Excavation & Trenching – Know The Laws of Your Province

Excavation and trenching regulations are essential for ensuring the safety of workers involved in digging, tunneling, and earth-removal activities. These regulations require employers to assess soil conditions, locate and mark underground utilities, and implement protective systems such as sloping, shoring, or trench boxes. Safety measures include keeping excavated materials and equipment away from trench edges, controlling water accumulation, and ensuring safe access and egress. Workers must be trained to recognize excavation hazards and follow safe work procedures. While core safety practices apply nationwide, specific regulations vary across Canadian provinces and territories to reflect different site conditions and risks. Adhering to these regulations helps prevent cave-ins, utility strikes, and other incidents, fostering a safer working environment.

FEDERAL

In Canada, **employers must** follow excavation safety rules under the **Canada Occupational Health and Safety Regulations**, **Part III, Section 3.12**. They are responsible for marking underground utilities, installing barricades around hazardous trenches, ensuring proper shoring for excavations deeper than 1.4 m, and keeping materials at least 1 m from edges. A qualified person **must** oversee shoring installation.

Part III – Temporary Structures and Excavations

Excavation

(1) Before the commencement of work on a tunnel, excavation or trench, the **employer shall** mark the location of all underground pipes, cables and conduits in the area where the work is to be done.

(2) Where an excavation or trench constitutes a hazard to employees, a highly visible barricade **shall** be installed around it.

(3) In a tunnel or in an excavation or trench that is more than 1.4 m deep and whose sides are sloped at an angle of 45° or more to the horizontal:

(a) the walls of the tunnel, excavation or trench, and

(b) the roof of the tunnel **shall** be supported by shoring and bracing that is installed as the tunnel, excavation, or trench is being excavated.

(4) Subsection (3) does not apply in respect of a trench where the **employer** provides a system of shoring composed of steel plates and bracing, welded or bolted together, that can support the walls of the trench from the ground level to the trench bottom and can be moved along as work progresses.

(5) The installation and removal of the shoring and bracing referred to in subsection (3) **shall** be performed or supervised by a qualified person.

(6) Tools, machinery, timber, excavated materials or other objects **shall** not be placed within 1 m from the edge of an excavation or trench. **Section 3.12 (1) to (6).**

Further details on the Canada Occupational Health and Safety Regulations can be found at *Justice.Gc.Ca*.

ALBERTA

In Alberta, **employers** are **required** to ensure excavation and tunneling safety under the **Occupational Health and Safety Code, Part 32, Sections 441 to 464**. **Employers must** identify soil types, stabilize excavations with shoring or sloping, and clearly mark excavation zones. They are responsible for locating and exposing buried utilities before work begins, protecting workers with proper access, barriers, and safe entry points, and ensuring the use of engineered protective structures in deeper excavations, shafts, and tunnels. These measures are essential for preventing cave-ins, equipment accidents, and underground hazards.

Part 32 – Excavating and Tunnelling

Disturbing the Ground

For the purpose of this Part, ground is disturbed if a work operation or activity on or under the existing surface results in a disturbance or displacement of the soil, but not if the disturbance or displacement is a result only of:

(a) routine, minor road maintenance,

(b) agricultural cultivation to a depth of less than 450 millimetres below the ground surface over a pipeline, or

(c) hand-digging to a depth of no more than 300 millimetres below the ground surface, so long as it does not permanently remove cover over a buried facility. **Section 441.**

Classification of Soil Type

(1) For the purpose of this Part, soil is classified as “hard and compact” if it closely exhibits most of the following characteristics:

(a) it is hard in consistency and can be penetrated only

with difficulty by a small, sharp object;

(b) it is very dense;

(c) it appears to be dry;

(d) it has no signs of water seepage;

(e) it is extremely difficult to excavate with hand tools;

(f) if has not been excavated before.

(2) For the purpose of this Part, soil is classified as "likely to crack or crumble" if:

(a) it has been excavated before but does not exhibit any of the characteristics of "soft, sandy or loose" soil, or

(b) it closely exhibits most of the following characteristics:

(i) it is stiff in consistency and compacted;

(ii) it can be penetrated with moderate difficulty with a small, sharp object;

(iii) it is moderately difficult to excavate with hand tools;

(iv) it has a low to medium natural moisture content and a damp appearance after it is excavated;

(v) it exhibits signs of surface cracking;

(vi) it exhibits signs of localized water seepage.

(3) For the purposes of this Part, soil is classified as "soft, sandy or loose" if it closely exhibits most of the following characteristics:

(a) it is firm to very soft in consistency, loose to very loose;

(b) it is easy to excavate with hand tools;

(c) it is solid in appearance but flows or becomes unstable when disturbed;

(d) it runs easily into a well-defined conical pile when dry;

(e) it appears to be wet;

(f) it is granular below the water table, unless water has been removed from it;

(g) it exerts substantial hydraulic pressure when a support system is used.

(4) If an excavation contains soil of more than one soil type, for the purposes of this Part an **employer must** operate as if all of it is the soil type with the least stability. **Section 442 (1) to (4).**

Soil Stabilization

(1) Subject to subsection (2), an **employer must** stabilize the soil in:

(a) an excavation by shoring or cutting back, or

(b) a tunnel, underground shaft or pit by shoring.

(2) An **employer** may stabilize the soil in an excavation, tunnel, underground shaft or pit using an artificial soil stabilization technique, including freezing soil by artificial means or grouting if the process used is:

(a) designed by a professional engineer to control soil conditions, and

(b) performed in accordance with the professional engineer’s specifications.

(3) A person **must** not use natural freezing of the soil as an alternative or partial alternative to a temporary protective structure, or to stabilize the soil in an excavation, tunnel or underground shaft. **Section 443 (1) to (3).**

Marking an Excavation

If there is a danger of a worker or equipment falling into an excavation, an **employer must** ensure that workers are made aware of the excavation through flagging, marking, safeguards, or other appropriate and effective means. **Section 444.**

Water Hazard

An **employer must** ensure that an excavation that a worker may be **required** or permitted to enter is kept free of an accumulation of water that may pose a hazard to the worker. **Section 445.**

Worker Access

(1) An **employer must** provide workers with a safe means of entering and leaving an excavation, tunnel or underground shaft.

(2) An **employer must** ensure that a worker does not enter an excavation, tunnel or underground shaft that does not comply with this Part.

(3) A worker **must** not enter an excavation, tunnel or underground shaft that does not comply with this Part. **Section 446 (1) to (3).**

For more information:

- Locating Buried or Concrete–Embedded Facilities. **Section 447 (1) to (5).**
- Exposing buried facilities. **Section 448 (1) to (7).**
- **Section 449.**
- Methods of protection. **Section 450.**

- Loose materials. **Section 452.**
- Spoil piles. **Section 453.**
- Safe entry and exit. **Section 455 (1) (2).**
- Temporary protective structures. **Section 456 (1) to (3).**
- Alternatives to temporary protective structures. **Section 457 (1) to (5).**
- Installation of shoring, stringers or **Section 458 (1) to (4).**
- Access for powered mobile equipment. **Section 459.**
- Dumping block. **Section 460.**
- Underground shafts. **Section 461 (1) to (5).**
- Drilled or bored underground shaft. **Section 462 (1) to (4).**
- **Section 463.**
- **Section 464 (1) (2).**

Further details on the Occupational Health and Safety Code can be found at *Alberta.Ca*.

