

SAFETY TALK



EXCAVATION & TRENCHING

Excavation and trenching work is inherently dangerous. Cave-ins, struck-by injuries, slips, trips and falls can occur without warning. Injuries to the worker can be fatal if the correct steps are not taken to minimize the risk. See *General Regulations Section 12, Excavation, Trenching and Construction* for specific safety requirements.

Collapsing Walls

The greatest risk, when working in an excavation or trench, is the potential for a cave in or a collapse. When the walls suddenly collapse, soil and earth can fill the excavated space quickly and forcefully.

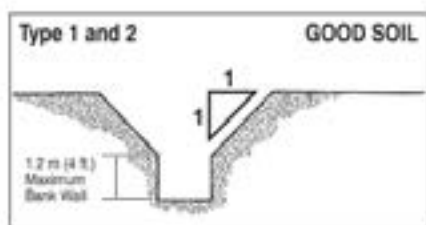
There are three basic methods used to protect workers from the walls caving in.

Additional hazards include:

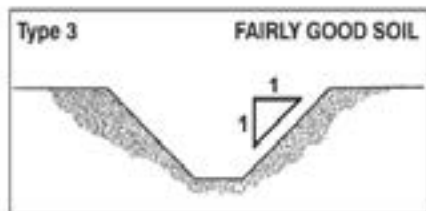
- Cave-ins or collapses that can trap workers
- Material, equipment, or vehicles falling onto workers in excavations or trenches
- Falling into the trench of excavation
- Traffic control on site
- Worker slips, trips, and falls
- Insufficient personal protective equipment
- Weather conditions
- Confined spaces and hazardous atmosphere
- Contact with overhead and underground service lines such as electrical, water, and sewer

Method #1: Sloping Trench Walls

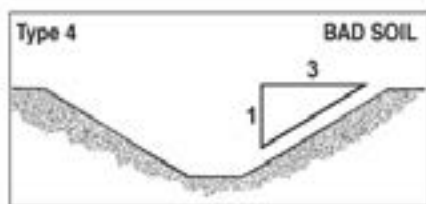
Sloping the walls is one way to keep a trench from collapsing. The angle of the slope depends on soil conditions.



Good Soil: Hard, very dense. You can only penetrate it with difficulty by using a shovel. It has low moisture content, high degree of internal strength and there are no signs of water seepage. Cut trench walls back at an angle of 1-to-1 or 45°. That's 1m (3 ft) back for each 1m up. Walls should be sloped starting at 1.2 m (4 ft) up the wall.



Fairly Good Soil: Very stiff and dense. You can penetrate it with moderate difficulty with a shovel and a pick can be driven easily. Has a damp appearance after it's excavated. Cut walls back at an angle of 1-to-1, but from the bottom of the trench.



Bad Soil: Loose in consistency and may be backfill or previously excavated soil. Signs of surface cracking or water seepage and it has a low degree of internal strength. When dry, the sides of the trench will not stand vertically. Slope the walls at 1-to-3. That's 3m (10 ft) back for every 1m (3 ft) up from the trench bottom.

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Method #2: Shoring Trench Walls with Supports

Shoring is a system that supports walls to prevent soil movement and helps to support underground utilities, roadways, and foundations.

The two types of shoring used most commonly are **timber** and **hydraulic**. Both consist of posts, wales, struts, and sheathing. One major

advantage of hydraulic shoring is that installation can be done from the top of the trench.

Whenever possible, shoring should be installed as excavation proceeds. If there's any delay between digging and shoring, no one should enter the unprotected trench.

Method #3: Shielding Trench Walls with Trench Boxes

Trench boxes aren't meant to shore up or support trench walls. They're only meant to protect workers in case of a cave-in.

The space between the box and the trench wall should be backfilled. Otherwise a cave-in or collapse may cause the trench box to tilt or turn over. It's also easier to enter the box if soil comes right up next to it. If you're in the trench, stay inside the box.



What additional precautions should you take?

Other important factors in protecting you and others in and around excavations and trenches include:

- Preplan the location of excavated spoils and any other new material brought on site.
- Locate and mark overhead lines, underground utilities, and facilities on site.
- Keep equipment and excavated spoils back at least 2 feet from the edge of the excavation.
- Use proper lighting, barricades, guardrails, traffic control and flagging, where necessary.
- Provide a ladder to climb in and out safely. Workers must never climb on shoring or shields.
- Ensure all workers are wearing proper personal protective equipment (i.e.: hard hat, safety boots, reflective vests, etc.)
- Use spotters on the surface to observe the employees working below.
- Barricade the excavation/trench at the end of the day.

Discussion Topics:

- What is the quality of soil on this work site?
- What actions will you take today to reduce your level of risk while working around excavations or trenches?
- Show participants the sloping diagrams.



For more information, please contact:
 Workers Compensation Board of PEI
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 Toll Free 1-800-237-5049
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