

Excavation & Trench Hazard & Control



Excavations and trenches are widespread in construction and are used to create structures, lay pipes, and install utilities. If sufficient safety precautions are not taken, they also pose serious threats to employees.

Excavation & Trenches Hazards

- The greatest risk associated with trenches and excavations is cave-ins. It occurs when the walls of the excavation or trench collapse and bury personnel.
- Risks of slipping, tripping, and falling: Workers may fall off the equipment used to access excavations or trenches or slide and fall into them.
- Machinery falling into the excavation area: Heavy equipment used for excavation work can accidentally fall into the excavation area, posing a risk to personnel.
- Accidents from underground utilities: Workers can accidentally hit underground utilities, such as gas or electrical lines, causing injury or death.
- Falling objects: Workers can be struck by tools, equipment, or materials that fall into the excavation or trench.
- Drowning and flooding: When water quickly fills a trench or excavation, it can cause drowning or other water-related injuries.
- Atmospheric hazards: Excavations and trenches can contain hazardous gases or lack oxygen, leading to suffocation or toxic exposure.
- Fire and explosion hazards: If workers are operating equipment that produces sparks or if gas lines are ruptured, a fire or explosion can occur

How to Control hazards

- Cross-check the Excavation PTW: A permit-to-work (PTW) is a document that lists the tasks that must be completed, the risks involved in the work, and the precautions that must be taken to reduce those risks. Cross-checking the excavation PTW means reviewing the document to ensure that all necessary steps have been taken to ensure safety.
- Identify any underground or overhead hazards, such as utility lines, pipelines, or electrical wires, that could endanger workers. Ensure Knowledge of or Elimination of Underground and Overhead Hazards. If possible, these hazards should be eliminated or relocated. If not, workers should be made aware of their whereabouts and precautions should be taken to prevent accidental collisions or damage during excavation work.
- Choose the Protective System That Will Be Used: Depending on the type of excavation, different protective systems, such as sloping, benching, shoring, shielding, or barricading, may be needed to prevent cave-ins. The appropriate protective system should be chosen based on the type of soil, depth of the excavation, and other factors.
- Check the Risk Assessment (RA): A risk assessment is a thorough evaluation of the potential risks associated with the excavation work. It involves identifying hazards, evaluating the risks associated with each hazard, and determining appropriate measures to control those risks.
- Ensure a Safe Means of Access/Egress: Workers should have a safe and easy way to enter and exit the excavation site. This may involve using ladders, stairs, or other equipment to ensure that workers can safely move in and out of the excavation.
- Traffic Controlled: If the excavation site is located near a road or other high-traffic area, traffic should be controlled to prevent accidents and ensure that workers are not endangered by passing vehicles.
- Ensure Signs & Barricading in Place: Clear signs and barricades should be used to mark the excavation site and warn workers and the public of the potential hazards.
- If the excavation is deeper than 1.2 meters, it is vital to test the atmosphere for dangerous gases and make sure there is sufficient ventilation to prevent suffocating or other atmospheric risks.
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- **Materials, Equipment, and Other Objects to be Placed a Minimum of 2m Away from the Excavation's Edge:** In order to avoid objects falling into the excavation or causing cave-ins, materials, equipment, and other items should be kept a minimum of two meters away from the excavation's edge.
- A qualified person should evaluate the excavation site to make sure that all necessary safety precautions have been taken and to spot any potential hazards that may have gone unnoticed.
- **Wearing the proper personal protective equipment (PPE),** such as hard hats, safety glasses, gloves, and respiratory protection, is required for workers.
- **Security of Nearest Structures/Buildings:** To avoid damage or collapse during excavation work, nearby structures and buildings should be secured.
- **Illumination, Blinker Light of Excavation During Dark Hours:** Adequate lighting should be provided to ensure that workers can see clearly and safely work during dark hours.

In conclusion, excavation and trench work can be dangerous, but by following proper safety procedures and controlling hazards, we can ensure that everyone stays safe. Remember, if you see something that doesn't look safe, speak up and report it to your supervisor immediately. Thank you for your attention, and stay safe out there.

