

Excavation Safety Quick Reference

- ☑ The **Competent Person** must **inspect** the excavation:
 - Before workers enter the excavation each day
 - As needed throughout the shift, especially after rain
 - Inspect for:
 - Cave-in hazards
 - Marked or unmarked subsurface utilities
 - Overhead powerlines - stay at least 10 feet from all lines (20 feet for cranes)
 - Atmospheric hazards (landfills, sewers, etc.)
 - Other hazards: traffic, etc.

- ☑ **Classify** soils as **A, B or C**, based on at least one visual and one manual test:

Visual Tests	Manual Tests
<ul style="list-style-type: none"> ▪ Soil cohesiveness and clumping ▪ Previously disturbed soil ▪ Sloping layers ▪ Cracks or fissures ▪ Water – seepage or in bottom ▪ Bulging or sloughing ▪ Sources of vibration or side loading 	<ul style="list-style-type: none"> ▪ Plasticity (threads) ▪ Thumb penetration ▪ Dry strength (crumbling) ▪ Pocket penetrometer or shear vane

Soil Type	Characteristics
A	Cohesive, very strong, not previously disturbed, no sloped layers, no seeping water, no fissures (cracks near the edge), not subject to vibration.
B	(Most common): Cohesive, medium strength, may be slightly sloped layers.
C	Cohesive, low strength, seeping water, sloped layers.

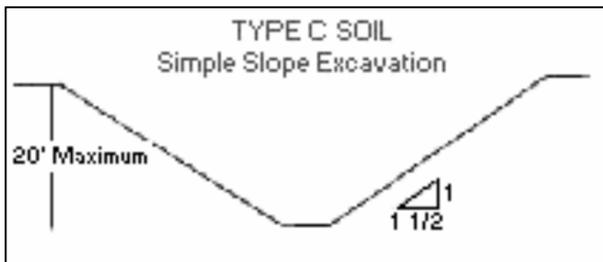
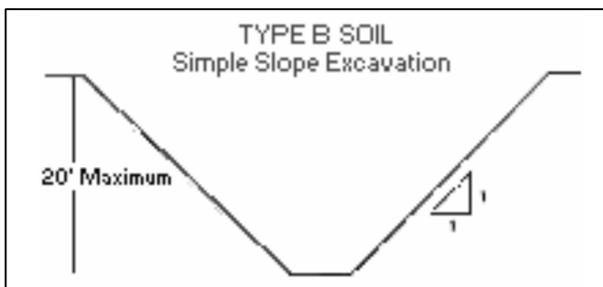
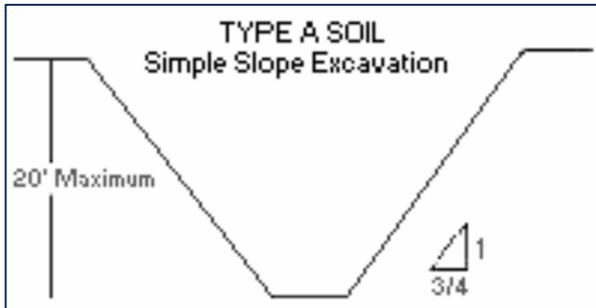
- ☑ **Protect from cave-in**, based on soil type and other risk factors:
 - All excavations 5 feet or deeper must be protected. Excavations less than 5 feet deep may require protection.
 - Protect by sloping, benching, and/or shoring (see other side). Protect all sides and the **ends** of trenches.
 - Cave-in protection must be in place prior to worker entry into the excavation.
 - Excavations deeper than 20 feet require cave-in protection designed by a registered professional engineer.

- ☑ **Other Requirements:**
 - Workers must have unobstructed means of entry/exit within 25 feet (ladder, sloping).
 - Ladders must extend 3 feet above the edge, and be secure from movement.
 - Keep spoils piles at least 2 feet from the edge of the excavation.
 - Keep heavy equipment away from excavation edges.
 - Workers must not work under any suspended or raised loads.
 - Protect workers from traffic and moving equipment.
 - Provide fall protection around excavations 6 feet or more in depth.
 - Evaluate excavations > 4 feet deep for atmospheric hazards.
 - Use confined space procedures for excavations with atmospheric hazards.
 - Fence or barricade excavations that are left open after the end of the shift.

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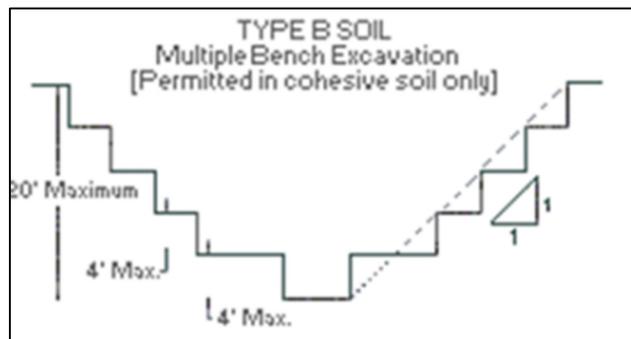
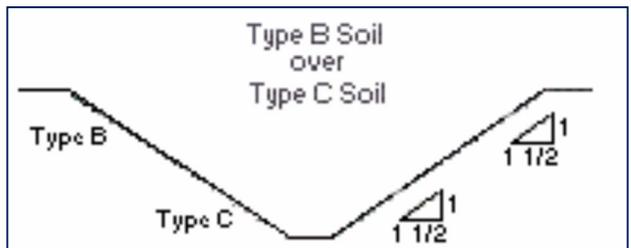
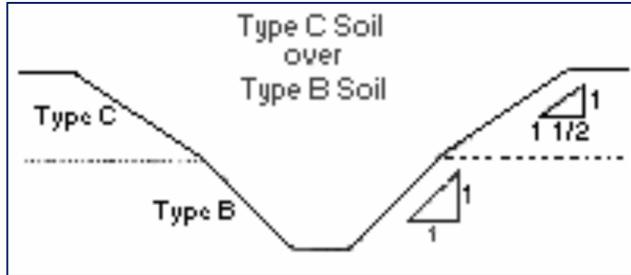
☑ Sloping

- Type A soils: $\frac{3}{4} : 1$ slope
- Type B soils: $1 : 1$ slope
- Type C soils: $1 \frac{1}{2} : 1$ slope



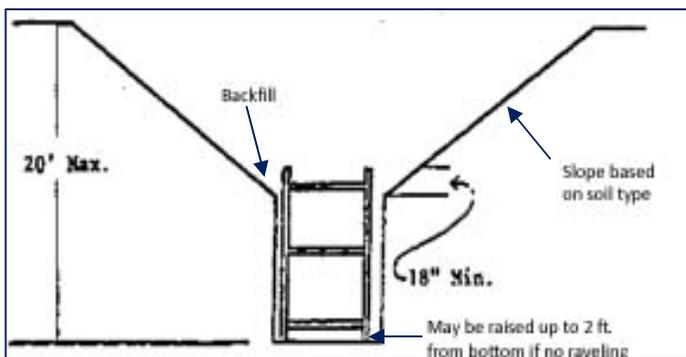
☑ Benching:

- No benching in Type C soils
- Benches: max. 4 foot deep each.
- Bottom bench must be 2 times as wide as other benches



☑ Shore Boxes:

- Keep tabulated data on site.
- Slope or shore ends.
- Shore boxes may be raised a max. of 2 ft. above the bottom of the excavation, if the soil does not ravel in from beneath.
- Backfill between the shoring box and the edge of the excavation.
- If shoring boxes are used at the bottom of a slope, the top of the box must extend 18" above the bottom of the slope.



☑ Hydraulic Shoring (e.g. Speedshore):

- Cannot be used in type C-80 soil.
- Keep tabulated data on site.
- Slope or shore ends.
- Use tabulated data for horizontal and vertical spacing of cylinders.
- Plywood sheeting is only used to prevent raveling, and must extend to the top, and within 2 feet of the bottom, of excavation.
- Sheeting must be either Finn Form or 1.125-in. thick CDX plywood or equal.