BRITISH COLUMBIA

In British Columbia, **employers** are **required** to ensure excavation safety under the **Occupational Health and Safety Regulation Part 20, Sections 20.78 to 20.94**. **Employers must** follow certified instructions from a qualified professional for deep or complex excavations, locate underground utilities before digging, secure or remove nearby hazards, and ensure proper sloping, shoring, or shielding to prevent collapse. They are also responsible for providing safe access and exit, guarding open excavations, maintaining clear distance for excavated materials, and positioning equipment to protect workers. These responsibilities are essential to minimize the risk of injury during excavation work.

Part 20: Construction, Excavation, and Demolition

Work Standards

(1) Subject to this section, excavation work **must** be done in accordance with the written instructions of a qualified registered professional if:

(a) the excavation is more than 6 m (20 ft) deep,

(b) an improvement or structure is adjacent to the excavation,

(c) the excavation is subject to vibration or hydrostatic pressure likely to result in ground movement hazardous to workers, or

(d) the ground slopes away from the edge of the excavation at an angle steeper than a ratio of 3 horizontal to 1 vertical.

(2) Despite subsection (1), excavation work described in that subsection **must** be done in accordance with the written instructions of a professional engineer if the excavation requires or uses support structures.

(3) The written instructions **required** by this section **must:**

(a) be certified by the qualified registered professional concerned,

(b) be available at the site, and

(c) specify the support and sloping requirements, and the subsurface conditions expected to be encountered. **Section 20.78 (1) to (3).**

Underground Utility Services

(1) Before excavating or drilling with powered tools and equipment, the location of all underground utility services in the area **must** be accurately determined, and any danger to workers from those utility services **must** be controlled.

(2) Excavation or drilling work in proximity to an underground

utility service **must** be undertaken in conformity with the requirements of the owner of that utility service.

(3) Pointed tools **must** not be used to probe for underground petroleum and electrical utility services.

(4) Powered equipment used for excavating **must** be operated so as to avoid damage to underground utility services, or danger to workers. **Section 20.79 (1) to (4).**

Removing Nearby Hazards

Trees, utility poles, rocks and similar objects adjacent to an area to be excavated **must** be removed or secured if they could endanger workers. **Section 20.80.**

Sloping and Shoring Requirements

(1) Subject to section 20.78, before a worker enters any excavation over 1.2 m (4 ft) in depth or, while in the excavation, approaches closer to the side or bank than a distance equal to the depth of the excavation, the **employer must** ensure that the sides of the excavation are:

(a) sloped as specified in writing by a qualified registered professional,

(b) sloped at angles, dependent on soil conditions, which will ensure stable faces, but in no case may the slope or combination of vertical cut and slope exceed that shown in Figure 20-1,

(c) benched as shown in Figure 20-2,

(d) supported as specified in writing by a professional engineer,

(e) supported in accordance with the minimum requirements of section 20.85, or

(f) supported by manufactured or prefabricated trench boxes

or shoring cages, or other effective means.

(2) If the end of a trench over 1.2 m (4 ft) in depth is not adequately sloped, end shoring **must** be installed unless:

(a) a worker in the trench is not **required** to approach closer to the end of the trench than a distance equal to the depth of the trench at that end,

(b) where, for the prevailing soil conditions at the end of the trench, the permissible spacing of uprights equals or exceeds the width of the trench, or

(c) otherwise authorized in writing by a professional engineer or professional geoscientist.

(3) If end shoring is **required**, the walers for the end shoring **must** be installed to bear against the walers that extend along the sides of the trench, or in a manner that will provide equivalent structural restraint.

(4) End shoring **must** be designed by a professional engineer if the end shoring waler length exceeds 1.8 m (6 ft).

(5) Shoring **must** extend from at least 30 cm (1 ft) above ground level to as close to the bottom of the trench as the material being installed will allow, but in no case more than 60 cm (2 ft) from the bottom.

(6) Shoring need not extend above ground level where traffic crossing plates need to be used, provided that other measures are taken to prevent excavated or other material from entering the excavation. **Section 20.81 (1) to (6).**

For more information:

- Timber shoring and grades. **Section 20.82.**
- Safe shoring procedures. **Section 20.83.**
- Manufactured shoring. **Section 20.84.**
- Trench support structures. **Section 20.85.**

- Spoil piles. **Section 20.86.**
- Entry and exit. **Section 20.87.**
- **Section 20.88.**
- Excavation crossings. **Section 20.89.**
- Excavated materials. **Section 20.90.**
- Use of skips or buckets. **Section 20.91.**
- Scaling and trimming. **Section 20.92.**
- Height limitations. **Section 20.93.**
- Positioning equipment. **Section 20.94.**

Further details on the Occupational Health and Safety Regulation can be found at *Worksafebc.Com*

MANITOBA

In Manitoba, **employers must** follow **Workplace Safety and Health Regulation Part 26, Sections 26.1 to 26.46** when performing excavation or trenching work. They are responsible for developing safe work procedures, training and supervising workers, notifying authorities, protecting against hazards like cave-ins and utility strikes, and ensuring safe access, support structures, and site guarding to keep workers safe.

Part 26 – Excavations And Tunnels

General Matters

Application

(1) Subject to subsection (2), this Part applies to every workplace where excavation work takes place.

(2) This Part does not apply to a mine as defined in The Mines and Minerals Act. **Section 26.1 (1) to (2).**

Safe Work Procedures

(1) An **employer must:**

(a) develop and implement safe work procedures for the work

to be done at an excavation, including the installation, use, and removal of shoring;

(b) train workers in the safe work procedures; and

(c) ensure that workers comply with the safe work procedures.

(2) Before any excavation work begins, an **employer must** ensure that workers are made aware of the potential hazards of the job functions they are to perform. **Section 26.2 (1) to (2).**

Registration

Registration Requirement

(1) In order to perform excavation work, an **employer must:**

(a) notify the branch that the **employer** intends to do excavation work; and

(b) receive a registration number from the branch.

(2) An **employer must** not begin any excavation work unless the **employer** has a valid registration number.

(3) A safety and health officer may revoke an **employer**'s registration number if the officer is of the opinion that the **employer** is performing excavation work in a manner that creates or may create a risk to the safety or health of a worker.

(4) When a registration number has been revoked, an **employer** may not be issued a new registration number unless a safety and health officer is satisfied that the **employer** will perform excavation work in accordance with the requirements of this Part. **Section 26.3 (1) to (4).**

Notification

Notice of Excavation

(1) An **employer** who proposes to make an excavation that is more than 1.5 m deep in which a worker is **required** or permitted to enter **must** notify the branch not more than 48 hours before the day that excavation work is scheduled to begin and provide the following information to the branch:

(a) the name and address of the owner of the land where the excavation is to be made;

(b) the name and address of the **employer**;

(c) the location of the excavation;

(d) the starting date of the excavation and its proposed completion date;

(e) the proposed depth, length and width of the excavation;

(f) a description of the proposed support structure, including the method of shoring and type of shoring materials, if shoring is to be used;

(g) verification that the owners of underground facilities have been notified and that the location of any pipes, conduits, or previous excavations in or adjacent to the proposed excavation site has been determined;

(h) the name of the person who will be supervising the work.

26.4(2) An **employer required** to notify the branch under this section **must** not begin excavation work until the branch has assigned a serial number to the excavation project.

26.4(3) This section does not apply to the digging of a burial lot or plot in a cemetery as defined in The Cemeteries Act. **Section 26.4 (1) to (3).**

For more information:

- **Sections 26.5.**

- Underground Facilities. **Sections 6 (1) to (4).**
- Support Structure in Firm Contact. **Section 23 (1) (2).**
- Deep Foundation Excavations. **Sections 28 to 26.32.**

Further details on The Employment Standards Code can be found at *Canlii.org*.

