

Lesson: Excavation

- Lesson Objectives:**
- Identify and minimize excavation hazards.
 - Outline OSHA's requirements and support systems for trenches and excavation.
 - Manage controls and other procedures and protective systems designed to protect workers in or around an excavation
 - Prevent other types of common surface and trench incidents.
 - Plan and train the workforce in the recognition, identification, evaluation, and control of excavation hazards.

- Topics:**
- Hazards
 - OSHA's Requirements
 - Controls
 - Other Issues

Topic: Hazards

Excavation and trenching are extremely hazardous operations that expose workers to the possibility of serious injury or death. This topic covers common excavation hazards and will help employers and workers prevent incidents on the job. Having completed this topic, you should be able to:

- Recognize excavations as extremely hazardous operations
- Categorize the three types of soil
- Identify the contributing factors to cave-ins
- Explain the characteristics of soil mechanics

Topic summary:

Please take a moment to review these major points before you continue with the next topic.

- Excavations and trenching are extremely hazardous operations that expose workers to the possibility of serious injury and death.
- Soil is divided into four types: Type A, Type B, Type C, and solid rock.
- Factors contributing to cave-ins include soil type, moisture content, depth, vibration, adjacent structures and weight, previous disturbances, and weather.
- Not planning for protective and inspection systems and unsafe spoil-pile placement and access present hazardous conditions.
- Excavation incidents may create large financial losses due to workers' compensation, insurance premiums, work stoppage, and re-excavation.

Topic: OSHA's Requirements

OSHA requires that workers in trenches and excavations be protected and that safety and health programs address the variety of hazards they face. Having completed this topic, you should be able to:

- Identify safety precautions for excavations and trenches and requirements for the competent person
- Describe visual and manual testing methods
- Explain these three protective systems: slides to angle, tabulated data use, and the trench box
- Define OSHA's requirements for temporary and permanent spoils
- Discuss OSHA's requirements for benching, sloping, shoring, and shielding support systems
- Explain the employer's responsibility when installing support systems, using protective equipment, and providing access

Topic summary:

Please take a moment to review these key points before you continue with the next topic.

- OSHA requires that workers in trenches and excavations be protected, and that safety and health programs address the variety of hazards they face.
- A competent person specializing in cave-in hazards requires a great level of training.
- A competent person determines the soil type and its stability by performing a visual test and one or more of the manual tests.
- An excavation protective system is designed by (1) sloping sides to angle, (2) using tabulated data, or (3) employing a trench box or shield.
- Temporary and permanent spoils prevent fallback into the excavation and have distance requirements.
- OSHA has very specific requirements for these protective system options: benching, sloping, shoring, and shielding.
- OSHA requires the employer to provide safety management for protective systems, materials and equipment, and access during excavation operations.

Topic: Controls

OSHA requires employers to take extensive precautions to protect workers. This topic covers a number of procedures and protective systems designed to protect workers in or around an excavation. Having completed this topic, you should be able to:

- Determine the hierarchy of control measures and preplanning strategy
- Identify precautions for surface crossing and exposure to vehicles and falling loads
- Explain safety precautions for water accumulation, hazardous atmospheres, and confined spaces
- Manage a safe excavation by following the preplanning specifications
- Identify the requirements for a comprehensive excavation training program and emergency action plan

Topic summary:

Please take a moment to review these key points before you continue with the next topic.

- Determine control measures in this order: engineering, administrative, and personal protective systems.
- OSHA regulates employees' exposure to surface crossing, vehicles, and falling loads.
- OSHA has strict standards for controlling water and atmospheric hazards.
- OSHA outlines a comprehensive training program in the recognition, identification, and evaluation and control of excavation hazards.

Topic: Other Issues

This section describes how the employer can prevent other types of common accidents in the industry. Having completed this topic, you should be able to:

- Manage an excavation site for fallbacks, equipment mishaps, and slips, trip, and falls
- Identify protection for both underground and above-ground utilities
- Maintain good housekeeping to prevent incidents
- Demonstrate awareness of reducing public liability when working in or around excavation

Topic summary:

Please take a moment to review these major points before you continue with the next topic.

- Contractors and contractor employees must always be aware to protect excavation and trenches to reduce the risk of public liability.
- Consult the owners of water, sewer, gas, and power lines before performing any excavating operations.
- Protect yourself from falling objects, equipment mishaps, and slips, trips, and falls by following OSHA's guidelines.