and protective systems daily for possible cave-ins, indications of failures in protective systems and equipment, hazardous atmospheres, and other hazardous conditions. Inspections must be done prior to the start of work and as needed throughout the shift. Inspections are also required after natural events, such as rainstorms, or other hazard-increasing occurrences, such as blasting work. If an inspector finds any unsafe conditions during an inspection, the employer must clear workers from the hazardous area until the necessary safety precautions have been taken.

OSHA defines the requirements for competent person, but doesn't specify how the competent person is trained. Best practice is for this training to consist of both hands-on and course material and to be overseen by a safety professional.

### **Training**

OSHA doesn't specify the training frequency for trenching and excavation for employees. Best practice is to train all personnel who are involved in excavations every three years, when conditions change, and as appropriate after an incident. Training should include when an excavation permit is needed and the hazards.

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