NEW BRUNSWICK

In New Brunswick, **employers must** follow **General Regulation, Sections 180 to 193**, when performing excavation and trenching work. **Employers** are responsible for identifying underground utilities, supporting trench walls through proper shoring or sloping, preventing water accumulation, ensuring atmospheric safety, and providing safe access. They **must** also protect workers from falling materials, vehicle hazards, and inadvertent entry by using barriers, illumination, and supervision.

XIII – Excavations and Trenches

Underground Utility Lines or Piping and Utility Poles

(1) Before beginning an excavation or trench, an **employer shall** ensure that the location of any underground utility line or piping is determined.

(2) Where employees are working within 600 mm of underground utility line or piping, an **employer shall** ensure that:

(a) the authority operating the utility line or piping has been notified of the operation,

(b) the utility line has been de-energized, and

(c) an adequate operating procedure is used by the employees.

(3) An **employer shall** ensure that utility poles, posts and similar structures are supported or removed if they are within

3 m of an excavation or trench that is more than 1.2 m deep. **Section 180 (1) to (3).**

Shoring, Bracing, or Caging of Walls

(1) An **employer shall** ensure that the walls of an excavation or trench are supported by shoring, bracing or caging except when the excavation or trench:

(a) is less than 1.2 m deep,

(b) subject to subsection (2), is cut in solid rock,

(c) is sloped or benched to within 1.2 m of the bottom of the excavation or trench with the slope or bench not exceeding 1 m of vertical rise to each 1 m of horizontal run, or

(d) is one that an employee is not **required** to enter.

Support of Unstable Walls Cut in Solid Rock

(2) Where the walls or crests of an excavation or trench are cut in solid rock and are not stable, an **employer shall** ensure that the walls and crests are adequately supported by rock bolts, wire mesh, shoring, or a method that provides equivalent support.

Support Where Heavy Equipment Used Near Edge

(3) Where powered mobile equipment or a mobile crane is used near the edge of an excavation or trench, an **employer shall** ensure that any shoring, bracing or caging for the excavation or trench is adequate to support the increased pressure.

Certificate of Engineer Respecting Support

(4) An **employer shall** ensure that shoring, bracing or caging for an excavation or trench is certified as adequate by an engineer and **shall** make the proof of the certification available to an officer on request. **Section 181 (1) to (4).**

Entering Excavation or Trench

(1) An **employer shall** ensure that an employee does not, and no employee **shall**, enter an excavation or trench 1.2 m or more in depth unless:

(a) the walls of the excavation or trench are supported by shoring, bracing or caging, the excavation or trench is cut in solid rock or the excavation or trench is sloped or benched to within 1.2 m of the bottom of the excavation or trench with the slope not exceeding 1 m of vertical rise to each 1 m of horizontal run,

(b) subsections 181(2), (3) and (4) have been complied with,

(c) loose material that may fall into the excavation or trench has been removed, and

(d) a ladder that extends at least 1 m above the excavation or trench is installed no more than 15 m from where the employee is working or some other safe means of access and egress is provided.

(2) Notwithstanding subsection (1), an employee may enter an excavation 1.2 m or more in depth to install bracing if the employee remains a distance from the face of the excavation equal to or greater than the depth of the excavation.

(3) Notwithstanding subsection (1), an **employer shall** ensure that an employee does not, and no employee **shall**, enter an excavation or trench 1.2 m or more in depth to install or remove shoring or caging from a position inside an excavation or a trench. **Section 182 (1) to (3).**

Location of Excavated Material

(1) Subject to subsection (2), an **employer shall** ensure that excavated material is kept at least 1.2 m away from the edge of an excavation or trench. **Section 183(2).** Where an

excavation or trench is more than 1.8 m deep in rock, an **employer shall** ensure that:

> (a) excavated material is located back from the face of the excavation or trench a distance equal to at least the height of the excavated material, or
>
> (b) a fence that is adequate to support the excavated material is erected at a minimum distance of 1 m from the face of the excavation or trench. **Section 183 (1) (2).**

For more information:

- Water, testing for hazardous gas or oxygen deficiency, Storage of hazardous substance prohibited, Hazardous gases, and adequacy of ventilation. **Section 184 (2) to (4).**
- Observation of employee working in excavation or trench. **Sections 185.**
- Material lowered into excavation or trench. **Sections 186, 187.**
- Illumination to prevent inadvertent entry, Barrier to protect workers. **Section 188 (1) (2).**
- Protection of employees – rock face. **Section 1.**

XIV – Pits and Quarries

- **Section 189.**

Further details on the General Regulation can be found at *Laws.Gnb.Ca*.

NEWFOUNDLAND & LABRADOR

In Newfoundland and Labrador, **employers** are **required** to address excavation and trenching safety under **Occupational Health and Safety Regulations Part XVIII, Sections 404 to 413**. **Employers must** ensure safe pre-excavation planning by identifying underground utilities, removing nearby hazards,

and implementing protective systems like shoring, sloping, or trench boxes when workers enter excavations over 1.22 metres deep. Safe access and egress, proper storage of excavated material, atmospheric testing, and barriers to prevent falls are also **required**. **Employers** are responsible for protecting workers from cave-ins, hazardous gases, dust, and water accumulation, and **must** maintain air quality and ventilation, especially in underground work.

Part XVIII – Excavation, Underground Work and Rock Crushing

Definition

In this Part, “excavation” means a cut, cavity, trench or depression in the earth’s surface resulting from rock or soil removal. **Section 404.**

Entrapment Danger

(1) A worker **shall** not enter a place where there is a danger of entrapment unless safe access has been provided by catwalks, walkways or other acceptable means or the worker wears retrieval equipment satisfying the requirements of Part XXVII and is attended by another worker who is stationed, equipped and capable of immediately effecting a rescue.

(2) An area in which materials may be dropped, dumped or spilled **shall** be barricaded and protected by warning signs to prevent the inadvertent entry of workers. **Section 405 (1) (2).**

Pre-Excavation Requirements

(1) Before beginning excavation work with power tools or equipment in an area likely to have underground conduits, cables or pipelines, the location of the service facilities **shall** be accurately determined by the **employer**, marked by suitable means and communicated to the employee.

(2) Powered equipment **shall** not be used in a manner that exposes workers to harmful effects resulting from the damage

to service facilities.

(3) Trees, boulders or other unsecured material located within 1.83 metres of the area to be excavated **shall** be secured or removed before excavation begins.

(4) A worker **shall** not enter an excavation over 1.22 metres deep unless:

(a) the sides of the excavation are sloped to a safe angle and have been secured by the use of sheet piling, shoring and bracing or a trench box; or

(b) the worker is protected by other effective means.

(5) Added loads **shall** be considered in the design of the support system where:

(a) equipment or other heavy objects are located or operated close to the edge of excavations;

(b) excavations are adjacent to or abutting buildings or other structures; or

(c) hazards are created by vibration from nearby equipment or passing vehicular traffic.

(6) Where there is a danger of undermining adjacent foundations, excavation work **shall** be done in short sections and the building walls **shall** be effectively shored or braced. **Section 406 (1) to (6).**

Excavation or Access

(1) Where a worker is **required** to enter an excavation greater than 1.22 metres deep, a ladder **shall** be provided in the immediate area where the worker is employed, extending from the bottom of the excavation to at least 0.91 metres above the top of the excavation.

(2) Walkways entering excavations **shall** be:

(a) not less than 50.80 centimetres wide;

(b) equipped with guardrails when over 1.22 metres above grade; and

(c) provided with cleats when the grade is over 1/6.

(3) A runway which is used by mobile equipment **shall** be equipped with curbs. **Section 407 (1) to (3).**

Removal of Material

(1) A worker **shall** not permit excavated material to remain:

(a) within 1.22 metres of the edge of a trench-type excavation; or

(b) within 1.52 metres of the edge of a pit-type excavation.

(2) Where skips or buckets are used to remove material from excavations, a horizontal shoring member **shall** be protected against dislodgement by the installation of vertical planking. **Section 408 (1) (2).**

For more information:

- Faces and slopes. **Section 409 (1) to (4).**
- Excavation safety. **Section 410 (1) to (3).**
- Underground workings. **Section 411.**
- Internal combustion engines. **Section 412.**
- Air quality. **Section 413 (1) to (11).**

Further details on the Occupational Health and Safety Regulations can be found at *Assembly.Nl.Ca*.

NOVA SCOTIA

In Nova Scotia, **employers must** address excavation and trenching safety under the **Occupational Safety General**

Regulations **Part 14, Sections 166 to 173**. They are responsible for ensuring that excavations over 1.2 m deep are properly supported with shoring, bracing, or trench cages unless exempted. **Employers must** also provide safe access, keep excavated material at a safe distance, control water and hazardous atmospheres, and install barriers to prevent falls. Support systems and trench cages **must** be certified by engineers and inspected daily by a competent person to ensure worker safety.

Part 14 — Excavations and Trenches

(1) Where a person may enter an excavation or trench and a wall of an excavation or trench is greater than 1.2 m in height, an **employer shall** ensure that the wall is supported by adequate shoring or bracing, or that an adequate trench cage is used, except where the **employer** is able to establish that the excavation or trench:

(a) is cut in sound and stable rock;

(b) is sloped

(i) to within 1.2 m of the bottom of the excavation or trench, or

(ii) where soil overburden is located above an excavation or trench excavated in sound and stable rock, for the entire overburden, and the slope does not exceed 1 m of vertical rise to each 1 m of horizontal run; or

(c) is one that a person does not enter within a horizontal distance from the walls of the excavation or trench that is equal to the height of the walls.

(2) Where the walls or crests of an excavation or trench are cut in rock, an **employer shall** ensure that the walls and crests are adequately supported by rock bolts, wire mesh or

other means of adequate protection, if necessary, to ensure safe working conditions.

(3) Where powered mobile equipment is used near the edge of an excavation or trench, an **employer shall** ensure that any shoring, bracing or caging for the excavation or trench is adequate to support the increased load.

(4) An **employer shall** ensure that the walls of an excavation or trench are stripped of loose rock or other material that could slide, roll or fall on a person in the excavation or trench and injure that person.

(5) Despite clause (1)(b), an **employer** may slope the walls of an excavation or trench at an angle that exceeds a 1 m vertical rise to each 1 m horizontal run where an engineer has certified in writing that the steeper slope will be stable and is not a hazard to a person in the excavation or trench.

(6) An **employer shall** ensure that a utility pole, building or other structure is provided adequate support or removed if the utility pole, building or other structure may become unstable because of excavation or trenching activity. **Section 166 (1) to (6).**

No person **shall** enter an excavation or trench 1.2 m or more in depth unless an **employer** ensures that a ladder is installed that extends at least 1 m above the excavation or trench or some other adequate means of access and exit is provided:

(a) that is no more than 15 m from where the person is working; or

(b) where a trench cage is used, within the trench cage. **Section 167.**

An **employer shall** ensure that excavated material is:

(a) kept at least 1 m away from the edge of an excavation or trench, unless an engineer certifies a shorter distance

as adequate; and

(b) located a sufficient distance from the edge of the excavation or trench to ensure the excavated material does not re-enter the excavation or trench. **Section 168.**

(1) An **employer shall** ensure that an excavation or trench in which a person works is kept reasonably free of water.

(2) Where a person may be exposed to a hazardous substance or to an oxygen rich atmosphere in an excavation or trench, an **employer shall** ensure that, before the person enters the excavation or trench,

(a) testing is performed to

(i) determine the concentration of any hazardous gas, vapour or dust, flammables, the concentration of oxygen, and oxygen deficiency in the atmosphere in the immediate area of the excavation or trench where the work is to be performed,

(ii) ensure that the concentration of a chemical substance or a mixture of chemical substances in the excavation or trench does not exceed its occupational exposure limit under Part 2: Occupational Health of the *Workplace Health and Safety Regulations* made under the Act or 50% of its lower explosive limit, and

(iii) ensure that the level of oxygen in the atmosphere in the excavation or trench is not less than 19.5 % and not more than 22.5 %, unless the **employer** can demonstrate that an unsafe oxygen level is not possible in the circumstances; and

(b) adequate precautions are taken to reduce the risk of injury to a person.

(3) No person **shall** store hazardous substances in an excavation or trench.

(4) An **employer shall** provide, at or near the sides of all temporary excavations greater than 1.2 m in depth, fences, guards or barricades that prevent a person from falling into an excavation, and **shall** keep those fences, guards or barricades in place at all times, except where they interfere with the excavation or other work being done. **Section 169 (1) to (4).**

For more information:

- Engineer Design Certification of trench cage. **Section 170 (1) to (4).**
- Permanently Attached of Nameplate in Trench Cage. **Section 171 (1) (3).**
- Trench cage positioning in excavation or cage. **Section 172.**
- Shoring or bracing In Certification Compliance. **Section 173.**

Further details on the Occupational Safety General Regulations can be found at *Novascotia.Ca*.

NORTHWEST TERRITORIES

In the Northwest Territories, **employers must** follow the **Occupational Health and Safety Regulations Part 17, Sections 264 to 269, 271, 272** when performing excavation or trenching work. They are responsible for locating and marking underground utilities, preventing cave-ins with proper sloping or engineered protective systems, and keeping excavation areas clear of water and loose material. For excavations over 1.2 m deep, **employers must** provide safe access and ensure structures nearby are supported. Additional safety measures apply to shafts, tunnels, and boreholes to protect workers from collapse and falling materials.

Part 17 – Excavations, Trenches, Tunnels, and Excavated Shafts

Application of Part

This Part applies to excavations, trenches, tunnels, excavated shafts and bore holes. **Section 264.**

Locating Underground Pipelines

(1) An **employer shall** accurately establish the location of all underground pipelines, cables and conduits in an area where work is to be done and **shall** ensure that those locations are conspicuously marked:

(a) before commencing work using power tools or powered mobile equipment on an excavation, trench, tunnel, excavated shaft, or borehole; or

(b) before breaking ground surface with any equipment that could contact underground utilities.

(2) If an operation is to be undertaken involving the disturbance of soil within 600 mm of an area of an existing pipeline, cable or conduit, an **employer shall** ensure that the pipeline, cable or conduit is exposed by hand digging or other approved method before mechanical excavating is allowed to begin within that area.

(3) If an operation referred to in subsection (2) exposes a pipeline, cable or conduit, an **employer shall** ensure that the pipeline, cable or conduit is supported to prevent damage during backfilling and any subsequent settlement of the ground.

