

**Part 4: General Conditions**

**Update to Section 4.1, Safe premises**

**New Section 4.1.1, Terrain stability assessment**

*Consequential amendments to:*

**Part 1: Definitions**

**Four new definitions to be added**

**Part 20: Construction, Excavation and Demolition**

**New Section 20.14.1 Fills and stockpiles**

**Update to Section 20.78 Work standards**

**Update to Section 20.81 Sloping and shoring requirements**

**Part 22: Underground Workings**

**Update to Section 22.6, Notice of project**

**Update to Section 22.144, Limiting descent**

**Purpose:**

The proposed amendment to section 4.1 is to add reference to fill structures (such as roads, dykes and earth fill dams) and stockpiles. It would also add reference to design, construction and maintenance as factors required to be considered in achieving compliance. This section would also be renamed to capture the broader scope of work premises (i.e., safe workplaces and equipment). Earth fills or fill structures are common in a variety of workplaces, and provisions governing the design, construction and maintenance of fills are proposed for Part 4. There is also a new provision proposed for Part 20, section 20.14.1, to address the process of construction and maintenance of fills and stockpiles.

The proposed new section 4.1.1 is a relocation and expansion of the requirements of section 26.18 related to landslide and avalanche hazards. It reflects that a terrain stability assessment may need to be conducted in a workplace that is not a forestry operation.

These proposed changes would add reference to professional geoscientists and professional foresters as persons who can undertake responsibility for the design and certification of fills and stockpiles and the conduct of terrain stability assessments as covered in Parts 4 and 20, and add professional geoscientists as persons who can undertake responsibility for certain professional assessment and certification requirements in Part 22, Underground Workings. These changes recognize the scope of practice these professionals have under the legislation that authorizes their right to practice their profession.

**Rationale for Change:**

The proposed amendments:

- clarify the obligation to design, build, use and maintain fill structures and stockpiles so that workers will not be endangered,
- ensure that any danger to workers on or near a fill or stockpile during construction or maintenance is controlled through proper planning and engineering, and
- broaden the requirements for landslide and avalanche hazard assessments to apply to all workplaces, not just to a forestry operation.

**Key Issues:**

- Design, construction, use and maintenance criteria for fills and stockpiles, and the qualifications of people who must be responsible for design and certification of such things
- Criteria for terrain stability assessments and qualifications of people who must be responsible for the assessment and certification of related documentation and reports
- Recognition of professional geoscientists and professional foresters as people who have rights to professional practice in some areas where the *Occupational Health and Safety Regulation* does not specifically now recognize these professionals

**Evaluative Mechanism:**

The proposed amendments will:

- Reduce the number of enquiries from stakeholders by clarifying the application of provisions and responsibilities;
- Address hazards in all workplaces, not just in forestry operations; and
- Reduce the number of fatalities, serious injuries and claims associated with these hazards.

**Source:**

Association of Professional Engineers and Geoscientists of BC  
Association of BC Forest Professionals  
Investigations Division  
Policy and Research Division

PROPOSED AMENDMENTS FOR PART 1: DEFINITIONS  
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

Please note that proposed deletions in the regulatory amendments are identified with a ~~strikethrough~~ and additions are identified in **bold**.

## PART 1: DEFINITIONS

1.1 In this Occupational Health and Safety Regulation:

<b>“fill”</b>	<b>means any soil or other loose material that is constructed to form an embankment or a part of the foundation of a structure or improvement;</b>
<b>“professional forester”</b>	<b>means a professional forester as defined in the <i>Foresters Act</i>;</b>
<b>“professional geoscientist”</b>	<b>means a professional geoscientist as defined in the <i>Engineers and Geoscientist Act</i>;</b>
<b>“stockpile”</b>	<b>means any soil or other loose material that is placed in an area for storage but that is not intended to function as fill;</b>

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### Explanatory Note

These new definitions are proposed for inclusion in Part 1 as the terms will be used in amendments proposed for several Parts of the *Occupational Health and Safety Regulation*.

