

# Excavations: Cutting back walls

## OHS information for employers, prime contractors and workers

This publication explains some of the requirements under Part 32 of Alberta's Occupational Health and Safety Code (OHS Code) relating to cutting back walls. For detailed information about all of Part 32's requirements, consult the legislation.

### KEY INFORMATION

- Worker injuries and fatalities from collapses of excavation walls are preventable.
- Employers (and prime contractors in some cases) have several responsibilities in ensuring workers and others are protected from hazards at an excavation site.
- Excavation walls that are cut back must meet certain legislated specifications, depending on the classification of the soil.
  - The soil classification must be performed by a competent person, such as a geotechnical engineer.

## Introduction

The word "excavation" has a specific legal definition in the OHS Code. It is defined as "any dug-out area of ground that is not a tunnel, underground shaft or open pit mine."

Once soil is removed to create an excavation, it no longer supports the soil left behind in the excavation wall. If not properly supported, the soil can easily fall into the excavation, creating a life-threatening hazard.

## Methods of protection

Excavation workers can be protected by cutting back the excavation walls in particular ways (depending on soil classification), installing temporary protective structures, or using a combination of both these methods. (For more information on installing temporary protective structures, see [Excavations: Temporary protective structures.](#))

One special type of excavation is a trench, which is defined in the OHS Code as "a long narrow dug-out area of ground that is deeper than its width at the bottom." If a trench meeting this definition is to be made in solid rock, cut backs or temporary protective structures are not required. Cut backs or temporary protective structures are also not required if the worker is not working closer to the walls than the depth of the excavation, or if the excavation is less than 1.5 metres deep.

However, even in situations where these protections are not required, there may be other hazards. Employers must ensure any such hazards are eliminated or controlled.

## Soil classification

If cutting back walls is one of the chosen methods of protection, the employer must either determine the classification of the soil to be excavated or assume that the soil is the least stable classification (soft, sandy or loose). The soil's classification will dictate the legislated specifications that must be met when cutting back the walls, as per Section 451 of the OHS Code:

- If the soil is classified as "hard and compact," the specifications listed in Section 451(a) must be met.
- If the soil is classified as "likely to crack or crumble," the specifications listed in Section 451(b) must be met.
- If the soil is classified as "soft, sandy or loose," the specifications listed in Section 451(c) must be met.

### IMPORTANT

The soil classification must be performed by a competent person, such as a geotechnical engineer or a professional engineer experienced in soil classification. Otherwise (or if no soil classification is performed at all), it must be assumed that the soil is of the weakest type (soft, sandy or loose), and the support system must be designed accordingly as per Section 451(c).

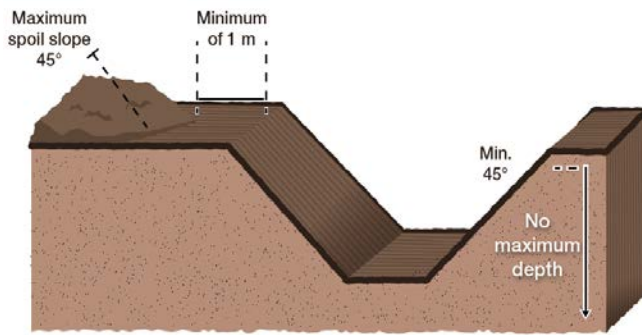
## Design specifications

The following descriptions and diagrams illustrate the legislated design specifications when cutting back walls in the three different types of soil.

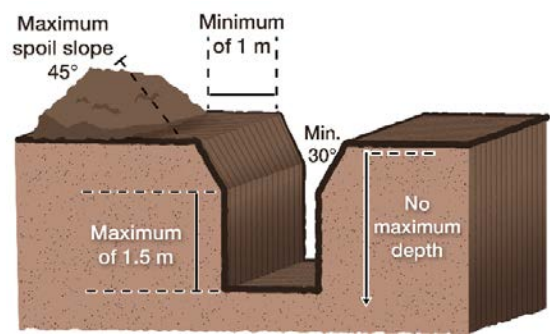
### Soft, sandy or loose soil

For soft, sandy or loose soil, the walls must be sloped from the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical (as shown in Figure 1 on the next page).

**Figure 1**  
Cutback of excavation walls in soft, sandy or loose soil



**Figure 3**  
Cutback of excavation walls in hard and compact soil



**WARNING**

The next two types of cutbacks (as shown in Figure 2 and Figure 3) are only acceptable if the soil has been classified by a competent person and all hazards have been addressed.

Do not use either of the options if workers are performing tasks where they are positioned below the straight cut portions of the excavations (for example, if a worker is in a kneeling position to perform work on a pipe).

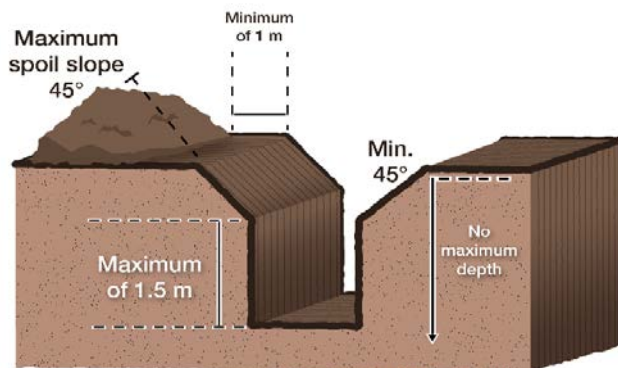
Note that employers have a responsibility under Section 3(1)(a) of Alberta's *Occupational Health and Safety Act* (OHS Act) to ensure the health and safety of workers. Accordingly, if these OHS Code requirements will not provide adequate protection due to conditions at the work site or the nature of the work, the employer is required to do a hazard assessment and implement any required controls to provide additional protection.