(4) If there is contact with or damage to an underground pipeline, cable or conduit, an **employer shall**, without delay,

(a) notify the owner of the pipeline, cable, or conduit that contact or damage has occurred; and

(b) take steps to protect the health and safety of workers who could be endangered until any unsafe condition

resulting from the contact or damage is repaired or corrected. **Section 265 (1) to (5).**

Excavating and Trenching

(1) An **employer shall** ensure that:

(a) before excavating or trenching begins, if the stability of a structure could be affected by an excavation or trench, the structure is supported by a temporary protective structure designed by a professional engineer and constructed, installed, used, maintained and dismantled in accordance with that design;

(b) all loose material is scaled or trimmed from the side of an excavation or trench where a worker is **required** or permitted to be present;

(c) equipment, spoil piles, rocks, and construction materials are kept not less than 1 m from the edge of an excavation or trench;

(d) an excavation or trench that a worker could be **required** or permitted to enter is kept free from accumulation of water; and

(e) the slope of a spoil pile adjacent to an excavation or trench has a slope at an angle not steeper than one horizontal to one vertical, or 45º measured from the horizontal.

(2) Subject to subsections (3) and (4), if a wall of an excavation or trench is cut back, an **employer shall** ensure that:

(a) in the case of type 1 or type 2 soil, the walls are sloped to within 1.2 m of the bottom of the excavation or trench, with a slope at an angle not steeper than one horizontal to one vertical, or 45º measured from the horizontal;

(b) in the case of type 3 soil, the walls are sloped from the bottom of the excavation or trench, with a slope at an angle not steeper than one horizontal to one vertical, or 45º measured from the horizontal; and

(c) in the case of type 4 soil, the walls are sloped from the bottom of the excavation or trench, with a slope at an angle not steeper than three horizontal to one vertical, or 19º measured from the horizontal.

(3) If an excavation or trench contains more than one type of soil, the soil **must** be classified as the soil type with the highest number.

(4) Subsection (2) does not apply to an excavation or trench that is cut in sound and stable rock.

(5) If an excavation or trench is to be made in the vicinity of an overhead power line pole, an **employer shall** ensure that the work is carried out in a manner that will not reduce the original support provided for the pole, unless permission has previously been obtained from the utility company responsible for the overhead power line.

(6) An **employer shall** ensure that none of the following is operated or located near an excavation or trench so as to affect the stability of the walls of the excavation or trench:

(a) a unit of powered mobile equipment;

(b) a vehicle of any type;

(c) any other load. **Section 266 (1) to (6).**

Frozen Soil

If an excavation, trench, tunnel, excavated shaft or borehole is made in proximity to or into frozen soil, an **employer shall** take measures to preserve the adjacent frozen soil. **Section 267.**

For more information:

- Temporary Protective Structures. **Section 268 (1) to (4).**
- Protection Against Cave-In of Excavations. **Section 269 (1) to (3).**
- Excavated Shafts and Tunnels. **Section 271 (1) to (3).**
- Boreholes, Belled Areas of Excavated Shafts. **Section 272 (1) to (3).**

Further details on the Occupational Health and Safety Regulations can be found at *Canlii.Org*.

NUNAVUT

In Nunavut, **employers must** follow the **Occupational Health and Safety Regulations Part 17, Sections 264 to 269, 271, 272** when performing excavation or trenching work. They are responsible for locating and marking underground utilities, preventing cave-ins with proper sloping or engineered protective systems, and keeping excavation areas clear of water and loose material. For excavations over 1.2 m deep, **employers must** provide safe access and ensure structures nearby are supported. Additional safety measures apply to shafts, tunnels, and boreholes to protect workers from collapse and falling materials.

Part 17 – Excavations, Trenches, Tunnels, and Excavated Shafts

Application of Part

This Part applies to excavations, trenches, tunnels, excavated shafts and bore holes. **Section 264.**

Locating Underground Pipelines

(1) An **employer shall** accurately establish the location of all underground pipelines, cables and conduits in an area where work is to be done and **shall** ensure that those locations are conspicuously marked:

(a) before commencing work using power tools or powered mobile equipment on an excavation, trench, tunnel, excavated shaft, or borehole; or

(b) before breaking ground surface with any equipment that could contact underground utilities.

(2) If an operation is to be undertaken involving the disturbance of soil within 600 mm of an area of an existing pipeline, cable or conduit, an **employer shall** ensure that the pipeline, cable or conduit is exposed by hand digging or other approved method before mechanical excavating is allowed to begin within that area.

(3) If an operation referred to in subsection (2) exposes a pipeline, cable or conduit, an **employer shall** ensure that the pipeline, cable or conduit is supported to prevent damage during backfilling and any subsequent settlement of the ground.

(4) If there is contact with or damage to an underground pipeline, cable or conduit, an **employer shall**, without delay,

(a) notify the owner of the pipeline, cable, or conduit that contact or damage has occurred; and

(b) take steps to protect the health and safety of workers who could be endangered until any unsafe condition resulting from the contact or damage is repaired or corrected. **Section 265 (1) to (5).**

Excavating and Trenching

(1) An **employer shall** ensure that:

(a) before excavating or trenching begins, if the stability of a structure could be affected by an excavation or trench, the structure is supported by a temporary protective structure designed by a professional engineer and constructed, installed, used, maintained, and

dismantled in accordance with that design;

(b) all loose material is scaled or trimmed from the side of an excavation or trench where a worker is **required** or permitted to be present;

(c) equipment, spoil piles, rocks, and construction materials are kept not less than 1 m from the edge of an excavation or trench;

(d) an excavation or trench that a worker could be **required** or permitted to enter is kept free from accumulation of water; and

(e) the slope of a spoil pile adjacent to an excavation or trench has a slope at an angle not steeper than one horizontal to one vertical, or 45º measured from the horizontal.

(2) Subject to subsections (3) and (4), if a wall of an excavation or trench is cut back, an **employer shall** ensure that:

(a) in the case of type 1 or type 2 soil, the walls are sloped to within 1.2 m of the bottom of the excavation or trench, with a slope at an angle not steeper than one horizontal to one vertical, or 45º measured from the horizontal;

(b) in the case of type 3 soil, the walls are sloped from the bottom of the excavation or trench, with a slope at an angle not steeper than one horizontal to one vertical, or 45º measured from the horizontal; and

(c) in the case of type 4 soil, the walls are sloped from the bottom of the excavation or trench, with a slope at an angle not steeper than three horizontal to one vertical, or 19º measured from the horizontal.

(3) If an excavation or trench contains more than one type of

soil, the soil **must** be classified as the soil type with the highest number.

(4) Subsection (2) does not apply to an excavation or trench that is cut in sound and stable rock.

(5) If an excavation or trench is to be made in the vicinity of an overhead power line pole, an **employer shall** ensure that the work is carried out in a manner that will not reduce the original support provided for the pole, unless permission has previously been obtained from the utility company responsible for the overhead power line.

(6) An **employer shall** ensure that none of the following is operated or located near an excavation or trench so as to affect the stability of the walls of the excavation or trench:

(a) a unit of powered mobile equipment;

(b) a vehicle of any type;

(c) any other load. **Section 266 (1) to (6).**

Frozen Soil

If an excavation, trench, tunnel, excavated shaft or borehole is made in proximity to or into frozen soil, an **employer shall** take measures to preserve the adjacent frozen soil. **Section 267.**

For more information:

- Temporary Protective Structures. **Section 268 (1) to (4).**
- Protection Against Cave-In of Excavations. **Section 269 (1) to (3).**
- Excavated Shafts and Tunnels. **Section 271 (1) to (3).**
- Boreholes, Belled Areas of Excavated Shafts. **Section 272 (1) to (3).**

Further details on the Occupational Health and Safety

Regulations can be found at *Canlii.Org*.

