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**NEW BRUNSWICK  
REGULATION 91-191**

**under the**

**OCCUPATIONAL HEALTH AND SAFETY ACT**  
**(O.C. 91-1035)**

*Filed December 3, 1991*

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Under section 51 of the *Occupational Health and Safety Act*, the Lieutenant-Governor in Council makes the following Regulation:

1 This Regulation may be cited as the *General Regulation - Occupational Health and Safety Act*.

**PART I**  
**INTERPRETATION**

2 In this Regulation

"ACGIH" means the American Conference of Governmental Industrial Hygienists;

"Act" means the *Occupational Health and Safety Act*;

"adequate" means sufficient to protect a person from the risk of injury or damage to health;

"aerial device" means any vehicle-mounted telescoping or articulating device that is used to position a person by means of a bucket, basket or platform directly secured to the boom;

"air contaminant" means any gas, fume, smoke, vapour, dust or other airborne concentration of a substance that may be hazardous to the health or safety of a person;

"angle of repose" means the angle with the horizontal at which material will no longer flow freely;

"ANSI" means the American National Standards Institute;

"arboricultural operation" means work connected with the care and maintenance of trees and includes pruning and tree removal;

"ASHRAE" means the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.;

"ASME" means the American Society of Mechanical Engineers;

"blaster" means a person who holds a valid certificate of qualification in the blaster occupation or powderman trade issued under the *Apprenticeship and Occupational Certification Act*;

"blasting area" means an area within a 50 m radius extending from a place where explosives are being prepared, handled or loaded or from a place where an unexploded charge is known or believed to exist;

"blasting operation" means an operation using explosives and extends from the time explosives arrive at a place of employment to the time all explosives are used or removed from the place of employment;

"CGA" means the Compressed Gas Association, Inc.;

"CGSB" means the Canadian General Standards Board;

"competent" means

(a) qualified, because of such factors as knowledge, training and experience, to do assigned work in a manner that will ensure the health and safety of persons,

(b) knowledgeable about the provisions of the Act and the regulations that apply to the assigned work, and

(c) knowledgeable about potential or actual danger to health or safety connected with the assigned work;

"CSA" means the Canadian Standards Association;

"danger area" means twice the distance at which there exists a possibility of hazard to a person or property from the effects of a blast;

"dB" means peak sound pressure level in decibels referenced to twenty micropascals;

"dBA" means the sound pressure level in decibels referenced to twenty micropascals measured on the A scale of a sound level meter;

"de-energized" means isolated and grounded;

"engineer" means a person who

(a) is registered as a member of the Association of Professional Engineers and Geoscientists of New Brunswick as entitled to engage in the practice of engineering,

(b) has received a licence from the Executive Council of the Association of Professional Engineers and Geoscientists of New Brunswick to engage in engineering, or

(c) is practising as a professional engineer in New Brunswick under subsection 10(7) of the *Engineering and Geoscience Professions Act*;

"explosive" means a substance that is made, manufactured or used to produce an explosion or detonation and includes black powder, propellant powders, blasting agents, dynamite, detonating cord, slurry, watergel and detonators;

"felling" means any part of an operation that severs a tree from its stump and brings it to a horizontal position on the ground or a bed;

"firefighter" means an employee who provides fire protection services to the public from a fire department within a municipality, rural community or local service district, and includes an industrial firefighter;

"guardrail" means a guardrail that meets the requirements of section 97;

"hazardous substance" means a substance that may, because of its harmful nature, cause injury or damage to the health or safety of a person exposed to it;

"hoisting apparatus" means mobile cranes, tower cranes, electric overhead travelling cranes, vehicle hoists, winches, and other similar equipment, but does not include elevators, dumbwaiters, or mine hoists;

"individual fall-arresting system" means an individual fall-arresting system that meets the requirements of subsection 49(3);

"industrial firefighter" means an employee who works at an industrial or commercial place of employment and who is designated by his or her employer to fight fires at that place of employment;

"industrial lift truck" means a self-propelled vehicle used to carry, lift, stack, tier, push or pull material;

"life line" means a manila rope with a minimum diameter of 19 mm or a rope or strap of equivalent strength;

"lock out" means to render a machine or electrical equipment inoperative and prevent it from being activated by using a locking device to isolate the energy source from the machine or equipment;

"logging operation" means work connected with the harvesting of trees and includes the felling and transportation of trees;

"manufacturer's rated capacity" means the maximum capacity, speed, load, depth of operation or working pressure recommended in the manufacturer's specifications for the operation of a machine under the circumstances prevailing at the time of operation;

"manufacturer's specifications" means the written instructions or recommendations of a manufacturer of a machine, materials, tools or equipment that outline the manner in which the machine, materials, tools or equipment is to be erected, installed, assembled, started, operated, used, handled, stored, stopped, adjusted, maintained, repaired or dismantled and includes an instruction, operating or maintenance manual and drawings;

"owner of a tool" means a person who has purchased, rented or otherwise obtained a tool and has the tool for use at a place of employment;

"portable compressed gas container" means any container having a water capacity of 450 kg or less that contains or is intended to contain a compressed or liquefied gas;

"portable power-operated hand tool" means a tool held with one or both hands and powered by a hydraulic, pneumatic, electrical or chemical energy source;

"powder actuated tool" means a tool that, by means of an explosive force, propels or discharges a fastening device for the purpose of impinging it on, affixing it to or causing it to penetrate another object or material;

"powderman" Repealed: 93-8

"powered mobile equipment" means self-propelled off-highway equipment used for construction, mining, agriculture, forestry and other purposes and includes front-end loaders, dozers, backhoes, excavators, skidders, forwarders, tree-harvesters, scrapers, compactors, rollers, graders, agricultural tractors and industrial tractors, but does not include industrial lift trucks or mobile cranes;

"pressure" means gauge pressure in kilopascals;

"SAE" means the Society of Automotive Engineers;

"safeguard" means a guard, shield, guardrail, fence, gate, barrier, safety net, wire mesh or other protective enclosure, handrail or other similar device designed to protect the safety of a person, but does not include protective equipment;

"service stairway" means a stairway used for access for purposes of maintenance and repair and not used as part of a travelway;

"silviculture operation" means the development and care of trees and includes site preparation, planting, thinning and harvesting;