## PART 4: GENERAL CONDITIONS

### BUILDINGS, STRUCTURES AND EQUIPMENT

<b>Safe premises Safe workplaces and equipment</b>	<b>4.1</b>	<b>A buildings, structures, stockpile, fill, excavations, machinery, piece of equipment, tools and workplaces must be designed, constructed, supplied, used and maintained in a manner to protect people from danger</b> <del>in such a condition that workers will not be endangered.</del>
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#### Explanatory Note

The proposed amendment to section 4.1 adds clarity by making specific reference to stockpiles and fills, which may be part of a workplace. Fills are regularly part of a workplace as part of a road, or as a dyke, dam or embankment. Stockpiles are also part of many operations and may be of soil, gravel or other similar geotechnical material or of a product such as hog fuel or wood chips. A fill or stockpile is most hazardous when heavy equipment is being used near the top edge and there is a risk of the edge giving way and the equipment rolling or sliding down the slope endangering the operator, or from a substantial amount of the fill or stockpile material moving down slope and endangering anyone near the base of the fill or slope.

The proposed amendment to section 4.1 also broadens the scope by adding responsibility to consider the design, supply, construction, and use, as well as maintenance, to the process of ensuring a safe and healthy workplace.

## PART 4: GENERAL CONDITIONS

### Terrain stability assessment

- 4.1.1 (1) In this section, “terrain stability assessment” means the investigation and analysis of the terrain within, adjacent to or connected to a workplace to determine the level of hazard that exists, or is likely to develop due to the activity planned to take place, in the workplace from a landslide, an avalanche or other unstable ground conditions, and includes the development of recommendations for measures to eliminate the hazard or reduce the risk to people in the workplace.
- (2) Before work commences in a workplace where there may be risk of a landslide, avalanche or unstable ground conditions, an appropriately qualified professional engineer or professional geoscientist must conduct a terrain stability assessment.
- (3) If the workplace described in subsection (2) is a forestry operation, the terrain stability assessment may be conducted by an appropriately qualified professional forester.
- (4) If a terrain stability assessment identifies a hazard to a workplace described in subsection (2), the measures recommended to eliminate the hazard or reduce the risk to people in the workplace must be implemented before work commences.
- (5) A person working in a workplace described in subsection (2) must be trained in any safe work procedures specified in the terrain stability assessment and must comply with those procedures.
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### Explanatory Note:

The proposed new section 4.1.1 is a relocation of section 26.18 from Part 26, as the need for a terrain stability assessment may arise in workplaces that are not part of a forestry operation. The proposed new wording clarifies a number of aspects regarding terrain stability assessments.

Proposed section 4.1.1(1) defines the term “terrain stability assessment” and states, where a hazard is identified by the assessment, the assessment is to include the development of recommendations for measures to eliminate the hazard or reduce the risk. Eliminating the hazard generally will involve physical alterations to the terrain or a change to the layout of the workplace. If the hazard cannot be eliminated or can only be partially removed, reducing the risk will require implementing procedures, such as, for example, to stop work and stay out of a hazard area under certain climatic conditions.

Proposed section 4.1.1(2) sets out when an assessment must be done and who must conduct it. In determining “where there may be a risk”, the employer, prime contractor or owner is expected to make a preliminary decision on the likelihood of a terrain stability hazard being present of the magnitude that could be a hazard to a person in the workplace. If the employer is unsure whether the circumstance at a particular workplace may be hazardous, or unsure if a hazard may be a significant risk, a professional opinion must be obtained. If it is determined there may be a terrain stability concern, a formal terrain stability assessment must be conducted by a professional engineer or professional geoscientist. Doing a terrain stability assessment is engineering work, and under the requirements of the *Engineers and Geoscientists Act*, such work must be done by an engineer or geoscientist, except as explained in the next paragraph.

Proposed section 4.1.1(3) sets out that a professional forester may conduct this type of work in a forestry operation. The *Engineers and Geoscientists Act* does not apply to a professional forester undertaking work within the scope of practice covered by the *Foresters Act*. Under the *Foresters*

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*Act*, a professional forester is entitled to practice professional forestry, including forest engineering.