ONTARIO

In Ontario, **employers** are **required** to address excavation and trenching safety under the **Reg. 213/91: CONSTRUCTION PROJECTS Part III, Sections 224–241**. **Employers must** locate and mark underground utilities, ensure that excavations over 1.2 m deep are properly supported or sloped, and keep excavations free of water and loose material. They **must** also provide safe access and barriers to prevent falls, maintain clear zones around the edge, and use engineered or prefabricated support systems when needed. These measures are essential to protect workers from cave-ins, structural collapses, and other serious hazards.

Part III – Excavations

Entry and Working Alone

No person **shall** enter or be permitted to enter an excavation that does not comply with this Part. **Section 224.**

Work **shall** not be performed in a trench unless another worker is working above ground in close proximity to the trench or to the means of access to it. **Section 225.**

Soil Types

(1) For the purposes of this Part, soil **shall** be classified as Type 1, 2, 3 or 4 in accordance with the descriptions set out in this section.

(2) Type 1 soil,

(a) is hard, very dense and only able to be penetrated with difficulty by a small sharp object;

(b) has a low natural moisture content and a high degree of internal strength;

(c) has no signs of water seepage; and

(d) can be excavated only by mechanical equipment.

(3) Type 2 soil,

(a) is very stiff, dense and can be penetrated with moderate difficulty by a small sharp object;

(b) has a low to medium natural moisture content and a medium degree of internal strength; and

(c) has a damp appearance after it is excavated.

(4) Type 3 soil is,

(a) previously excavated soil; or

(b) soil that is stiff to firm or compact to loose in consistency and has one or more of the following characteristics:

(i) It exhibits signs of surface cracking.

(ii) It exhibits signs of water seepage.

(iii) If it is dry, it may run easily into a well-defined conical pile.

(iv) It has a low degree of internal strength.

(5) Type 4 soil,

(a) is soft to very soft and very loose in consistency, very sensitive and upon disturbance is significantly reduced in natural strength;

(b) runs easily or flows, unless it is completely supported before excavating procedures;

(c) has almost no internal strength;

(d) is wet or muddy; and

(e) exerts substantial fluid pressure on its supporting system. **Section 226 (1) to (5).**

(1) The type of soil in which an excavation is made **shall** be determined by visual and physical examination of the soil,

(a) at the walls of the excavation; and

(b) within a horizontal distance from each wall equal to the depth of the excavation measured away from the excavation.

(2) The soil in which an excavation is made **shall** be classified as the type described in section 226 that the soil most closely resembles.

(3) If an excavation contains more than one type of soil, the soil **shall** be classified as the type with the highest number as described in section 226 among the types present. **Section 227 (1) to (3).**

Precautions Concerning Services

(1) Before an excavation is begun,

(a) the **employer** excavating **shall** ensure that all gas, electrical and other services in and near the area to be excavated are located and marked;

(b) the **employer** and worker locating and marking the services described in clause (a) **shall** ensure that they are accurately located and marked; and

(c) if a service may pose a hazard, the service **shall** be shut off and disconnected.

(2) If a service may pose a hazard and it cannot be shut off or disconnected, the owner of the service **shall** be requested to supervise the uncovering of the service during the

excavation.

(3) Pipes, conduits and cables for gas, electrical and other services in an excavation **shall** be supported to prevent their failure or breakage. **Section 228 (1) to (3).**

For more information:

- Protection of Adjacent Structures. **Section 229.**
- General Requirements. **Sections 230 to 233 (1) to (4).**
- Support Systems. **Section 234 (1) to (5).**
- Timbering and Shoring Requirements. **Section 235.**
- Prefabricated, Hydraulic or Engineered Support System. **Section 236 (1) to (7).**
- Prefabricated Or Hydraulic Requirements Support Systems Used in Type 4 Soil. **Section 237.**
- Timbering and Shoring Requirements Including Graphic Tables. **Section 238.**
- Support System for The Walls Of An Excavation. **Section 239, 240, 241.**

Further details on the Reg. 213/91: CONSTRUCTION PROJECTS can be found at *Ontario.Ca*.

PRINCE EDWARD ISLAND

In Prince Edward Island, **employers** are **required** to address excavation and trenching safety under the **Occupational Health and Safety Act General Regulations Part 12, Sections 12.1 to 12.15**. **Employers must** identify and mark underground utilities, notify utility operators, and ensure safe procedures within 2 feet of any lines. Excavations over 4 feet deep **must** be supported with shoring, bracing, or caging unless exceptions apply. **Employers must** also provide proper access, prevent water accumulation and hazardous gas buildup, keep excavated material at a safe distance, and ensure adequate lighting, barriers, and supervision.

Part 12 – Excavations, Trenches, and Construction

Location of Utility Lines

(1) The **employer shall** ensure that before beginning an excavation or trench, the location of possible underground utility lines and piping is determined.

Safety Precautions

(2) The **employer shall** ensure that when working within 609 mm (2 ft.) of underground utility lines and piping:

(a) adequate safety precautions are taken;

(b) utility lines have been de-energized and grounded; and

(c) the authority operating the utility has been notified of the operation.

Operating Procedure

(3) The **employer shall** ensure that an adequate operating procedure is used when workers are working within 609 mm (2 ft.) of any underground utility line or piping.

Support of Poles

(4) The **employer shall** ensure that utility poles, posts or similar structures are supported or removed when they are within 3 048 mm (10 ft.) of an excavation or trench more than 1 219 mm (4 ft.) deep. **Section 12.1 (1) to (4).**

Shoring

(1) The **employer shall** ensure that the walls of an excavation or trench are supported by adequate shoring and bracing or caging except when an excavation or trench:

(a) is less than 1 219 mm (4 ft.) deep;

(b) is cut in solid rock;

(c) is sloped to within 1 219 mm (4 ft.) of the bottom of the excavation or trench with a slope at the angle of repose that does not exceed 305 mm (1 ft.) of vertical rise to each 305 mm (1 ft.) of horizontal run; or

(d) is such that workers are not **required** to enter.

(2) If necessary to provide protection to workers working in a trench the **employer shall** ensure that additional shoring and bracing is added to support the increased pressure due to the location of mobile equipment at the edge of an excavation or trench.

Certification

(3) The **employer shall** ensure that shoring and bracing for excavations or trenches is certified as adequate by a professional engineer and the proof of certification is made available to an officer on request. **Section 12.2 (1) to (3).**

Safety Requirements Before Entry

The **employer shall** ensure that workers are not allowed to enter an excavation or trench 1 219 mm (4 ft.) or more in depth, and workers **shall** not enter unless:

(a) the requirements of section 12.2 are complied with;

(b) CSA approved safety headwear and footwear are provided and worn by the workers, as specified in sections 45.5 or 45.15, as the case may be;

(c) ladders, extending at least 914 mm (3 ft.) above the excavation or trench are installed and located no more than 15 240 mm (50 ft.) from where workers are working or other safe means of access and egress are provided;

(d) the sides and crests have been scaled down to prevent loose material from falling into the excavation or trench. **Section 12.3.**

Removal, etc. of Shoring

(1) The **employer shall** ensure that a worker does not install or remove shoring from a position inside a trench.

(2) A worker **shall** not install or remove shoring from a position inside a trench. (EC180/87; 126/21) **Section 12.4 (1) (2).**

Excavated Material

(1) The **employer shall** ensure that excavated material is kept at least 609 mm (2 ft.) away from the edge of excavations or trenches.