"structural fire-fighting" means the activities of rescue, fire suppression and conservation of property from fires involving buildings, structures, vehicles, vessels, aircraft or other large objects;

"swing staging" means a platform supported at the ends by hangers or stirrups and slings and suspended by ropes attached to hooks or thrust-outs which are attached to fixed supports;

"threshold limit value" means

(a) except with respect to lead sulfide and formaldehyde, a threshold limit value adopted by the ACGIH and set out in the ACGIH publication entitled "1997 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices", and

(b) with respect to lead sulfide, a threshold limit value adopted by the ACGIH for lead sulfide set out in the ACGIH publication entitled "1991-1992 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices", and

(c) with respect to formaldehyde, the threshold limit value set out in section 23.1;

"tool" includes a hand tool, a portable power-operated hand tool and a powder actuated tool;

"underground mine" means an underground mine as defined in the *Underground Mine Regulation - Occupational Health and Safety Act*;

"work platform" Repealed: 2001-33

"zero energy state" means, with respect to a machine, a state in which all

(a) power sources,

(b) pressurized fluids and air,

(c) potential mechanical energy,

(d) accumulators and air surge tanks,

(e) kinetic energy of machine members,

(f) loose or freely moveable machine members, and

(g) moveable material or work pieces that are supported, retained or controlled by a machine and that could move or cause the machine to move,

are acted upon to render the machine incapable of spontaneous or unexpected action by being locked out, isolated, blocked, supported, retained, controlled, drained to tank, vented to the atmosphere, reduced to atmospheric pressure or otherwise released of potential energy.

93-8; 96-106; 97-121; 2001-33; 2005-80

**3** In the event of an inconsistency between any standard incorporated by reference in this Regulation and any other provision of this Regulation, that other provision shall prevail to the extent of the inconsistency.

**3.1** The following provisions do not apply to a place of employment that is a ferry, a train or a vehicle used or likely to be used by an employee:

- (a) the definition "blasting operation";
- (b) subsections 5(1), (2) and (3);
- (c) subsection 10(2);
- (d) subsections 12(1), (2), (3) and (4);
- (e) subsection 13(1);
- (f) subsection 19(1);
- (g) subsection 20(1).

2004-70

## **PART II**

### **SANITATION AND ACCOMMODATION**

#### **Drinking Water**

**4(1)** An employer shall ensure that sufficient potable water for drinking is readily available and that it meets the standards set out in the "Guidelines for Canadian Drinking Water Quality", Sixth Edition, published by authority of the Minister of National Health and Welfare, 1996.

**4(2)** Where drinking water is not taken directly from a water pipe, an employer shall ensure that it is kept in an adequately covered container and that, if used by more than one employee, the container is equipped with a drain faucet.

**4(3)** An employer shall ensure that individual sanitary drinking vessels or cups are provided, except where the drinking water is delivered in an upward jet from which an employee may drink.

**4(4)** Where outlets exist for both drinking water and water not suitable for drinking, an employer shall ensure that the outlets are appropriately and clearly labelled.

2001-33

#### **Toilets**

**5(1)** An employer shall provide a minimum number of toilets for each sex determined according to the maximum number of employees of each sex who are normally employed at any one time at the same place of employment as follows:

- (a) where the number of such employees does not exceed nine, one toilet;
- (b) where the number of such employees exceeds nine but does not exceed twenty-four, two toilets;
- (c) where the number of such employees exceeds twenty-four but does not exceed forty-nine, three toilets;
- (d) where the number of such employees exceeds forty-nine but does not exceed seventy-four, four toilets;
- (e) where the number of such employees exceeds seventy-four but does not exceed one hundred, five toilets; and



*(f)* where the number of such employees exceeds one hundred, five toilets and one toilet for every thirty such employees in excess of one hundred.

**5(2)** Where the total number of employees normally employed by an employer in the place of employment at any one time does not exceed nine, the employer may provide only one toilet for both male and female employees if the toilet is situated in a room whose entrance door is fitted on the inside with a locking device.

**5(3)** Notwithstanding subsection (1), in an underground mine an employer shall provide a minimum number of toilets for each sex determined according to the maximum number of employees of each sex who are normally employed at any one time at the same place of employment as follows:

*(a)* where the number of such employees does not exceed twenty-five, one toilet;

*(b)* where the number of such employees exceeds twenty-five but does not exceed fifty, two toilets;

*(c)* where the number of such employees exceeds fifty but does not exceed seventy-five, three toilets;

*(d)* where the number of such employees exceeds seventy-five but does not exceed one hundred, four toilets; and

*(e)* where the number of such employees exceeds one hundred, four toilets and one toilet for every thirty such employees in excess of one hundred.

**5(4)** Where more than two toilets are required for male employees, an employer may substitute urinals for up to two-thirds of the required number of toilets.

**5(5)** Where running water and sewage facilities are available, toilets shall be of the water flush type and may be of the chemical, self-contained portable or other similar type if no running water is available.

**5(6)** As soon as work has started on a project site, the principal contractor or, if there is no principal contractor, the owner shall provide toilets in accordance with subsection (1).

**5(7)** An employer shall ensure that a toilet facility is

*(a)* within easy access of an employee's work site,

*(b)* enclosed so that an employee is sheltered from view and protected from the natural elements,

*(c)* adequately ventilated and illuminated,

*(d)* where possible, heated,

*(e)* kept in a clean and sanitary condition,

*(f)* provided with a sufficient supply of toilet paper and hygiene supplies,

*(g)* provided with a covered waste receptacle,

*(h)* maintained in working condition, and

*(i)* in the case of a self-contained unit, is emptied and serviced at intervals which ensure that the unit does not overflow.

### **Washrooms**

- 6(1) An employer shall provide a wash basin or equivalent hand cleaning facility in a room with one toilet and sufficient additional wash basins or equivalent hand cleaning facilities in the room for additional toilets or urinals.
- 6(2) Where an outdoor privy is provided, an employer shall provide a hand cleaning facility as close to the outdoor privy as is practicable and sufficient additional hand cleaning facilities as close as practicable to additional outdoor privies.
- 6(3) Where a wash basin is provided, an employer shall provide
- (a) hot and cold water,
  - (b) liquid or powder soap or other appropriate cleansers, and
  - (c) sufficient sanitary hand drying facilities.

