Town of Perinton
Safety and Security
1350 Turk Hill Road, Fairport, NY 14450

EXCAVATION SAFETY

TOOLBOX TALK SERIES – EXCAVATIONS

April 2025

Construction Safety: Trenching and Excavation Safety

https://youtu.be/pP046HTKjkU?si=0H_fmKDnmKXUlbsR

Excavation and trenching work is common on construction sites, but it is one of the most hazardous activities. It is crucial to ensure the safety of everyone on-site by following proper procedures and using the correct protective measures.

Common Hazards in Excavation and Trenching:

There are several hazards that workers face in excavation and trenching work, including:

1. **Cave-ins:**
   - The **most dangerous hazard** in excavation and trenching is a cave-in, which occurs when the walls of an excavation collapse. A cave-in can bury a worker under tons of soil, leading to serious injury or death.

2. **Falls:**
   - Workers may fall into trenches, or be struck by tools, equipment, or materials falling into the excavation.
3. **Hazardous Atmospheres:**
   - Some excavations, especially those near buildings, utilities, or confined spaces, can have hazardous atmospheres, such as gases, vapors, or low oxygen levels. This can lead to suffocation or poisoning.
4. **Utility Strikes:**
   - Excavating near underground utilities like gas, electrical, or water lines can lead to dangerous strikes, causing explosions, fires, or electrocution.
5. **Collapse of Nearby Structures:**
   - Work near buildings or walls can cause those structures to collapse into the excavation or trench, posing additional risks.

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Key Safety Practices:

To reduce the risk of accidents and injuries, it is important to follow these **safety practices**:

1. Soil Testing and Analysis:

- Before beginning any excavation, determine the type of soil you are working with. The soil type will dictate the kind of protective system you need.
- For example, soft, sandy soil may require more support than firm, clay-like soil. This helps in determining whether **shoring**, **sloping**, or **shielding** is required.

2. Protective Systems:

- To prevent cave-ins, use one or more of the following protective systems, depending on the depth and type of excavation:
  - **Shoring**: Installing vertical supports to prevent the walls from collapsing.
  - **Shielding**: Using trench boxes or other equipment to shield workers from falling soil.
  - **Sloping**: Angling the sides of the excavation to reduce the risk of collapse. The steeper the slope, the less chance there is of soil collapse.

- Ensure the protective system is designed by a **competent person** and is regularly inspected.

3. Competent Person for Inspections:

- A **competent person** (someone who is trained and authorized to identify hazards) must inspect the excavation site:
  - Before work begins
  - After any weather event (e.g., rain or storms)
  - After any changes in the surrounding environment or equipment usage

4. Excavation Entry and Exit:

- Workers must have safe access and egress (entry and exit) from the excavation, especially if the trench is 4 feet deep or more. Safe access points, such as ladders, ramps, or stairs, should be placed within 25 feet of the workers.
- Ensure these access points are always clear of debris and in good condition.

5. Barrier and Fall Protection:

- Protect workers from falling into the excavation by setting up physical barriers such as fencing, guardrails, or warning signs.
- Ensure that all workers stay a safe distance from the edge of the excavation, and never allow tools or materials to be stored near the edge.

6. Utility Locating and Marking:

- Always **locate and mark underground utilities** before starting excavation work. This is critical to avoid accidental strikes, which can cause serious accidents.
- Contact 811 to have them mark the location of utilities before you dig.

7. Trench Safety for Deep Excavations:

- If the trench is 5 feet deep or more, the walls must be protected against collapse using one of the protective systems mentioned earlier.
- If the trench is 20 feet deep or more, a professional engineer may need to design the protective system.

8. Personal Protective Equipment (PPE):

- Workers should wear the appropriate PPE, including:
  - Hard hats
  - Steel-toed boots
  - High-visibility vests
  - Gloves
  - Eye and face protection when necessary
- Respirators may be required if there is a concern about hazardous air quality.

Emergency Procedures:

It's important to have emergency procedures in place in case of an accident, especially if a worker is caught in a cave-in or struck by falling debris.

- **Rescue Plan**: Develop and practice a rescue plan for trench collapses. The faster the response, the better the chance of saving someone trapped in an excavation.

- **First Aid**: Ensure all workers know the location of first aid kits and have access to emergency medical personnel.
- **Call for Help**: In case of a serious accident, always call emergency services immediately.

Conclusion:

Excavation and trenching work can be dangerous, but with proper planning, training, and adherence to safety protocols, we can significantly reduce the risk of accidents and injuries.

Remember:

- Always inspect the excavation site and use the appropriate protective systems.
- Ensure safe access and egress to and from the excavation.
- Stay aware of surrounding conditions and report any unsafe practices immediately.