Excavations

Subpart P

Why the Training?

- People die in excavations!
  - See Fatal Facts
- Regulations
  - 29 CFR 1926, Subpart P

Regulations

- 29 CFR 1926 Subpart P - Excavations
  - Appoint Competent Person
    - Soil evaluations by Competent Person
    - Daily Inspections by Competent Person
    - Shoring and sloping evaluations by Competent Person
    - Stop Work Authority of Competent Person

Competent Person

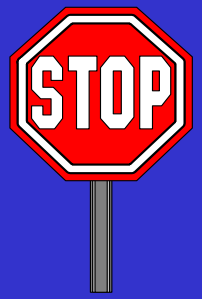
- "Competent person" means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Competent Person

- Qualifications
  - Knowledge of soils and soil classification
  - Understands design and use of protective systems
  - Ability to recognize and test hazardous atmospheres
  - Documented training
  - Prior excavation experience

Competent Person

- Responsibilities
  - Site safety briefings on excavation safety
  - Daily excavation inspections
    - More frequent if conditions change (e.g. freeze/thaw, rain, vibration)
  - Physically located at the excavation



STOP WORK AUTHORITY!!!

Excavation Hazards

- Surface encumbrances
- Utilities
- Access/Egress
- Vehicle traffic
- Falling loads
- Mobile equipment
- Hazardous atmospheres
- Water accumulation
- Adjacent structures
- Loose rock or soil
- Falls
- Cave-in

Access/Egress

- Note: Poor housekeeping --- # 1 cause of slips, trips and falls on construction projects
  - Debris kept cleared from work areas
  - Mark hazards
  - Barricade or cover holes
- Egress provided-
  - 25’ travel distance
  - ladders
  - ramps
  - stairs

Exposure to Falling Loads

- No work under loads
- Operators remain in cab

Mobile Equipment

- Warning system
  - Barricades
  - Hand signals
  - Mechanical signals
  - Stop logs
  - Grade away from excavation

Hazardous Atmospheres

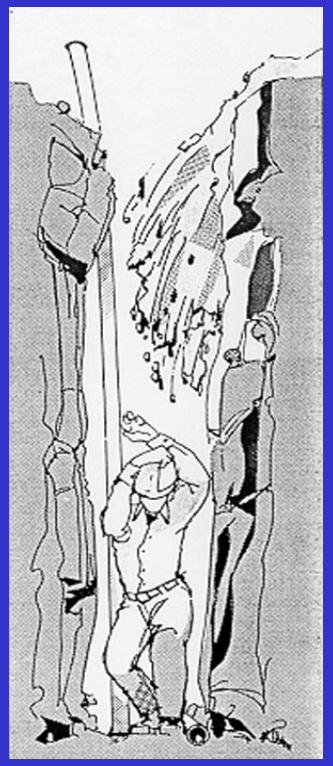
- Test @ 4’ if suspected
  - LEL
  - Oxygen
  - CO
  - H2S
  - Petroleum
  - Other toxics

Ventilation

- Displace hazardous gases and vapors
- Considerations
  - Heavier than air or lighter than air contaminant
  - Exhausting or blowing in
  - Volume/time required to lower concentrations to acceptable levels

Loose Rock and Soil

- Protection of employees from loose rock or soil
  - Scaling
  - Protective barriers
  - Placing material at least 2’ from edge
  - No work on slopes above workers



Soil Classification

- Soil Classification (Type A,B,or C) determines construction of protective system:
  - Sloping or benching
  - Shoring
    - Timber shoring
    - Aluminum shoring

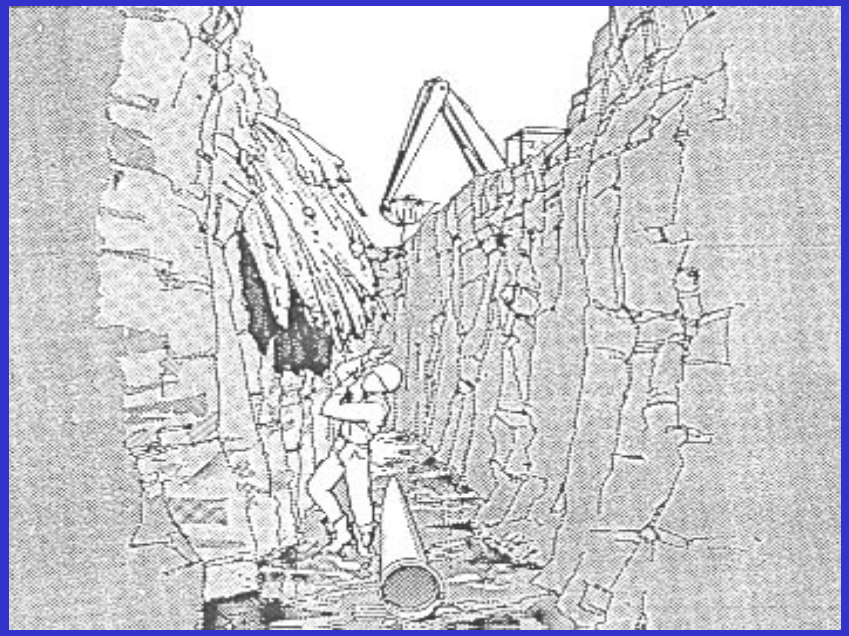
Protective Systems

- Required unless:
  - Excavation in stable rock
  - Excavation less than 5 ‘ (4’ some states) and examination by Competent Person determines no potential for cave-in

- YO!

