

Excavation, Trenching and Shoring

- * Work activities supervised by a competent person.
- * Employee training provided.
- * Protection against a cave-in hazard exposure required at four (4) feet depth. (WISHA)
- * Protection against a cave-in hazard exposure required at five (5) feet depth. (OSHA)
 - * Except in solid rock.
 - * May be required, if a hazard exists above four (4) or five (5) feet level.
- * Excavated or other material stored two (2) or more feet away from an excavation.
- * Keep material from falling into an excavation.
- * Employee access provided, every twenty-five (25) feet; ladder, ramp or other suitable means.
 - * When entering or existing a trench box, personnel protection against a cave-in hazard exposure must be provided.
- * Precautions if trees, boulder, utility poles or other objects near the excavation area.
- * Determine if utilities are present:
 - * Use locator service.
 - * Qualified person must identify direct burial type electrical cable.
 - * A qualified electrical line-person must perform work activities that involve physical contact with energized direct burial type electrical cable.
 - * A minimum two (2) feet distance maintained between operational mechanical equipment and an energized electrical cable.
- * Wells, pits, shafts, etc. barricaded or covered.
- * Daily inspection.
 - * Aware of changes in conditions...freezing, rain water, blasting, traffic, etc..
 - * Hazardous atmosphere. (Confined Spaces)
- * Emergency rescue equipment available.

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- * Work prohibited if water has or is accumulating in an excavation/trench, unless appropriate precautions (special support or shield system, water removal equipment, harness and lifeline, etc.) are taken to protect occupant(s).
- * Stability of adjacent structure, sidewalk, footing, building, etc. is insured.
- * Top person required, unless equipment operator has a clear view of personnel within the excavation/trench.
- * During backfill operations, a top person is continuously required.
- * Guardrails must be provided when a walkway or bridge is located four (4) feet or more (WISHA) or six (6) feet or more (OSHA) above the lower excavation/trench surface.
- * Sloping requirements:
- * Soil types:

Type "A": 3/4 Horizontal to 1 Vertical (53 degrees) slope required.

Unconfined compressive strength of: 1.5 tsf (ton per square foot) or more. Part of a slope or layered system which is greater than 4 horizontal to 1 vertical (4H to 1V)

Type "B": 1 Horizontal to 1 Vertical (45 degrees) slope required.

Unconfined compressive strength between 0.5 tsf and 1.5 tsf.
Granular cohesion less soil.
Fissured soil.
Previously disturbed soil.
Subject to vibration.
Unstable dry rock.
Part of a sloped or layered system which is less steep than 4 Horizontal to 1 Vertical (4H to 1 V).

Type "C": 1.5 Horizontal to 1 Vertical (34 degrees) slope required.

Unconfined compressive strength of 0.5 tsf or less.
Granular soil.
Submerged soil.
Water freely seeping from soil.
Submerged and unstable rock.
Part of a sloped or layered system which is steeper than 4 Horizontal to 1 Vertical (4H to 1 V).