### **Eating Areas**

- 7(1) Where the possibility of contamination of food exists if there is no eating area separate from a work area, an employer shall provide an eating area for employees separate from that work area.
- 7(2) An employer shall ensure that the eating area referred to in subsection (1)
- (a) is kept in a sanitary condition, and
  - (b) is adequately provided with
    - (i) light, heat and ventilation,
    - (ii) hand cleansing and drying facilities,
    - (iii) tables and seating sufficient for the number of employees who use the eating area at any one time, and
    - (iv) garbage receptacles.
- 7(3) An employer shall ensure that an employee does not convey food or drink into an area where a process is being carried out which may contaminate the food or drink.
- 7(4) An employee shall not convey food or drink into a area where a process is being carried out which may contaminate the food or drink.

### **Food and Rest Periods**

- 8 An employer shall allow an employee at least one-half hour for food and rest after each five consecutive hours of work.

### **Work Clothes**

- 9(1) If the nature of an employee's work makes it necessary for the employee to change from street clothes to work clothes to protect the employee's health or safety, an employer shall provide
- (a) storage for the employee's street clothes and work clothes that will prevent the clothes from becoming wet or dirty, and
  - (b) a changing room.

**9(2)** Where an employee's work clothes are liable to be contaminated by a toxic, noxious, infectious or irritating substance so that the health of the employee or other persons may be adversely affected by exposure to the clothes when contaminated, an employer shall

- (a) provide work clothes for the employee's use,
- (b) provide storage for the employee's street clothes and work clothes that will prevent the street clothes from becoming contaminated,
- (c) provide a changing room, and
- (d) ensure that the work clothes are cleaned as necessary.

97-121

#### **Showers**

**10(1)** Where an employee may be exposed to a toxic, noxious, infectious or irritating substance or may be exposed to high levels of heat or humidity so that the health of the employee may be adversely affected, an employer shall provide a shower facility.

**10(2)** An employer shall provide a shower facility referred to in subsection (1) as follows:

- (a) a number of showers for each sex determined according to the maximum number of employees of each sex who are normally employed at the same place of employment and who are exposed as described in subsection (1) at any one time as follows:
  - (i) where the number of employees does not exceed ten, one shower, and
  - (ii) an additional shower for each unit of ten additional employees of each sex;
- (b) sufficient water supply which can be manually adjusted to come within a range of 35°C and 45°C; and
- (c) soap and towels.

#### **Emergency Eyewash and Shower**

2001-33

**11(1)** Where an employee's skin or eyes may be exposed to contamination from materials at a place of employment, an employer shall provide emergency showers or eyewash fountains in the area where the contamination may occur.

**11(2)** An employer shall ensure that an emergency shower or eyewash fountain provided under subsection (1) complies with the requirements of ANSI standard ANSI Z358.1-1990, "American National Standard for Emergency Eyewash and Shower Equipment".

2001-33

#### **First Aid**

Repealed: 2004-130

2004-130

**12** Repealed: 2004-130

97-121; 2004-130

**13** Repealed: 2004-130  
2004-130

### **Occupational Health Service**

**14(1)** Where an occupational health service is required under section 45 of the Act, the occupational health service shall be established and maintained so as to

(a) provide leadership, support and medical and technical services in all areas relating to health in the place of employment,

(b) provide ongoing health assessments and health supervision of each employee,

(c) establish appropriate records, standards, procedures, policies and reporting systems to identify and prevent health and safety hazards in the place of employment,

(d) promote prevention of occupational disease and injury through health education, health counselling and environmental assessment programs,

(e) be able to provide an emergency response to injuries and potential disasters in the place of employment, and

(f) enhance or maintain the health of employees through appropriate follow-up care, rehabilitation services or referrals to community based services.

**14(2)** An employer shall ensure that an occupational health service is managed by a competent person.

### **General**

**15** An employer shall ensure that a place of employment is kept in a clean and sanitary condition and in a good state of repair so as not to affect adversely the health and safety of an employee.

**16** An employer shall ensure that materials, machines or equipment are not stored or located in a place of employment so as to create a hazard to an employee.

**17** An employer shall ensure that containers used for refuse are emptied at frequent intervals and constructed to withstand the intended use.

### **PART III**

#### **AIR QUALITY**

**18(1)** Sections 19, 20, 21, 24, 24.1, 25 and 25.2 do not apply to an underground mine.

**18(2)** Sections 19, 20, 24, 24.1, 25 and 25.2 do not apply to a confined space under Part XVII.

**18(3)** Sections 19, 20, 24, 24.1 and 25.2 and paragraph 22(a) do not apply where a firefighter is engaged in structural fire-fighting.

96-106; 97-121; 2001-33

**19(1)** An employer shall ensure that an area where an employee works contains at least 8.5 m<sup>3</sup> of air space for each employee in that area.

**19(2)** When calculating the air space requirement under subsection (1), height above 3 m shall be excluded from the calculation.

### **Ventilation**

- 20(1)** An employer shall ensure that a place of employment is adequately ventilated by
- (a)* natural ventilation which introduces outside air provided by openings having a combined area equal to at least 5% of the floor area, or
  - (b)* mechanical ventilation conforming to ASHRAE standard 62-1989, "Ventilation for Acceptable Indoor Air Quality".
- 20(2)** Where mechanical ventilation is used and the ASHRAE standard referred to in subsection (1) does not specify supply rates of acceptable outside air required, an employer shall ensure that the minimum amount of outside air introduced shall be 8 litres/second/person.
- 20(3)** An employer shall ensure that a ventilation system prevents the return of exhausted air through the outside air intake.
- 20(4)** An employer shall ensure that exhausted air is replaced by air that
- (a)* does not constitute a hazard to the health of employees,
  - (b)* does not contain air contaminants in concentrations that exceed 10% of the threshold limit values,
  - (c)* is heated, when necessary, to maintain the minimum temperature specified in section 21, and
  - (d)* is properly distributed so as not to cause undue drafts or disturbance of conditions.