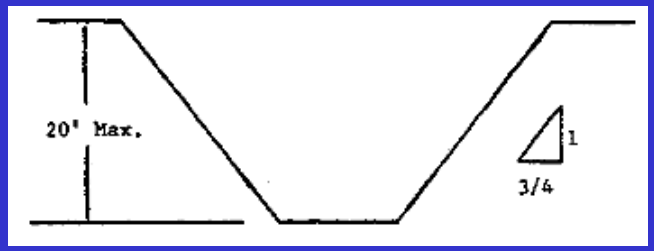
Protective Systems

- Options Include:
  - Sloping and benching
  - Shoring/sheet piling/ shielding (e.g.trench boxes)
  - Designed by P.E. if deeper than 20’

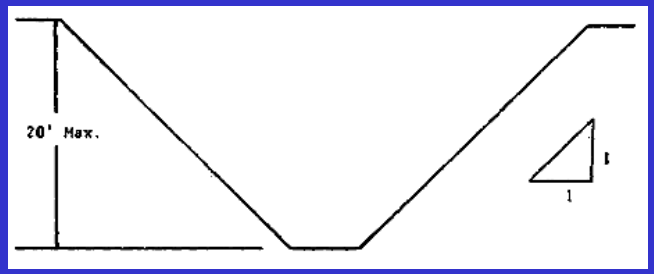


Simple Sloping

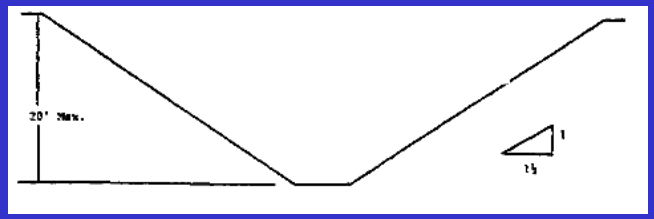
- Type A - 3/4:1



- Type B - 1:1

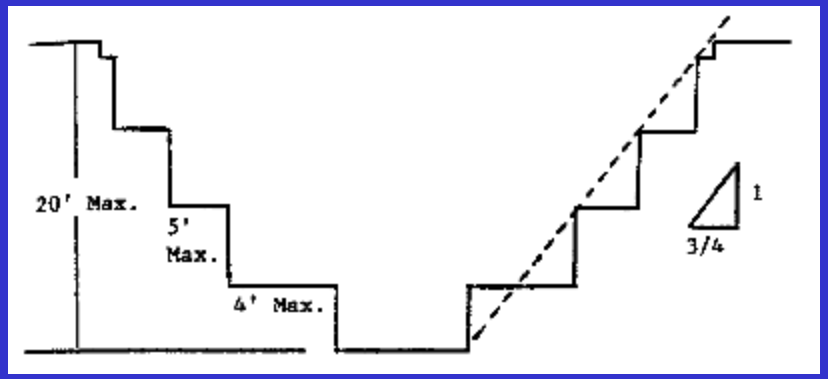


- Type C - 1½ :1

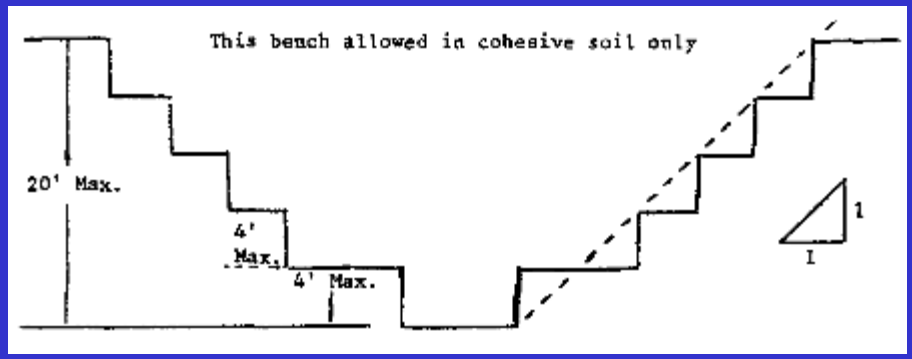


Benching

- Type A



- Type B
  - (cohesive soil)



- Type C **NA**

Safety Excellence

Shoring

- Based on OSHA Appendices
- Based on Manufacturer data
- Designed by a P.E.

Excavation Inspections

- Daily Inspections of ALL excavations by Competent Person
  - Start of shift, as needed, following rainstorms or other hazard-increasing event
    - Possible cave-ins
    - Protective system failure
    - Water accumulation
    - Hazardous atmospheres
  - Competent person has authority to remove workers from the excavation

Excavation Rescues

- The best rescue is the one you never have to make!
  - Practice proper procedures
    - Make sure everything is safe before anybody goes in!

DON'T ROLL THE DICE!!!