Proposed section 4.1.1(4) sets out that before work commences in a workplace where a hazard has been identified by a terrain stability assessment, the recommendations from that assessment must be implemented.

Proposed section 4.1.1(5) sets out that a person working in a workplace for which a terrain stability assessment was conducted must be trained in and must follow any safe work procedures stipulated in the terrain stability assessment.

The proposed wording does not specify a particular standard or criteria that a professional must follow when doing the terrain stability assessment. Both the *Engineers and Geoscientists Act* and the *Foresters Act* require registered members only undertake professional work they are qualified to do by virtue of their training and experience. Accordingly, a professional undertaking work with respect to a terrain stability assessment would be expected to be familiar with good engineering practice for doing a terrain stability assessment and the development of appropriate recommendations to address any hazards. Generally it is expected the professional would be familiar with and follow recognized, published guidelines that are applicable. For example, the Association of Professional Engineers and Geoscientists of BC publishes "Guidelines for Terrain Stability Assessments in the Forest Sector" and "Guidelines for Legislated Landslide Assessments for Proposed Residential Development in British Columbia" setting out the professional practice expected for this type of work. It is expected the engineer, geoscientist or forester will conduct an assessment of the workplace for potential hazards due to landslide, avalanche or other potential instability, and if necessary, will engage appropriately qualified specialist professionals to ensure the hazards are properly evaluated and appropriate remedial actions and/or work procedures are developed and implemented. The owner, prime contractor or employer, as applicable, must then ensure all the recommendations from the assessment are implemented.

## PART 20: CONSTRUCTION, EXCAVATION AND DEMOLITION

### SAFE WORK AREAS AND SAFE ACCESS

#### Fills and stockpiles

- 20.14.1 (1) If a person may be endangered by the failure of a fill or stockpile, the fill or stockpile must be constructed, used and maintained in accordance with the written instructions of an appropriately qualified professional engineer or professional geoscientist.
- (2) If the fill or stockpile described in subsection (1) is in a forestry operation, the written instructions may be given by an appropriately qualified professional forester.
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#### Explanatory Note

In August of 2005, the operator of an excavator building a new logging road was seriously injured when a recently placed section of road fill gave way under the excavator and the machine and operator slid and rolled down the slope. The investigation of this accident identified that the *Occupational Health and Safety Regulation* did not have any specific provisions for addressing the safety of people required to work on or around a fill or stockpile in a workplace.

The intent of proposed new section 20.14.1 is to ensure that during the construction of a fill or stockpile, or when maintenance or other activity is taking place on or around a fill or stockpile, the work or activity is done in a manner stipulated by an appropriately qualified professional that minimizes the risk to a person on or near the fill or stockpile from a failure or instability of the fill or stockpile.

## PART 20: CONSTRUCTION, EXCAVATION AND DEMOLITION

### EXCAVATIONS

#### Work standards

- 20.78** (1) Excavation work must be in accordance with the written instructions of a professional engineer **or professional geoscientist** if
- (a) the excavation is more than 6 m (20 ft) deep,
  - (b) support structures other than as specified in section 20.81 are used in the excavation,
  - (c) an improvement or structure is adjacent to the excavation,
  - (d) the excavation is subject to vibration or hydrostatic pressure likely to result in ground movement hazardous to workers, or
  - (e) the ground slopes away from the edge of the excavation at an angle steeper than 3 horizontal to 1 vertical.
- (2) The written instructions required in subsection (1) must
- (a) be certified by a professional engineer **or professional geoscientist**,
  - (b) be available at the site, and
  - (c) specify the support and sloping requirements, and the subsurface conditions expected to be encountered.

#### Sloping and shoring requirements

- 20.81** (1) 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 excavation sides are sloped or supported as specified by a professional engineer **or professional geoscientist**, or that the sides of the excavation are
- (a) 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 sloping exceed that shown in Figure 20-1,
  - (b) benched as shown in Figure 20-2,
  - (c) supported in accordance with the minimum requirements of section 20.85, or
  - (d) 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).