### **Temperature**

- 21(1)** Subject to subsection (2), an employer shall ensure that the temperature of an area where an employee works in an enclosed place of employment is maintained as follows:
- (a)* where light work is performed while sitting, such as any mental work, precision work, reading or writing, the minimum temperature required is 20°C;
  - (b)* where light physical work is performed while sitting, such as electric machine sewing or work with small machine tools, the minimum temperature required is 18°C;
  - (c)* where light or moderate physical work is performed while standing, such as machine tool work, assembly work or trimming, the minimum temperature required is 16°C; and
  - (d)* where heavy physical work is performed while standing, such as drilling or manual work with heavy tools, the minimum temperature required is 12°C.
- 21(2)** Where it is impractical to heat an area where an employee works to the temperature required by subsection (1), an employer shall provide a suitable place where the employee may go to get warmed.

### **Extremes of Temperature**

- 22** Where an employee is exposed to work conditions that may present a hazard because of extreme heat or extreme cold, an employer shall ensure that
- (a)* a competent person measures and records the thermal conditions at frequent intervals and makes the findings available to a committee, if any, and to an officer on request, and
  - (b)* the threshold limit values for protection against heat stress and cold stress are followed as well as the work-rest regimen for heat and the work-warming regimen for cold and other advice found from

pages 125 to 140 of the ACGIH publication "1997 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices".

2001-33

**23(1)** Where an employee is exposed to work conditions that may present a hazard because of excessive heat, an employer shall ensure that a competent person instructs the employee in the significance of symptoms of heat stress such as heat exhaustion, dehydration, heat cramps, prickly heat and heat stroke and in the precautions to be taken to avoid injury from heat stress.

**23(2)** Where an employee is exposed to work conditions that may present a hazard because of excessive cold, an employer shall ensure that a competent person instructs the employee in the significance of symptoms of cold stress such as severe shivering, pain in the extremities of the body and reduced mental awareness and in the precautions to be taken to avoid injury from cold stress.

#### **Threshold Limit Values for Formaldehyde and Lead Sulfide**

2001-33

**23.1** The threshold limit value for formaldehyde, as adopted by the ACGIH and set out in the ACGIH publication entitled "1997 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices" shall be deemed to be and shall be read as follows:

(a) formaldehyde - 0.5ppm TWA and 1.5 ppm STEL.

2001-33

#### **Air Contaminants**

**24(1)** An employer shall ensure that an air contaminant is kept at a level of concentration that does not constitute a hazard to the health or safety of an employee exposed to it and, where a threshold limit value exists in respect of an air contaminant, that the exposure of the employee to the air contaminant at no time exceeds the threshold limit value.

**24(2)** Where the installation of engineering controls is practical, an employer shall install and use appropriate engineering controls to comply with subsection (1).

**24(3)** Where practical, an employer shall ensure that air contaminants are removed at their source.

**24(4)** Where an employer or an employee has reason to believe that the level of concentration of an air contaminant may be approaching 50% of the threshold limit value, the employer shall ensure that the air is tested to determine the level of concentration of the air contaminant.

**24.1(1)** Where the exposure of an employee to an air contaminant occurs other than during the course of an eight hour work day and forty hour work week, an employer shall use the Brief and Scala model as referenced on page 10 of the ACGIH publication "1997 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices" to adjust the threshold limit values.

**24.1(2)** An employer shall ensure that the exposure of an employee to an air contaminant at no time exceeds the adjusted threshold limit values if the exposure of an employee to an air contaminant occurs other than during the course of an eight hour work day and forty hour work week.

**24.1(3)** An employer shall ensure that there is appropriate medical surveillance of employees exposed to the air contaminants for at least twelve months after the threshold limit values for the air contaminants have been adjusted according to the Brief and Scala method.

2001-33

**25** Where

(a) the level of concentration of an air contaminant may exceed 50% of the threshold limit value in conditions that are part of the normal work procedure,

(b) there is the possibility of accidental exposure to a level of concentration of an air contaminant in excess of the threshold limit value, or

(c) the oxygen content of the atmosphere is less than or may be less than 19.5% by volume,

an employer shall provide adequate respiratory protective equipment to each employee who may be exposed to the conditions described in paragraphs (a) to (c).

**25.1** Where diamond drilling occurs on the surface and there is a possibility of encountering methane, sections 55 to 60 of the *Underground Mine Regulation - Occupational Health and Safety Act* apply with the necessary modifications.

96-106

### **Dust**

2001-33

**25.2** Where work is carried out in an area where dust may create a hazard to the health of employees, an employer shall take such measures with respect to the dust as are sufficient to protect employees from the risk of damage to health.

2001-33

## **PART IV**

### **ILLUMINATION**

**26(1)** An employer shall provide lighting sufficient for the type of work being done considering

(a) the quantity of illumination, and

(b) the quality of illumination, including reflectances, direct glare and reflected glare.

**26(2)** An employer shall use one of the following ANSI standards, where applicable, to determine the lighting required by subsection (1):

(a) ANSI/IES RP-7 1991, "American National Standard Practice for Industrial Lighting";

(b) ANSI/IES RP3 - 1988, "Guide for Educational Facilities Lighting"; or

(c) ANSI/IESNA RP-1-1992, "American National Standard Practice for Office Lighting".

**26(3)** This section does not apply where a firefighter is engaged in structural fire-fighting.

97-121; 2001-33

**27(1)** Where failure of the normal lighting system may constitute a danger to an employee's health or safety, an employer shall ensure that emergency lighting is available that

(a) is independent of the normal lighting source, and

(b) provides a minimum of 50 lux of lighting so as to enable an employee to leave the place of employment safely.

27(2) An employer shall ensure that the emergency lighting referred to in subsection (1) is frequently tested to ensure that it will function in an emergency.

27(3) This section does not apply where a firefighter is engaged in structural fire-fighting.

97-121

28(1) Notwithstanding sections 26 and 27, in an underground mine an employer shall ensure that adequate illumination by means of stationary lighting is provided

(a) at an active shaft station and conveyance landing,

(b) at any opening or hole that may constitute a hazard to an employee if it is not illuminated, and

(c) in refuge stations.

28(2) Where the failure of the stationary lighting in an underground mine may constitute a danger to an employee's health or safety, an employer shall ensure that adequate alternative lighting sufficient to prevent any such danger is provided and maintained.

## PART V

### NOISE AND VIBRATION

2001-33

29(1) Where an employer or an employee has reason to suspect that the noise level in an area where employees work may exceed 80 dBA, an employer shall ensure that

(a) the noise level is measured by a competent person using a sound level meter that conforms as a minimum to the requirements of ANSI standard S1.4-1983, "American National Standard Specification for Sound Level Meters", for a Type 2 sound level meter that is set to use the A-weighted network with slow meter response, and

(b) the amount of time that an employee spends in an area where the noise level exceeds 80 dBA is measured.

29(2) An employer shall ensure that the information obtained under subsection (1) is documented and made available to a joint health and safety committee or health and safety representative, if any, and to an officer on request.

29(3) Where there is reason to suspect that substantial changes in noise levels documented under subsection (1) have occurred, an employer shall ensure that the noise level and employee exposure is re-measured and documented in accordance with the requirements of subsection (1).

30(1) An employer shall ensure that the exposure of an employee to noise is kept as low as is practical and does not exceed the following exposures:

Sound level	Duration per day
dB(A)	Hours
80	24
82	16
85	8
88	4
91	2
94	1
97	½



**30(2)** An employer shall ensure that when the daily noise exposure is composed of periods of noise exposure at substantially different levels, their combined effect is considered, rather than the individual effect of each, according to the following formula:

If the sum of the following fractions:

$$\frac{C_1}{T_1} + \frac{C_2}{T_2} + \dots + \frac{C_n}{T_n}$$

exceeds unity, then the mixed exposure is considered to exceed the relevant exposure prescribed in subsection (1).  $C_1$  indicates the total duration of exposure at a specific noise level, and  $T_1$  indicates the total duration of exposure permitted at that level. All job noise exposures of 80 dBA or greater shall be used in the above calculations.

**30(3)** An employer shall ensure that no employee is exposed to continuous, intermittent or impact noise in excess of a peak C-weighted level of 140 dB, using a Type 2 sound level meter that is set to use the A-weighted network with slow meter response.

2001-33

**31** Where the installation of engineering controls is practical, an employer shall install and use appropriate engineering controls to comply with section 30.

**32** Where necessary, an employer shall provide, and an employee shall use, adequate hearing protective equipment so that the exposure of an employee to noise is kept within the limits prescribed by section 30.

**33** Where the noise level exceeds 85 dBA in an area, an employer shall ensure that the area is clearly marked by a sign that indicates the range of the noise levels measured and warns of the noise hazard.

**33.1(1)** Except for a firefighter operating a structural fire-fighting apparatus, this Part does not apply where a firefighter is engaged in structural fire-fighting.

**33.1(2)** In this section, "structural fire-fighting apparatus" includes pumper units, foam apparatus, aerial ladders, aerial devices and other similar apparatus.

97-121

### **Vibration**

2001-33

**33.2** An employer shall ensure that the exposure of an employee to hand-arm vibration is kept as low as is practical and does not exceed the following exposures:

#### **Exposure of the Hand to Vibration in either Up and Down, Sideways or Forward and Back Directions**

**Total daily exposure  
duration\***

**Values of the dominant\*\*,  
frequency-weighted, root mean  
square, component acceleration  
which shall not be exceeded**

	m/s <sup>2</sup>	g <sup>***</sup>
4 hours and less than 8 hours	4	0.40
2 hours and less than 4 hours	6	0.61
1 hour and less than 2 hours	8	0.81
less than one hour	12	1.22

\* The total time vibration enters the hand per day, whether continuously or intermittently

\*\* Usually one axis of vibration is dominant over the two remaining axes. If one or more vibration axis exceeds the total daily exposure, then the exposure limit has been exceeded.

\*\*\* 1 g = 9.81 m/s<sup>2</sup>

2001-33

## PART VI NON-IONIZING RADIATION

### Laser Radiation

**34** An employer shall ensure that laser beams are operated and used in accordance with ANSI standard ANSI Z136.1-1993, "American National Standard for Safe Use of Lasers".

2001-33

### Infra-red Radiation

**35(1)** An employer shall ensure that all sources of intense infra-red radiation are shielded as near the source as possible by heat absorbing screens, water screens or other suitable devices.

**35(2)** An employer shall ensure that employees are provided with and wear properly fitting goggles, face shields or other adequate eye protective equipment when entering an area where they may be subjected to infra-red radiation liable to injure or irritate the eyes.

**35(3)** An employee shall wear the eye protective equipment referred to in subsection (2) when entering an area where the employee may be subjected to infra-red radiation liable to injure or irritate the eyes.

### Ultraviolet Radiation

**36** Where emissions of ultraviolet radiation are in the spectral region between 180 nm and 400 nm, an employer shall ensure that

(a) access to areas where equipment emits ultraviolet radiation is limited to those persons directly concerned with its use,

(b) users of such equipment are trained in the hazards and need for precautions,

(c) warning signs or devices are used to indicate the presence of ultraviolet radiation hazard,

(d) protective cabinets or screens are placed around the source of emission, with observation ports made of suitable absorbent materials such as certain grades of acrylics, polyvinyl chloride or window glass,

(e) protective clothing is used by an employee as required,

(f) eye protective equipment such as ultraviolet absorbing goggles, spectacles or face shields are used by an employee whenever there is a potential eye hazard, and

(g) exposure of an employee to ultraviolet radiation does not exceed the threshold limit value.  
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### **Radiofrequency Radiation**

**37(1)** An employer shall ensure that the installation and use of a radiation emitting device in the frequency range 10 kHz to 300 GHz conforms to the requirements of "Limits of Exposure to Radiofrequency Fields at Frequencies from 10 kHz-300 GHz, Safety Code 6", issued by the Environmental Health Directorate, Health Protection Branch and published by authority of the Minister of National Health and Welfare.

**37(2)** An employer shall ensure that the exposure of an employee or other person to radiofrequency radiation at frequencies from 10 kHz to 300 GHz does not exceed the limits set out in the safety code referred to in subsection (1).

## **PART VII PROTECTIVE EQUIPMENT**

### **General**

**38(1)** Where protective equipment is required to be used by an employee under this Regulation, an employer shall provide the protective equipment required and shall ensure that the employee is instructed and trained in the proper use and care of the protective equipment.

**38(2)** Where protective equipment is required to be used by an employee under this Regulation, an employee shall

- (a) use the equipment that is required in accordance with the instruction and training received,
- (b) test or visually inspect the equipment before each use as appropriate to the type of equipment to be used,
- (c) report any defective equipment to the employer and not use the equipment, and
- (d) care for the equipment properly while using it.

**39** Where an employee is exposed to a hazard that may irritate or injure the eyes, face, ears or front of the neck, the employee shall use protective equipment that is appropriate to the hazard and that conforms to CSA standard CAN/CSA-Z94.3-92, "Industrial Eye and Face Protectors" or a standard offering equivalent protection.

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**40(1)** On a project site, an employee shall use Class E, Type 1 headwear that conforms to ANSI standard ANSI Z89.1-1997, "American National Standard for Industrial Head Protection" or a standard offering equivalent or better protection.

**40(2)** At a place of employment, other than a project site, where an employee is exposed to a hazard that may injure the employee's head, the employee shall use protective equipment that is appropriate to the hazard and that conforms to ANSI standard ANSI Z89.1-1997, "American National Standard for Industrial Head Protection" or a standard offering equivalent or better protection.

2001-33

**41(1)** On a project site, an employee shall use Grade 1 footwear with sole protection that conforms to CSA standard CAN/ CSA-Z195-M92, "Protective Footwear" or a standard offering equivalent protection.

**41(2)** At a place of employment, other than a project site, where an employee is exposed to a hazard that may injure the employee's foot, the employee shall use protective equipment that is appropriate to the hazard and that conforms to CSA standard CAN/CSA-Z195-M92, "Protective Footwear" or a standard offering equivalent protection.

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**42** Where an employee is exposed to a hazard that may injure the skin, the employee shall use, as necessary,

- (a) adequate protective gloves,
- (b) adequate protective boots or wooden clogs,
- (c) adequate body covering,
- (d) adequate eye protection,
- (e) a barrier cream or oil to prevent irritation to exposed parts of the body, or
- (f) other protective equipment sufficient to provide protection from the hazard.

**43(1)** Subject to subsection (2), where an employee is handling objects that may injure the hands, the employee shall use adequate protective gloves or other protective equipment.

**43(2)** Where an employee is handling wire rope in a logging operation, the employee shall wear adequate double-palmed leather mitts or gloves.

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**44** Where an employee is exposed to a hazard from extreme heat or extreme cold, the employee shall use adequate protective clothing.

#### **Respiratory Protective Equipment**

**45(1)** Where an employer is required to provide respiratory protective equipment, the employer shall establish a written code of practice covering the proper selection, care, use, maintenance and fitting of the equipment that may be required to be used at that place of employment.

**45(2)** An employer shall comply with CSA standard Z94.4-93, "Selection, Use, and Care of Respirators" in developing a code of practice.

**45(3)** An employer shall ensure that the code of practice referred to in subsection (1) is, when followed, sufficient to provide for the health and safety of employees at the place of employment.

**45(4)** An employer shall consult with the joint health and safety committee or health and safety representative, if any, or with employees if there is no committee or representative, in developing the code of practice.

**45(5)** An employer shall ensure that a copy of the code of practice is readily available to an officer upon request and to employees in the areas where the respiratory protective equipment may be required to be used.

**45(6)** An employer shall ensure that the code of practice referred to in subsection (1) is implemented and adhered to at the place of employment.

**45(7)** An employee shall adhere to a code of practice referred to in subsection (1).

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**46(1)** An employer shall implement a training program for an employee who may have to use, issue, test or maintain respiratory protective equipment or supervise an employee who may have to use respiratory protective equipment.

**46(2)** An employer shall use clause 8 of CSA standard Z94.4-93, "Selection, Use, and Care of Respirators" as a guide to the necessary content of the training program required by subsection (1).

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**47** An employee who may be required to use respiratory protective equipment shall co-operate in attaining an effective fit of the equipment and, in particular, be as clean shaven as is necessary to ensure an effective facial seal.

#### **Hearing Protective Equipment**

**48(1)** An employer shall ensure that hearing protective equipment conforms to CSA standard Z94.2-94, "Hearing Protectors" or a standard offering equivalent protection.

**48(2)** An employer shall consult with a joint health and safety committee or health and safety representative, if any, or with employees if there is no committee or representative, concerning the selection of the types of hearing protective equipment to be used by employees.

**48(3)** Where hearing protective equipment is required, an employer and an employee who uses the equipment shall each ensure that the equipment is kept in a sanitary condition.

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#### **Fall-Arresting Systems**

**49(1)** Where an employee is required to work from

(a) an unguarded work area that is

(i) more than 3 m above the nearest safe level,

(ii) above any surface or thing that could cause injury to the employee upon contact, or

(iii) above any open top tank, pit or vat,

(b) a work platform that is more than 3 m above a permanent safe level and from which a person may fall if the work platform tips or fails,

(c) a communication or power transmission tower or other similar structure that is over 3 m in height, or

(d) a work area where an officer has determined that it is necessary for employee safety for an employee to use an individual fall-arresting system,

the employer shall provide and the employee shall use an individual fall-arresting system.

**49(2)** Where an employee is required to work from a communication or power transmission tower or other similar structure that is over 3 m in height, the employee shall

(a) use the individual fall-arresting system when ascending or descending, and

(b) secure himself or herself to the tower or structure when at rest or at the working level.

- 49(3)** An individual fall-arresting system shall
- (a) be attached to a secure anchor capable of withstanding a force of 17.8 kN,
  - (b) prevent an employee from falling freely for more than 1.2 m, and
  - (c) conform to one of the following standards:
    - (i) CSA standard Z259.1-1976, "Fall Arresting Safety Belts and Lanyards for the Construction and Mining Industries";
    - (ii) CSA standard Z259.2-M1979, "Fall-Arresting Devices, Personnel Lowering Devices, and Life Lines"; or
    - (iii) CSA standard Z259.3-M1978, "Lineman's Body Belt and Lineman's Safety Strap".

**49(4)** An employer shall ensure that an individual fall-arresting system that has been subjected to fall-arresting is removed from service and is inspected by a competent person before being returned to service.

**49(5)** This section does not apply where a firefighter is engaged in structural fire-fighting.  
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**50(1)** Where an employee may be exposed to a hazardous fall in circumstances other than those described in subsections 49(1) and (2) and an individual fall-arresting system or other method of protecting an employee from a hazardous fall is not practicable, an employer shall ensure that a safety net is installed for the protection of the employee.

**50(2)** An employer shall ensure that a safety net referred to in subsection (1) is selected, installed, used, stored and maintained in accordance with ANSI standard A10.11-1989, "Personnel and Debris Nets".

**50(3)** This section does not apply where a firefighter is engaged in structural fire-fighting or rescue.  
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### **Water Safety Equipment**

- 51(1)** Where an employee is exposed to a risk of drowning, the employee shall use
- (a) a life jacket or buoyancy device that conforms to CGSB standard CAN/CGSB-65.7-M88, "Life Jackets, Inherently Buoyant Type",
  - (b) an individual fall-arresting system, or
  - (c) a safety net that conforms to the requirements of subsection 50(2).

**51(1.1)** Subsection (1) does not apply where a firefighter is engaged in structural fire-fighting.

**51(2)** Notwithstanding subsection (1), an employee is not required to use the protective equipment referred to in subsection (1) if the employer provides a solid platform with a guardrail and safe access that protects the employee from the risk of drowning.

**51(3)** Where an employee may fall into water or any other liquid and may require assistance to return to a place of safety, an employer shall ensure that

- (a) appropriate emergency equipment is in readiness, and

(b) a person who is competent to operate the emergency equipment is readily available to provide assistance.

**51(4)** Where an employee may fall into water or any other liquid and may require assistance to return to a place of safety, an employer shall ensure that written emergency procedures are posted at a place of employment that contain

(a) a full description of the emergency procedures including the responsibilities of all those granted access to the place of employment, and

(b) the location of any emergency equipment and persons designated to operate the equipment.

**51(5)** An employee shall wear a life jacket or buoyancy device referred to in paragraph (1)(a) when being transported in a boat.

**51(6)** Where an employer provides a rescue boat for use in an emergency procedure, the employer shall ensure that the rescue boat is equipped with at least four life rings or buoys and that each life ring or buoy is attached to 30 m of rope.

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## **PART VII.1 EQUIPMENT FOR FIREFIGHTERS**

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**51.1(1)** This Part does not apply to an underground mine.

**51.1(2)** Where there is a conflict between a provision in this Part and a provision in any other Part, the provision in this Part prevails to the extent of the inconsistency.

**51.1(3)** In this Part, all references to standards prefaced by "NFPA" are references to standards established by the National Fire Protection Association of Quincy, Massachusetts.

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### **Protective Headwear**

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**51.2(1)** When engaged in structural fire-fighting, a firefighter shall use protective headwear that meets or exceeds NFPA 1972, "Standard on Helmets for Structural Fire Fighting", 1992 edition.

**51.2(2)** An employer shall ensure that attachments to and on the protective headwear referred to in subsection (1) are made only in the manner specified by the manufacturers of the headwear.

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### **Protective Footwear**

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**51.3** When engaged in structural fire-fighting or rescue, a firefighter shall use protective footwear that

(a) meets or exceeds NFPA 1974, "Standard on Protective Footwear for Structural Fire Fighting", 1992 edition or the standard for Grade 1 footwear, with sole puncture protection and electric shock resistant soles, in CSA standard CAN/CSA Z195-M92, "Protective Footwear",

(b) is water resistant for at least 12.7 cm above the bottom of the heel, and

(c) has a slip-resistant outer sole.

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### **Protective Handwear**

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**51.4** When engaged in structural fire-fighting, a firefighter shall wear protective handwear that meets or exceeds NFPA 1973, "Standard on Gloves for Structural Fire Fighting", 1993 edition.

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### **Protective Coat and Trousers**

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**51.5** When engaged in structural fire-fighting, a firefighter shall wear a protective coat and trousers that

(a) meet or exceed NFPA 1971, "Standard on Protective Clothing for Structural Fire Fighting", 1991 edition or CGSB standard CAN155.1-M88 (as amended Nov 90), "Fire Fighter's Protective Clothing for Protection Against Heat and Flame", and

(b) fit properly in sleeve length, coat length, chest girth, waist girth, trouser inseam length and crotch rise so as to minimize inefficient operations and unsafe situations resulting from the interference of one piece of clothing or equipment with another.

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### **Respiratory Protective Equipment**

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**51.6(1)** A firefighter who may be exposed to an oxygen deficient atmosphere or to harmful concentrations of air contaminants when engaged in structural fire-fighting or rescue shall wear positive-pressure self-contained respiratory protective equipment that meets or exceeds NFPA 1981, "Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire Fighters", 1992 edition, together with a protective hood that meets or exceeds the requirements in Chapter 6-1 of NFPA 1971, "Standard for Protective Clothing for Structural Fire Fighting", 1991 edition.

**51.6(2)** An employer shall ensure that a firefighter who is wearing self-contained respiratory protective equipment when engaged in structural fire-fighting or rescue is accompanied by another firefighter similarly equipped and having the same air capacity.

**51.6(3)** An employer shall ensure that the compressed breathing air used in self-contained respiratory protective equipment required under subsection (1) meets or exceeds CSA standard CAN3-Z180.1-M85, "Compressed Breathing Air and Systems".

**51.6(4)** An employer shall ensure that self-contained respiratory protective equipment used by a firefighter when engaged in structural fire-fighting or rescue is equipped with a personal distress alarm device that meets or exceeds NFPA 1982, "Standard on Personal Alert Safety Systems (PASS) for Fire Fighters", 1993 edition.

**51.6(5)** An employer shall ensure that CSA standard CAN/CSA Z94.4-93, "Selection, Use, and Care of Respirators" is followed concerning

(a) the training of users of self-contained respiratory protective equipment, and



(b) the use, maintenance and testing of respiratory protective equipment.  
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### **Body Harnesses and Safety Ropes**

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**51.7(1)** In this section, "confined space" means a confined space as defined in section 262.

**51.7(2)** A firefighter entering a confined space for the purposes of rescue shall wear a body harness that meets or exceeds NFPA 1983, "Standard on Fire Service Life Safety Rope and System Components", 1995 edition and self-contained respiratory protective equipment that meets or exceeds NFPA 1981, "Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire Fighters", 1992 edition.

