

Trenches and Excavations

GENERAL DISCUSSION

This meeting is about working safely around trenches and excavations. A lot of people think if there's ever a cave-in, they'll just outrun it. But that could be the biggest mistake you'll ever make. Between 50 and 100 workers die each year in the U.S. from cave-ins. You can't outrun them; so today let's discuss how to prevent them. Remember never enter an unsafe trench or excavation!

You or a crewmember may want to add a personal story about trenches or excavations.

Next, discuss with the crew where you will be trenching or excavating at this particular job site:

Ask the Crew these Questions

After each question, give the crew time to suggest possible answers. Use the information following each question to add points that no one mentions.

1. According to OSHA, excavations over five feet deep require a permit if workers will be entering them. We must have a competent person in charge. What does that person do?

- Determines the type of soil, and decides what kind of cave-in protection is needed.
- Inspects the operation daily.
- Inspects after every rainstorm or earthquake, before work resumes.
- Checks and corrects any hazards.
- Determines if there are hazardous fumes or vapors in the excavation, and if there is enough oxygen.
- Can shut down the operation until it is safe, if necessary.
- Must always be on the site when anyone is working in or around the excavation.

The "competent person" for this job is:

2. When does a trench or excavation need shoring, sloping, benching, shielding, or other protection from cave-ins?

- Always, if five feet deep or more.
- When less than five feet deep, similar protection may be needed if the “competent person” has not yet inspected the excavation and determined it is safe from cave-ins.

3. The “competent person” decides what type of cave-in protection is needed, taking into account the soil type. What are the different soil types?

- Stable rock (most stable)
- Type A
- Type B
- Type C (least stable)

On this job, the soil type:

The type of cave-in protection we’ll be using:

Required Slope:

4. Even a stable excavation can cave in if weakened by rain, snow, or other water. What precautions do we have to take in wet conditions?

- The “competent person” must re-inspect after rain or snow.
- When working below the water line, we must remove water or have some other kind of protection.

5. What utilities do you need to look out for when excavating?

- Make sure you’re not interfering with any kind of utility overhead, underground, or on the surface. Watch out for electrical, gas, telephone, water, and sewer lines.

- Keep all equipment at least six feet from any kind of electric power line (more distance for very high voltage). Remember that electricity can arc.
 - The Underground Service Alert (USA) system can help you locate underground power and other utility lines on the site. (USA is covered in more detail in a separate Training Guide.)
 - Point out locations of power lines and other utilities to watch for on this site:
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6. Where should spoil go? How far back from the edge?

- Keep it at least two feet from the edge. If you can't, use retaining devices adequate to prevent it from falling or rolling into the excavation.
- The same applies to all tools, equipment, and other materials. Keep them at least two feet from the edge, or use retaining devices.

7. How do you get in and out of a trench or excavation safely? How do you cross over safely?

- If the excavation is over four feet deep, there should be safe entrances and exits within 25 feet of any work area.
- To cross over, there should be walkways or bridges with standard guardrails.
- Trenches and excavations in remote areas should be barricaded.
- Point out places to get in/out of trenches and excavations on this site.

8. When do you need a lookout standing by?

- Always when working in a trench or excavation.

9. What precautions should you take if there may be air contamination in a trench or excavation?

- Don't go in until the "competent person" checks out the air. There may be toxic vapors or fumes, insufficient oxygen, or both.
- Follow directions from the "competent person." If there's contamination, you'll probably be told to use a respirator (or ventilation), rescue equipment, communications gear, and a "buddy" standing by outside.
- (If applicable:) On this job, we will be taking precautions in the following location:

Location:

Precautions:

OSHA Regulations

OSHA requires most of the safety measures we've talked about. We have to take these precautions, it's the law. I have a Checklist of the OSHA regulations on trenches and excavations. If you'd like to know more, see me after the meeting.

Company Rules

(Only if applicable.) Besides the OSHA regulations, we have some additional company rules about trenches and excavations. Discuss company rules:

Comments from the Crew

Ask the following: Do you have any other concerns about trenches or excavations? Do you see any problems on our job? What about other jobs you've worked on? Have you had any experience with trenches or excavations that might help us work safer on this job?

GENERAL SAFETY REVIEW

This is a time to review all safety concerns, not just today's topic. Keep your notes on this page before, during and after the safety meeting.

Are you aware of any safety hazards from any other crews? Point out any hazards other crews are creating that this crew should know about. Tell the crew what you intend to do about those hazards.

Do we have any other safety business? Discuss any past issues or problems. Report any progress of investigations and action taken.

Have there been any accidents near misses or complaints? Discuss any accidents, near misses, and complaints that have happened since the last safety meeting. Also recognize the safety contributions made by members of the crew.

Please remember, we want to hear from you about any health and safety issues that come up. If we don't know about problems, we can't take action to fix them.

ENDING THE MEETING

Circulate Sign-Off Form.

Assign one or more crew member(s) to help with next safety meeting.

Refer action items for follow-up.

Do you have any Safety Recommendations?

Do you have any Job Specific Topics you would like us to discuss?

Comments

SAFETY TALKS REVIEW

Hazard Identification

The company has a written Safety and Health Program that meets all OSHA requirements. It includes identification of trenching and excavation hazards on the site, regular inspections, accident investigation, and correction of hazardous conditions.

Permit

1. An OSHA permit has been obtained for any trenching or excavating job over 5 feet deep if workers will enter.
2. Sloping or benching for excavations greater than 20 feet deep was designed by a professional engineer.

The Competent Person

1. A “competent person” is on site and able to identify hazards.
2. If the competent person finds evidence of a hazard, workers are removed from the dangerous area.
3. No one enters a trench or excavation unless the competent person is on site.
4. The competent person has knowledge of soil classification, has classified the soil, and has determined the appropriate type of cave-in protection and required slope.

Protective Systems

1. Workers are protected from cave-ins in all excavations by an adequately designed protective system. (A protective system is not required if the excavation is made entirely in stable rock, or if the excavation is less than 5 feet deep and the competent person finds no indication of a potential cave-in.)
2. Work is done only in areas protected by sloping and benching, a support system, a shield system, etc.
3. Installation of the support system is closely coordinated with the excavation of the trench.
4. Material and equipment used for protective systems are the right size, in good condition, and free of defects.
5. Members of support systems are securely connected together and are not subjected to loads beyond their capacity.

6. Workers are protected from cave-ins, structural collapse, or accidentally being hit during installation and removal of the support system.
7. Removal of shoring or other protective systems starts at the bottom of the excavation. Members are released slowly so structural failures will be noticed.
8. Backfilling progresses with the removal of support systems from excavations.
9. Workers are instructed not to climb on shoring or bracing.

Inspections

1. The competent person inspects (a) every day before work, (b) after every rainstorm, and (c) as needed, for evidence of possible cave-ins, failure of systems, hazardous atmospheres, etc.
2. There is no accumulated water in trenches or excavations where employees work, unless special precautions are taken. Water is removed safely, monitored by the competent person. The competent person is aware of the water table and natural drainage.
3. There are no tension cracks, sloughing (small cave-ins), or bulging in trench walls or in the ground near trenches or excavations.
4. There is no bending or buckling of shoring. (If there is any damage, call a registered professional engineer).
5. There has been no change in weather affecting soil moisture since the last inspection by the competent person.

Lockout

1. Nobody works in a trench without a lookout standing by.

Hazards Underground

1. Underground utility installations in the area (such as electrical, phone, gas, sewage, water, and fuel lines) have been identified.
2. Utility owners have been notified at least two working days prior to digging.
3. While an excavation is open, underground utility lines are protected, supported, or removed as necessary.
4. Workers are not permitted underneath a load handled by lifting or digging equipment.
5. No workers are permitted above others on sloped/benched faces unless those below are protected from falling material.
6. There is adequate protection from loose rock on the face of a trench or excavation. (Protection may include scaling to remove loose material, or erection of a barricade.)

7. Hazards from vehicle or equipment vibration have been corrected.
8. Support systems have been installed wherever the stability of adjoining buildings, walls, or other structures is endangered by excavation operations.
9. No excavation is done below the level of the base or footing of any foundation or retaining wall unless the structure is supported.
10. Sidewalks and roads are supported if undermined.
11. Spoil, tools, material, and equipment are kept at least two feet from the edge. If not, they are kept in place by retaining devices.
12. Protection is provided for mobile equipment, which approaches the edge of an excavation. (Protection may include barricades, hand or mechanical signals, or stop logs) Where possible, the grade of vehicle paths slopes away from the excavation.

Access to Trenches and Excavations

1. Ladders, stairs, ramps, or other means of access are no more than 25 feet from any worker in a trench 4 feet or more deep.
2. Competent person designs structural ramps used solely by workers; a competent person qualified in structural design designs ramps for equipment.
3. Walkways or bridges with standard guardrails are provided where employees or equipment cross over excavations that is deeper than 6 feet and wider than 30 inches.
4. There are adequate barriers (warning signs, barricades, covers) to prevent unauthorized entry into a trench or excavation.
5. All remotely located trenches, excavations, wells, pits, etc. are barricaded or covered.
6. Temporary wells, pits, shafts, etc. are backfilled as soon as exploration or similar operations are completed.

Confined Spaces and Hazardous Atmospheres

1. Excavations are classified as confined spaces if dangerous air contamination or oxygen deficiency may exist and it is difficult for workers to exit. (If there are such areas, OSHA has strict requirements for confined spaces, which must be followed on the site.)
2. If digging over 4 feet deep near a landfill or in a known toxic area, testing is done for potential hazardous atmospheres (such as lack of oxygen, or the presence of toxic, flammable, or explosive substances).

Personal Protective Equipment

1. Hard hats, protective boots or shoes, goggles, protective clothing, and protective gloves are available and used as required by employees entering trenches, excavations, and confined spaces. Protective equipment is appropriate for the work and provides adequate protection.
2. If respirators are used on the site (for example, in confined spaces) the company has a written Respiratory Protection Program.
3. Workers exposed to vehicle traffic wear bright orange warning garments (shirts, vests, jackets). In rainy weather, they wear orange or yellow raingear.

Housekeeping

1. Adequate lighting exists if working at night.
2. All work areas are free of tripping hazards.
3. Means of access are kept clear at all times.