Safe Work Practices

Excavation Safety

It is mandatory that any trench or excavation more than 1.2 m (4 feet) is properly sloped or shored to comply with the occupational health and safety regulations. No employee shall enter any trench or excavation that is not properly sloped or shored.

DEFINITIONS:

Excavation: Any cut, cavity, trench, or depression in the earth’s surface resulting from rock or soil removal.

Prof. Engineer: A Professional Engineer registered in the province of BC.

Shoring: A mechanical system that provides support to the sidewalls of an excavation or trench. The system must conform to the occupational health and safety regulations or be designed by a Prof. Engineer.

Slope: The angle at which the side of a trench or excavation are cut to maintain soil stability.

Spoil Pile: The material removed of an excavation or trench.

Trench: An excavation less than 3.7 m (12 feet) wide at the bottom, over 1.2 m (4 feet) deep and of any length.

Excavation

- Prior to commencing any excavation or trench, all underground utilities must be located and their positions identified.
- Extreme caution and care must be exercised when excavating or trenching in the vicinity of underground utility systems; the final 30 cm (1 foot) around an existing utility must be excavated by hand.
- Excavation work must be in accordance with the written instructions of a Professional Engineer if the excavation is more than 6 m (20 feet) deep.
- Above ground hazards such as trees, buildings, boulders and utility poles that encroach on the excavation need to be removed, or secured.
- Proper access for the excavation or trench must be provided. If ladders are used they must be placed every 8m (25 feet and must extend 1m (3 feet) above the excavation or trench.
- Spoil piles must be placed;
- 60 cm (2 feet) back from the edge of a trench,
- 1.2 m (4 feet) back from the edge of a excavation.
- Barricades or warning devices must be erected to protect the public and other workers from the excavation or trench, if applicable.
- Frozen ground does not eliminate the need for shoring or sloping unless certified by a Professional Engineer.
- Water must not be allowed to accumulate in the excavation or trench.
- The safe limits of approach for overhead electrical lines must be observed when excavating or trenching in the vicinity of overhead power lines. If the safe limits cannot be maintained, then the utility company must be notified so that the line can be de-energized.
- Employees in an excavation must not work under the suspended bucket of the excavating machine or any load being placed by the machine.
- Sloping - The minimum slope that must be maintained on an excavation or trench over 1.2 m (4 feet) deep is 4/3 or 37 degrees from the vertical in hard compact soil, and a 1/1 slope or 45 degrees in other soils unless certified by a Professional Engineer.
- Benching – A minimum slope of 1/1.5 or 56 degrees from the vertical must be maintained with a maximum of 1.2 m (4 feet) high benches.

**Shoring**

- Shoring is required when the excavation is more than 1.2 m (4 feet) in depth and
  - The walls are not cut back, or
  - There is an existing structure adjacent to the excavation or trench. The existing structure is to be supported before proceeding with the work.
- No person in a trench shall be outside the protective shoring system.
- Temporary shoring meeting OSH regulations is required when prefabricated shoring is not practicable. (i.e.: Utility locations do not allow enough room to fit pre-manufactured shoring systems into the trench.)
- When shoring is used it shall be installed from the top down and removed in the opposite order.
- Shoring must be installed in contact with the faces of the excavation, unless otherwise specified by the manufacturer or Professional Engineer.
- Shoring must extend at least 30 cm (1 foot) above ground level to as close to the bottom of the trench as the material will allow, but in no case more than 60 cm (2 feet) from the bottom.
- Excavations or trenches and the shoring or sloping systems must be inspected before entry, or after any major rainfall or other upset condition.
- Workers must not enter an excavation to remove shoring materials if the ground conditions have deteriorated so as to make entry for shoring removal unsafe.
- Temporary shoring that supports an existing structure and is over 3 m (10 feet) in depth must be designed by a Professional Engineer.
- Temporary shoring must be constructed according to the guidelines set out by the occupational health and safety regulations.