Some examples of situations when this might be required include when someone in an excavation is working with hazardous energy or hazardous materials, or has to work with their body positioned awkwardly or precariously.

**Soil likely to crack or crumble**

When the soil is classified as likely to crack or crumble by a competent person, the walls must be sloped to within 1.5 metres of the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical (as shown in Figure 2).

**Figure 2**  
Cutback of excavation walls in soil likely to crack or crumble



**Hard and compact soil**

When the soil is classified as hard and compact by a competent person, the walls must be sloped to within 1.5 metres of the bottom of the excavation at an angle of not less than 30 degrees measured from the vertical (as shown in Figure 3).

**Other related requirements**

**Prime contractor responsibility**

As per Section 10(8) of the OHS Act, prime contractors must fulfill any employer obligations related to excavations if the excavations are conducted by, or on behalf of, the prime contractor.

These prime contractor obligations don't relieve other employers from any obligation they may have toward excavations, and do not absolve either the prime contractor or employers from their other legal responsibilities. Some work site excavations put in place by, or on behalf of, the prime contractor will be for shared use by site employers.

**Marking an excavation**

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

Employers are required to ensure hazards at the work site do not affect people in the vicinity. Depending on the location and configuration of the work site and excavation, this may require barriers or fencing to ensure the safety of people in the area.

## Loose materials

Employers must ensure loose materials are scaled and trimmed from the sides of an excavation if workers may be on or near the sides.

## Spoil piles

Employers must ensure:

- the leading edge of any spoil pile (waste material from an excavation) is at least one metre from the edge of the excavation;
- the slope of a spoil pile adjacent to the excavation is at an angle of no more than 45 degrees from the horizontal; and
- loose materials are scaled and trimmed from a spoil pile.

## Water hazards

If a worker might enter an excavation, the employer must ensure the excavation is kept free of accumulated water that may pose a hazard.

## Power pole support

The collapse of a power pole could expose workers to a falling pole structure and uncontrolled hazardous electrical energy. For this reason, the employer must ensure that any work to disturb the ground near an overhead power line doesn't reduce the original support provided to the power pole.

## Safe entry and exit

The employer must ensure workers who are required to enter an excavation have a safe way to enter and leave it. For trenches that are more than 1.5 metres deep, a safe entrance and exit (which may in some cases be the same location) must be located no more than 8 metres from the worker.

## Access for powered mobile equipment

The employer is required to ensure that the open side of an excavation, or a route used by powered mobile equipment to access an excavation, has a barrier high enough to stop equipment from sliding or rolling into the excavation.

Dumping blocks are required in places where powered mobile equipment may go over a bank or enter a dump opening when discharging a load. Section 460 of the OHS Code provides three options for employers to prevent powered mobile equipment from dumping hazards.

## Buried facilities and temporary protective structures

A number of provisions in Part 32 of the OHS Code apply to locating or exposing buried facilities, as well as to installing temporary protective structures for excavations. For more

information, see [Excavations: Locating buried facilities](#) and [Excavations: Temporary protective structures](#).

## Exemption

Many of the excavation requirements in Part 32 don't apply if a professional engineer certifies that the ground formation is and will remain stable, free from cave-ins, sliding or rolling materials and other hazards associated with the workings that may compromise worker safety. For details on which requirements don't apply in this circumstance, see Section 449 of the OHS Code.

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## Contact us

### OHS Contact Centre

Anywhere in Alberta

- 1-866-415-8690

Edmonton and surrounding area

- 780-415-8690

Deaf or hard of hearing (TTY)

- 1-800-232-7215 (Alberta)
- 780-427-9999 (Edmonton)

### Notify OHS of health and safety concerns

[alberta.ca/file-complaint-online.aspx](https://alberta.ca/file-complaint-online.aspx)

Call the OHS Contact Centre if you have concerns that involve immediate danger to a person on a work site.

### Report a workplace incident to OHS

[alberta.ca/ohs-complaints-incidents.aspx](https://alberta.ca/ohs-complaints-incidents.aspx)

### Website

[alberta.ca/ohs](https://alberta.ca/ohs)

## Get copies of the OHS Act, Regulation and Code

### Alberta King's Printer

[alberta.ca/alberta-kings-printer.aspx](https://alberta.ca/alberta-kings-printer.aspx)

### OHS

[alberta.ca/ohs-act-regulation-code.aspx](https://alberta.ca/ohs-act-regulation-code.aspx)

## For more information

Excavations: Locating buried facilities (EXCV003)

[ohs-pubstore.labour.alberta.ca/excv003](https://ohs-pubstore.labour.alberta.ca/excv003)

Excavations: Temporary protective structures (EXCV002)

[ohs-pubstore.labour.alberta.ca/excv002](https://ohs-pubstore.labour.alberta.ca/excv002)

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