



## Trenching Safety

A trench is a narrow channel that is deeper than it is wide, made below the surface of the ground. A trench can be up to 15 feet wide. An excavation is any man-made hole or trench that is made by removing earth. Trenching is recognized as one of the most hazardous construction activities. The greatest risk is a cave-in. Even a small job can present serious safety hazards. The key to preventing this type of accident is good planning.

Each year trenching cave-ins result in more than 5,000 serious injuries and 100 deaths in the United States. Trenches are needed for the installation and repair of utility lines, water and sewer lines, television cable, to build roads, and many other uses. (The list of the types of workers that might be involved in working in or around a trench is too long to include here.) Anyone whose work requires them to work in or around a trench should be aware of the hazards so they are not involved in or cause an accident to happen.

The Occupational Safety and Health Administration (OSHA) requires a competent person to inspect, on a daily basis, trenches for possible cave-ins, failures of protective systems and equipment, hazardous atmospheres, or other hazardous conditions. Refer to the OSHA website listed below for the complete list of the requirements of a competent person.

In trenching, soil is defined as any material removed from the ground to form a trench or hole. Soil can weigh more than 100 pounds per cubic foot. Most soil is thought of in terms of cubic yards. One cubic yard of soil may weigh more than 2700 pounds. OSHA classifies soil into four groups: solid rock, Type A, Type B, and Type C. Solid rock is the most stable, with Type C soil being the least stable. If you are unsure of the soil type, always assume it is Type C. Soil removed from a trench must be kept at least 2 feet back from the edge of the trench.

### **Safety Hazards:**

\* Cave-ins - can be caused by:

- Vibration of nearby construction equipment or vehicle traffic.
- Weight of equipment that is too close to the edge of the trench.
- Soils that do not hold tightly together.
- Soil that has been dug in before is not as stable as undisturbed earth.
- Water weakening the strength of the trench sides.

\* Hazardous atmospheres – may be generated as toxic gases can be released by the digging, or accumulate in the bottom of the trench.

\* Underground utilities – the location of any utility services must be located before digging.

Protective systems are methods of protecting workers from cave-ins of material that can fall or roll into an excavation/trench, or from the collapse of nearby soil structures. Protective systems include shoring, sheeting, shielding, sloping and benching. For trenches between 5 feet and 20 feet deep, protective measures must be taken. It is up to the planners of the construction project and the competent person on site to determine which systems will work best. If an excavation is greater than 20 feet deep, a registered professional engineer must design the protective system.

Trenches deeper than 4 feet must have a way to get in and out (access and egress), usually a ladder, for every 25 feet of horizontal travel within the trench.

Safety Recommendations:

