AFSCME
Health & Safety Fact Sheet

TRENCHING AND EXCAVATION

WHAT IS TRENCHING AND EXCAVATION WORK?

A ***trench*** is a narrow channel that is deeper than it is wide. A trench can be up to 15 feet wide. An ***excavation*** is any hole or trench that is made by removing earth.

WHAT ARE THE HAZARDS OF TRENCHING AND EXCAVATION WORK?

Cave-in
The most common serious hazard is a ***cave-in***. Workers can be killed or seriously injured if the sides of a trench or other excavation collapse. Cave-ins are most often caused by:

- Vibration from construction equipment or traffic in the construction area that makes the soil come apart.

- The weight of equipment that is too close to the edge of the trench. The weight of the earth that has been removed (***spoil bank***) can also put a dangerous strain on the trench walls causing them to collapse.

- Soils that do not hold tightly together are more likely to collapse. For example, sandy soils are not cohesive and can easily slide back into a trench. By contrast, clay usually holds up well and is cohesive.
- Soil that has been disturbed is not as stable as earth that has not been disturbed. Work on utility lines involves digging previously disturbed soil.

- Water weakens the strength of the trench sides. Rain can be a hazard by either putting too much weight on the walls or filling the trench with water.

- Soil that is too dry will crumble easily.

NOTE: The risk of a cave-in increases if more than one of these conditions is present!

OTHER HAZARDS

- Contact with electric, water, sewer, natural gas, or other types of utility lines can cause serious injuries or death from drowning, exposure to chemicals, or electrocution.

- Toxic gases can be released during digging. Trenches should be treated as a confined space and the air should be tested and monitored This is very important for bell-bottom types of excavation.

- Working in or near traffic puts workers at risk of being struck by vehicles.

WHO IS AT RISK?

AFSCME members who repair water, sewer, and other utility lines, build roads, and perform other digging operations are at risk. Each year, as many as 400 workers are killed and another 4,000 are injured during trenching and shoring operations.

WHAT CAN BE DONE TO PROTECT WORKERS?

- Determine risks before the work begins. A competent person must evaluate the possible dangers before the work begins and until the operation is completed. The person must know the risks posed by the soil that will be disturbed. The operation must be watched at all times because the danger can increase when it rains or other conditions change.

- Use protective systems for any trench or other excavation that is 5 feet or more deep. Excavations that are less than five feet deep may also require a protective system if the competent person on site feels there is a possibility of cave-in. Protective systems include:

  - ***Sloping*** means the sides of the hole open out from the excavation. The type of soil determines the required angle. Sloping is less practical for deeper digs.

  - ***Benching*** is similar to sloping with steps cut into sides of the trench.

NOTE: A registered engineer MUST approve sloping and benching systems in excavations greater than 20 feet in depth!

- ***Shoring*** supports the walls of the excavation. Shoring is made up of wales, crossbraces, and uprights. The material can be metal or wood, but plywood and 2'x4's are not adequate shoring materials. The equipment can be hydraulic or pneumatic. Shoring must be installed from the top down and removed from the bottom up.

- ***Shielding***, also called trench boxes or trench shields, are structures that are placed in the excavation to prevent the sides of a trench from caving-in. The worker is only protected while in the "box." Some trench boxes can be moved as the work progresses. Heavy equipment must always be used to place the box or shield in the trench. The shield must extend at least 18 inches from the top of the slope of the trench.

WHAT LAWS APPLY TO TRENCHING AND EXCAVATIONS WORK?

The Occupational Safety and Health Administration's (OSHA) standard for trenching and excavation work is 29 CFR1926.650-652, subpart P. The Standard can be found on the OSHA website:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10930

September 2011

For more information about protecting workers from workplace hazards, please contact the AFSCME Research & Collective Bargaining Department, Health and Safety Program at (202) 429-1215. You can also contact our office located at 1625 L Street, NW Washington, DC 20036.