

Trenching and Excavation Safety

by Ken Bradley*

Various measures can ensure safety on a trenching, excavation, or any other job site. Some measures are common sense, some are required by law, and others are practices that come from years of experience. This article contains a summary of some of those practices.

It is important to thoroughly think through a job before beginning. Preparation will enable the road manager to consider any problems that might occur and obtain any equipment that might be necessary.

Federal and New Hampshire laws requires anyone digging or trenching to contact Dig Safe before breaking ground. A good practice is to photograph all the markings before starting work. This will help supervisors to keep an accurate record since the first thing that happens in digging operations is destruction of markings by the removal of asphalt. Also, one should keep a daily log of what occurs on the job site so there is a record in case of liability or contractual issues. Supervisors should keep phone numbers and directions to the nearest hospital and emergency medical assistance readily available, and make certain everyone knows where to find them.

Crew members should complete daily inspections of all equipment. On multi-employer worksites, managers should require each employer to present the Materials Safety Data Sheet (MSDS). Crews should have and use all materials for safety, including the MUTCD required signs, cones, vests and hard hats. Work zones must be clearly defined. Personal protective equipment may include safety glasses, steel-toed boots, hearing protection, and gloves. For future detection lay magnetic tape or copper wire over plastic pipe before it is backfilled. Extension cords should have a Ground Fault Circuit Interrupter (GFI), even if the tools have double insulated cords. If there is a laser employed on site, the operator must have a certification card and a placard warning of the potential damage to eyesight.

When purchasing equipment it is important to thoroughly research specification and buy quality equipment. It is expensive to repurchase equipment that might not fit safety specifications. Beepers, walkie talkies, hazard atmosphere monitors, and cell phones should be explosive proof and intrinsically safe; specify this when purchasing. Hydraulic shoring fluid should always be winter grade. Winter grade will work in the summer but summer grade won't work in the winter.

*Ken Bradley is the President of Waste, Inc in Concord NH

Trenching & Excavation Definitions:

Guidelines for Competent Person

COMPETENT PERSON WILL:

1. Conduct daily inspections before work begins and as needed throughout the work shifts when conditions change.
2. Conduct daily inspections of protective systems, unsanitary conditions, and testing for hazardous atmospheres or conditions when there is reasonable cause to believe they exist.
3. Determine the degree to which actual slopes are reduced due to surcharge loading, operating equipment or traffic.
4. Monitor the equipment and operations of water removal.

COMPETENT PERSON MAY:

5. Design structural ramps of soil used by employees only. Structural ramps used by equipment will be designed by a registered professional engineer. Design must follow certain guidelines.

Confined Space/Review attendant and entrant duties.

A Confined Space is a Space that:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work; AND
2. Has limited or restricted means for entry or exit (for example tanks, vessels, silos, storage bins, hoppers, vaults and pits are spaces that may have limited means of entry.); AND
3. Is not designed for continuous employee occupancy.

When is a Permit Required in a Confined Space?

1. Contains or has the potential to contain a hazardous atmosphere;
2. Contains a material that has the potential for engulfing an entrant;
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward to a smaller cross-section; or
4. Contains any other recognized serious safety or health hazard.

Duties of an attendant and entrant.

Four Parameters

- Use a hazardous atmosphere meter
- Use a ventilator/blower
- Use Rescue/Retrieval Tripod
- Use a respirator or self contained breathing apparatus (SCBA).

General requirements when excavating trenches

Deeper than 4' test for hazardous atmosphere. Use a ladder and have it within 25' of all employees.

Deeper than 5' or possibility of cave in, slope the gravel or use a trenchbox. Use a ladder and have it within 25' of all employees.

Keep your spoils pile a minimum of 2' back from the opening of the trench. Watch for surcharge loads. Make sure that tabulated data for the trenchbox is always on site. Have your trenchbox extended up 18" above the excavation. You may bench your trenchbox up to 2' in a dry soil.