# Excavation and Trenching

## I. Scope and Purpose

These documents are to be used whenever a trench or excavation is dug and employees are needed to enter the excavation, without changes, modification or exceptions. The documents provide a guideline for digging and working in a trench or excavation.

## II. Precautions

A. Each employee is responsible to know, understand and practice sound safety rules so they will not endanger themselves of fellow workers by committing an unsafe act. He or she also must caution others when observing an unsafe practice or condition.

B. This procedure must remain on the job site and be available for review and inspection at any time.

C. The Safety Officer and Job Foreman are responsible for ensuring this procedure is followed. Ultimately employees need to be responsible for themselves.

## III. Process

A. Underground Utilities.

1. Prior to any digging, Miss Utility must be notified to mark any utilities that are in the area to be excavated.

B. Soil Classification

1. Prior to any digging, soil classification must be established. Although there are three soil types—A, B and C—consider everything to be Type C. (Pre-disturbed soil automatically becomes Type C.) See note on flow chart.

C. Protective Support System

1. **Sloping:** Consider all soil Type C and slope angle of response at 30°. (For every foot dug vertically, you need to dig 1½ feet horizontally.)
2. **Shielding**: With trench boxes, top of box must be 18? above the edge of the ditch. Note, everything above the trench box still needs to be at a 30° angle of repose.
3. **Shoring:** Aluminum hydraulic. The distance between the bottom cylinder on the jack and the bottom of the ditch cannot exceed 4? The top cylinder on the jack and the top of the ditch cannot exceed 2?

**See attached flowchart.**

# EXCAVATION FLOWCHART

1. Contact Miss Utility. **Do not do any digging until all utilities have been located and clearly marked.**

2. Soil Classification
   Type A: cohesive, 1.5-tsf compression strength (doesn't exist in Eastern U.S.).

   Type B: cohesive, .5-tsf compression strength (chances of working in are slim).

   Type C: cohesive, <.5-tsf compression strength (**Consider everything you work in this type**).

3. Protective Support Systems
   **Sloping** - If you can't classify soil then consider it Type C and slope at a 30° angle. For every 1-foot dug vertical (down), you need to dig 1 1/2 feet horizontally (wide).

   **Shielding** - Trench boxes, Top of the trench box must be 18 inches above the ditch. (Example: a box 8' tall can be used in a trench 6 ½' deep) Remember everything above the trench box still needs to be at a 30° angle.)

   **Shoring** - Aluminum Hydraulic, the bottom cylinder on the shore can be a maximum of 4' from the bottom of the ditch, and the top cylinder can be a maximum of 2' from the top of the ditch.

***KEY THINGS TO REMEMBER***

1. Whatever type of system you choose you must maintain at least 2' between the edge of the ditch and the spoil pile, equipment, or anything else that could pose a risk of falling into the ditch.

2. You must maintain a means of egress. **Ladders !!!!** every 25' of ditch (No one should have to travel more than 25' laterally.) They must be placed inside the shored area, not outside, and they must extend 2 to 3 feet above the top of the ditch.

3. Ladders, ramps and stairways are required on ditches starting at 4' deep.

4. If you're unclear about something, STOP and get the right answers before you continue.

5. Re-inspect trench after moving any equipment and after any change in weather.

6. **1 cubic foot of dirt can weigh 100-145 pounds. With the suction effect, pulling out one buried worker's foot can take up to 750 pounds of force!!**