(2) The **employer shall** ensure that where piled rock or other granular material creates a hazard above an excavation or trench more than 1 828 mm (6 ft.) deep in rock:

(a) the pile is located back from the face of the excavation or trench a distance equal to at least the height of the pile; or

(b) a fence is erected at a minimum distance of 914 mm (3 ft.) from the face of the excavation or trench, consisting of material adequate to support the pile. **Section 12.5 (1) (2).**

For more information:

- **Section 12.6 (1) to (3).**
- Lowering materials. **Section 12.7.**
- Observation requirement. **Section 12.8.**
- Standing under loads. **Section 12.9.**
- Wall supports. **Section 12.10.**
- Illumination of materials. **Section 12.12.**
- Signs, Signalers, Reflectorized vests, Reflectorized paddles. **Section 12.12 (2) to (5).**
- Night lighting. **Section 12.13.**
- Power shovels, Shoring, Mats. **Section 12.14 (1) to (3).**

- Adjacent buildings. **Section 12.15.**

Further details on the Occupational Health and Safety Act General Regulations can be found at *Princeedwardisland.Ca*.

QUÉBEC

In Quebec, **employers must** follow the **Safety Code for the Construction Industry**, **Sections 3.15.1 to 3.15.10**, when performing excavation and trenching work. They are responsible for locating underground utilities, using approved digging methods, and supporting nearby structures if needed. Excavations over 1.2 m deep require engineered shoring unless exempted, and safe access with ladders **must** be provided every 15 metres. **Employers must** remove loose material from trench walls, keep sites free of water, and install barriers at hazardous edges.

Public services:

(1) Before digging, the **employer shall** verify whether there is underground piping within the perimeter of the works to be carried out and, where applicable, situate its exact location on the ground.

(2) The piping may be temporarily disconnected, relocated or left in place, on condition that:

(a) the excavation procedure has been approved in advance by the road office or the utility company;

(b) a work method is adopted which prevents damage to conduits; and

(c) temporary supports are constructed. **Section 3.15.1.**

Adjoining structure: Where there is any danger that the proposed digging might affect the stability of the adjoining structures and thus threaten the safety of workers, an

adequate method of shoring or a sub-structure **shall** be provided, and a copy of the plans and specifications of such works **shall** be kept on the site. **Section 3.15.2.**

(1) The **employer shall** ensure that the banks of an excavation or trench are shored solidly with quality materials in accordance with the plans and specifications of an engineer. Shoring is not **required** in the following cases:

(1) where the trench or excavation is dug out of solid rock or where no workers are **required** to descend into it;

(2) where there is no risk of the banks of the trench or excavation collapsing and where they slope less than 45º from a point less than 1.2 m from the bottom;

(3) where there is no risk of the banks of the trench or excavation collapsing and where an engineer attests that it is not necessary to shore up the banks, given the slope, nature and stability of the ground. A copy of the engineer's attestation **shall** be available on the construction site at all times.

Solid rock means rock that cannot be excavated otherwise than by blasting.

(2) The shoring **shall** extend 300 mm above the excavation, except where the trench dug in on a public road and **must** be covered over to allow for the passage of traffic during periods when works are not in progress.

When the shoring consists of unjoined stays, the 300 mm extension above the excavation **shall** be fitted with a plinth 300 mm wide.

(3) The banks **shall** be shored as the work progresses unless the shoring can be carried out before the digging.

(4) During the work the **employer shall** ensure that the walls are inspected and maintained so as to remove:

(a) rocks or materials liable to become detached therefrom;

(b) overhanging matter.

Where the banks have been subject to environmental or climatic stress, inspections **shall** be more frequent.

(5) It is prohibited:

(a) to place materials less than 1.2 m from the rim of the banks;

(b) to drive or park vehicles or machines less than 3 m from the rim of the banks, unless reinforced shoring has been used;

(c) to let banks deteriorate.

(6) Shoring **shall** be removed by an experienced person or under his supervision:

(a) from the bottom upwards; and

(b) only in places to which workers no longer have access. **Section 3.15.3 (1) to (5).**

Means of access and supervision: The **employer shall** ensure that ladders are placed in trenches at intervals of 15 linear metres or fractions thereof and in such manner as to follow the progress of the works.

Ladders **shall** rest on the bottom of the trench and extend at least 1 m above ground level.

When workers are in a trench, the **employer shall** post an experienced person at ground level so that he may detect faults, earth breaking away or any other source of danger. **Section 3.15.4.**

For more information:

- Barriers, barricades, or warning line. **Section 3.15.5 (1) (2).**
- **Section 3.15.6.**
- **Section 3.15.7 (1) (2).**
- **Section 3.15.8 (1) (2).**
- **Section 3.15.9.**
- Minimum age. **Section 3.15.10.**

Further details on the Safety Code for the Construction Industry can be found at *Gouv.Qc.Ca*.

SASKATCHEWAN

In Saskatchewan, **employers must** follow **Part 17, Sections 17-2 to 17-9 of the Occupational Health and Safety Regulations** for excavation, trenching, and tunneling. **Employers** are responsible for locating underground utilities, stabilizing excavation walls based on soil type, and using certified protective structures when needed. Workers in excavations over 1.2 m deep **must** be protected from cave-ins and have safe access. Additional safeguards apply near overhead lines, in shafts, tunnels, and boreholes to ensure overall worker safety.

Part 17 – Excavations, Trenches, Tunnels, and Excavated Shafts

Excavating and Trenching

(1) An **employer** or contractor **shall** ensure that:

(a) before excavating or trenching begins, if the stability of a structure may be affected by an excavation or trench, the structure is supported by a temporary protective structure designed by a professional engineer and constructed, installed, used, maintained and dismantled in accordance with that design;

(b) all loose material is scaled or trimmed from the side of an excavation or trench if a worker is **required** or

permitted to be present;

(c) equipment, spoil piles, rocks and construction materials are kept at least 1 metre from the edge of an excavation or trench;

(d) an excavation or trench that a worker may be **required** or permitted to enter is kept free from any accumulation of water; and

(e) the slope of a spoil pile adjacent to an excavation or trench has a slope at an angle not steeper than 1 horizontal to 1 vertical, or 45° measured from the horizontal.

(2) Subject to subsections (3) and (4), if a wall of an excavation or trench is cut back, an **employer** or contractor **shall** ensure that:

(a) in the case of type 1 or type 2 soil, the walls are sloped to within 1.2 metres of the bottom of the excavation or trench, with a slope at an angle not steeper than 1 horizontal to 1 vertical, or 45° measured from the horizontal;

(b) in the case of type 3 soil, the walls are sloped from the bottom of the excavation or trench, with a slope at an angle not steeper than 1 horizontal to 1 vertical, or 45° measured from the horizontal; and

(c) in the case of type 4 soil, the walls are sloped from the bottom of the excavation or trench, with a slope at an angle not steeper than 3 horizontal to 1 vertical, or 19° measured from the horizontal.

(3) If an excavation or trench contains more than 1 type of soil, the soil **must** be classified as the soil type with the highest number.

(4) Subsection (2) does not apply to an excavation or trench

that is cut in sound and stable rock.

(5) If an excavation or trench is to be made in the vicinity of an overhead power line, an **employer** or contractor **shall** ensure that the work is carried out in a manner that will not reduce the original support provided for any overhead power line pole, unless permission has previously been obtained from the utility company responsible for the overhead power line.