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- (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.
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**Explanatory Note**

The proposal to add reference to *professional geoscientist* in sections 20.78 and 20.81 is being done at the request of the Association of Professional Engineers and Geoscientist of BC. Some geoscientists are involved in the practice of engineering geology and regularly assess terrain stability, cut slopes and fills, and provide a professional opinion on the safety of activity to take place on or near such areas. Normally a geoscientist will not design or specify support structures for a fill or for excavation work, but may specify sloping requirements to provide for safe work conditions on or around a fill or for excavation work. While it is expected the majority of the design and certification of fills, stockpiles and excavation work will continue to be done by engineers, the purpose of this change is to ensure appropriately qualified professional geoscientists are not restricted from undertaking responsibility for this type of work.

## PART 22: UNDERGROUND WORKINGS

### GENERAL REQUIREMENTS

**Notice of  
project**

- 22.6**
- (1) No later than 30 days before commencing an underground project, written notification of the project must be given to the Board by the owner or another person engaged by the owner to be the prime contractor, except that if there is more than one prime contractor employed on the project the notice must be given by the owner.
  - (2) The notification must include
    - (a) the name of the project,
    - (b) the address or location of the project referenced to the nearest town and public highway,
    - (c) the name and address of the owner and of any other person engaged to be the prime contractor, and of the bonding company, if appropriate,
    - (d) the name of the person in charge of the project,
    - (e) a brief description of the project including
      - (i) the type of underground working,
      - (ii) the mining method,
      - (iii) the type, number of units, and engine horsepower (watts) of the mining equipment,
      - (iv) the starting date and approximate duration of the project,
      - (v) the approximate peak labour force, and
      - (vi) the proposed hours of work,
    - (f) the details of proposed temporary or permanent ground support, including the proposed timing of such support, and whether the owner or another person engaged to be the prime contractor will be responsible for its design and installation,
    - (g) the plans, drawings and fan specifications for the ventilation systems that will be used during construction, and
    - (h) a report produced by a professional engineer **or professional geoscientist** that provides
      - (i) a description of the geological hazards associated with the work,
      - (ii) drawings showing profiles, transverse sections and plans for the proposed underground workings, including the potential for encountering gassy ground, explosive dusts, rock falls, running ground or rock bursts, and
      - (iii) a detailed statement from the owner or another person engaged to be the prime contractor as to how geological hazards will be dealt with.
  - (3) Any hazards discovered during the work which were not included in the report required by subsection (2) (h) must be reported immediately to the Board.

**LARGE DIAMETER HOLES**

**Limiting  
descent**

- 22.144 (1) A person** ~~Workers~~ entering a large diameter holes must not descend more than 3 m (10 ft) below the casing of the hole unless **a professional engineer or professional geoscientist has inspected the ground conditions below the casing and certified in writing that those ground conditions are safe.** ~~ground conditions have been inspected and certified safe in writing by a professional engineer, and copies of the certification must be maintained at the worksite.~~
- (2) A copy of the certification referred to in subsection (1) must be available at the worksite before a person enters the hole.**
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**Explanatory Note:**

The proposal to add reference to *professional geoscientist* in sections 22.6 and 22.144 is being done at the request of the Association of Professional Engineers and Geoscientists of BC. Some geoscientists are involved in the practice of engineering geology and regularly assess soil, rock and related geological conditions and provide a professional opinion on the safety of activity to take place in or near such areas. Normally a geoscientist will not design or specify support structures for soil or rock, but may specify procedures necessary to provide for safe work conditions in or near an underground working. While it is expected the majority of the design and certification requirements for an underground working will continue to be done by engineers, the purpose of this change is to ensure appropriately qualified professional geoscientists are not restricted from undertaking responsibility for the parts of this type of work which they are qualified to do.

It is proposed to break section 22.144 into two subsections for clarity.