(6) An **employer** or contractor **shall** ensure that no powered mobile equipment or vehicle is operated, and that no powered mobile equipment, vehicle or heavy load is located, near an excavation or trench so as to affect the stability of the walls of the excavation or trench. **Section 17-4 (1) to (6).**

Temporary Protective Structures

(1) An **employer** or contractor **shall** ensure that a temporary protective structure to be used pursuant to this Part:

(a) is designed, constructed, installed, used, maintained and dismantled to provide adequate protection to a worker who is in an excavation, trench, tunnel, excavated shaft or borehole and to a worker who installs, uses, maintains, or dismantles the temporary protective structure; and

(b) extends at least 300 millimetres above the wall of the excavation, trench, tunnel, excavated shaft or borehole to prevent material from falling in.

(2) An **employer** or contractor **shall** ensure that:

(a) all drawings and instructions necessary to safely construct, install, use, maintain and dismantle a temporary protective structure **required** pursuant to this Part are kept at the site of the excavation, trench, tunnel, excavated shaft, or borehole; and

(b) if **required** by this Part, a professional engineer certifies that the temporary protective structure, if

constructed and installed as drawn and used, maintained and dismantled as instructed, will provide adequate protection to a worker who constructs, installs, uses, maintains, or dismantles the temporary protective structure.

(3) Freezing the ground by artificial means is acceptable as an alternative or partial alternative to installing a temporary protective structure in an excavation, trench, tunnel, excavated shaft or borehole if the freezing is:

(a) designed by a professional engineer to control the ground condition so as to ensure the safety of workers; and

(b) performed in accordance with the professional engineer's specifications and instructions.

(4) Natural freezing of the ground is not acceptable as an alternative or partial alternative to the installation of temporary protective structures. **Section 17-5 (1) to (4).**

For more information:

- Application of Part. **Section 17-2.**
- Locating underground pipelines, etc. **Section 17-3 (1) to (4).**
- Protection against cave-in of excavations. **Section 17-6 (1) to (3).**
- Protection against cave-in of trenches. **Section 17-7 (1) to (7).**
- Excavated shafts and tunnels. **Section 17-8 (1) to (3).**
- Boreholes, belled areas of excavated shafts. **Section 17.9 (1) to (3).**

Further details on the Occupational Health and Safety Regulations can be found at *Saskatchewan.Ca*.

YUKON

In Yukon, **employers must** comply with **Part 10, Sections 10.62**

to 10.72 of the **Occupational Health and Safety Regulations** for trenching and excavating. Excavations deeper than 6 m or near structures require engineer-certified procedures. **Employers must** locate and mark utilities before digging, ensure proper sloping or shoring for trenches deeper than 1.2 m, provide safe access and egress, keep excavated materials and water away from trench edges, and maintain protection from cave-ins through approved support systems.

Part 10 — Construction and Building Safety

Trenching and Excavating

Engineering

(1) Excavating, shoring, trenching or shaft work **shall** be carried out according to the design, instruction and procedures developed and certified by a professional engineer, considering all the factors for safe operation, including the type of soil or material to be excavated, where:

(a) the excavation or trench will be more than 6 m (20 ft.) deep,

(b) support structures will be used in an excavation or trench,

(c) an excavation or trench will be adjacent to an improvement or structure,

(d) the excavation or trench may be subject to hydraulic pressure or vibration which may result in ground movement,

(e) the ground slopes away from or downhill toward the top edge of the excavation at an angle steeper than 3 horizontal to 1 vertical,

(f) in a trench or excavation of any depth there are any extraordinary conditions, or

(g) the trench or excavation will be in permafrost.

Written Procedures

(2) Any written procedures or instructions from a professional engineer to prevent cave-in of a trench or excavation **shall:**

(a) be available at the site, and

(b) specify the shoring support structures or the sloping requirements and the subsurface conditions that are expected. **Section 10.62.**

Notification to Board

Prior to commencement of any trenching or excavating project, the board **shall** be notified and work procedures discussed:

(a) where the trench or excavation depth will exceed 6 m (20 ft.), and

(b) where the trenching or excavating will be done in permafrost, where ground conditions may change. **Section 10.63.**

Utilities Located and Marked

(1) All underground cables, pipes and conduits **shall** be located and marked with the help of the owner of the service before the commencement of excavation or drilling activity with power tools and equipment.

Requirement Near Utilities

(2) Excavating or drilling work **shall** be undertaken in conformity with the requirements of the owner of the service and those of the applicable regulations or specifications of the various authorities concerned.

Uncovering Utilities

(3) Where a service poses a hazard and cannot be disconnected or shut off, the owner of the service **shall** be requested to attend the site to supervise the uncovering of the service during excavation.

Hand Digging

(4) When within 0.6 m (2 ft.) of the underground utilities, the service **shall** be exposed by hand digging.

Tools Near Utilities

(5) Pointed tools **shall** not be used in probing for underground gas or electrical services, except as directed by the utility owner.

Utilities Supported

(6) Pipes, conduits and cables for gas, electrical and other services in a trench or excavation **shall** be supported to prevent their damage or failure.

Hazards Near Excavation

(7) Trees, utility poles, rocks or other hazards adjacent to an area to be excavated **shall** be cleared or supported. **Section 10.64 (1) to (7).**

Protection from Cave-In

(1) Before a worker enters any excavation or trench more than 1.2 m (4 ft.) in depth, or where a worker approaches the side or bank within a distance equal to the depth of the excavation, the excavation sidewalls **shall** be sloped or supported, as specified by a professional engineer, or the sidewalls of the excavation **shall** be, at a minimum:

Sloped Sidewalls

(a) sloped at an angle not steeper than 37 degrees from the vertical,

Slope Tables

(b) sloped at an angle, dependent on soil conditions, which will ensure stable faces, but in no case may the slope or combination of vertical cut and sloping exceed that shown in Figure 10-1,

Benching

(c) benched as shown in Figure 10-2,

Shoring

(d) supported in accordance with the minimum requirements of Section 10.68, or

Trench Boxes, Cages

(e) supported by manufactured or prefabricated trench boxes, shoring cages, or other effective means acceptable to the board.

End Shoring Required

(2) End shoring **shall** be installed if the end of a trench more than 1.2 m (4 ft.) in depth is not adequately sloped unless:

(a) a worker in the trench is not **required** to approach closer to the end of the trench than a distance equal to the depth of the trench at that end,

(b) the permissible spacing of uprights equals or exceeds the width of the trench, or

(c) otherwise authorized in writing by a professional engineer.

End Shoring Supports

(3) Where end shoring is **required**, the walers for the end shoring **shall** be installed to bear against the walers that

extend along the sides of the trench, or in a manner that will provide equivalent structural restraint.

End Shoring Design

(4) A professional engineer **shall** design end shoring where the end shoring waler length exceeds 1.8 m (6 ft.).

End Shoring Dimensions

(5) Shoring **shall** extend at least 0.3 m (1 ft.) above ground level to as close to the bottom of the trench as the material being installed will allow, but in no case more than 0.6 m (2 ft.) from the bottom of the trench. **Section 10.65 (1) to (5).**

For more information:

- Traffic crossing plates. **Section 10.65 (6).**
- Timber shoring and grades, Manufactured shoring. **Section 10.66 (1) (2).**
- Safe shoring procedures. **Section 10.67 (1) to (4).**
- **Trench support structure design Section 10.68 (1) to (10), table 8, 9, 10 – uprights, Walers, Cross Braces.**
- Entry and exit. **Section 10.69 (1) to (5).**
- Excavated material. **Section 10.70.**
- Height limitations – excavations. **Section 10.71.**
- Water accumulations. **Section 10.72.**
- **Section 10.**

Further details on the Employment Standards Act can be found at *Wcb.Yk.Ca*.