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**51.8(1)** An employer shall ensure that ropes and associated body harnesses and hardware used by a firefighter for structural fire-fighting or rescue purposes meets or exceeds NFPA 1983, "Standard on Fire Service Life Safety Rope and System Components", 1995 edition.

**51.8(2)** When working from an aerial device, a firefighter engaged in structural fire-fighting or rescue shall use a body harness that meets or exceeds NFPA 1983, "Standard on Fire Service Life Safety Rope and System Components", 1995 edition.

**51.8(3)** In this section, "aerial device" means an aerial device as defined in subsection 51.92(2).

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**51.9** An employer shall ensure that a body harness that has been subjected to use is removed from service and is inspected by a competent person before being returned to service.

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### **Portable Ladders**

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**51.91** Where a portable ground ladder is used for structural fire-fighting, an employer shall ensure that it meets or exceeds NFPA 1931, "Standard on Design of and Design Verification Tests for Fire Department Ground Ladders", 1994 edition, and is used, maintained and tested in accordance with NFPA 1932, "Standard on Use, Maintenance and Service Testing of Fire Department Ground Ladders", 1994 edition.

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### **Aerial Devices**

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**51.92(1)** Where an aerial device is used for structural fire-fighting, an employer shall ensure that it

(a) meets or exceeds NFPA 1904, "Standard for Testing Fire Department Aerial Devices", 1991 edition or Underwriters' Laboratories of Canada standard CAN/ULC - S515 - M88, "Standard for Automobile Fire Fighting Apparatus", or

(b) is certified in writing by an engineer as being safe to elevate personnel to a work site above ground when used for structural fire-fighting purposes.

**51.92(2)** In this section, "aerial device" includes an aerial bucket, aerial ladder, elevating platform, aerial ladder platform or water tower that is designed to position personnel, handle materials, provide egress or discharge water, as the case may be.

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### **Industrial Firefighters**

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**51.93(1)** Where an employer establishes an internal fire-fighting procedure at an industrial or commercial place of employment, the employer shall ensure that industrial firefighters designated to take part in the fire-fighting procedure have received adequate training.

**51.93(2)** An employer shall ensure that industrial firefighters do not engage in structural fire-fighting beyond the incipient stages unless wearing and using the protective equipment required under this Part.

**51.93(3)** An industrial firefighter shall not engage in structural fire-fighting beyond the incipient stages unless wearing and using the protective equipment required under this Part.

**51.93(4)** An employer shall ensure that beyond the incipient stages of a fire, fire-fighting by industrial firefighters conforms to NFPA 600, "Standard on Industrial Fire Brigades", 1996 edition.

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### **Transitional provision for protective equipment**

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**51.94(1)** This section applies to protective equipment purchased or provided by an employer for use by a firefighter when engaged in structural fire-fighting or rescue, as the case may be, and specified in subsection (2), if the equipment was purchased or provided before the commencement of this section.

**51.94(2)** Where in a provision specified below, a firefighter is required to use protective equipment of the type specified below, the standard or standards cited in that provision shall be read, with respect to the protective equipment to which this section applies, as follows:

(a) in subsection 52.1(1) with respect to the use of protective headwear - NFPA 1972, "Standard for Helmets for Structural Fire Fighting", 1985 edition;

(b) in paragraph 51.3(a) with respect to the use of protective footwear - NFPA 1974, "Standard on Protective Footwear for Structural Fire Fighting", 1986 edition or the standard for Grade 1 footwear, with sole puncture protection and electric shock resistant soles in CSA standard Z195-M1984, "Protective Footwear";

(c) in section 51.4 with respect to the use of protective handwear - NFPA 1973, "Standard on Gloves for Structural Fire Fighters", 1988 edition;

(d) in paragraph 51.5(a) with respect to the use of protective coat and trousers - NFPA 1971, "Standard on Protective Clothing for Structural Fire Fighting", 1986 edition or CGSB standard CAN155.1-M-88, "Fire Fighter's Protective Clothing Against Heat and Flame";

(e) in subsection 51.6(4) with respect to the use of a personal distress alarm device - NFPA 1982, "Standard on Personal Alert Safety Systems (PASS) for Fire Fighters", 1988 edition;

(f) in subsections 51.7(2) and 51.8(2) with respect to the use of body harnesses - NFPA 1983, "Standard on Fire Service Life Ropes, Harnesses and Hardware", 1985 edition;

(g) in subsection 51.8(1) with respect to the use of ropes and associated body harnesses and hardware - NFPA 1983, "Standard on Fire Service Life Safety Ropes, Harnesses and Hardware", 1985 edition.

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#### **Additional Requirements**

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**51.95** An employer shall ensure that each fire truck is equipped with two portable hand lights, each of which is powered with at least a six volt battery.

**51.96** When engaged in structural fire-fighting, a firefighter shall not wear any jewellery.

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### **PART VIII**

#### **HANDLING AND STORAGE OF MATERIALS**

##### **General Handling of Objects and Material**

**52** Where the health or safety of an employee handling an object or material may be endangered, an employer shall ensure that

(a) adequate and appropriate equipment is provided to the employee and is used by the employee for lifting and moving the object or material, and

(b) the employee is instructed as to the appropriate method of lifting and moving objects and material.

##### **Heavy Objects**

**53(1)** Where a heavy object is handled on an incline, an employer shall ensure that an employee handling the object uses, and the employee handling the object shall use, chocks and ropes or other tackle to control the motion of the object, and both shall ensure that other employees do not stand on the downward side of the incline.

**53(2)** Where a heavy object is moved by using rollers, an employer shall ensure that an employee moving the object uses, and the employee moving the object shall use, bars or sledges to change the direction of the moving rollers.

##### **Bulk Material in Bins, Hoppers and Process Vessels**

**54** An employer shall ensure that a bin, hopper or process vessel used to store bulk material

(a) is designed and built for removal of the material from the bottom,

(b) if the material is highly combustible, is provided with a lid and an adequate ventilation system and is fire-resistive, and

(c) where appropriate, is provided on the outside with stairways or fixed ladders with platforms and guardrails.

**55(1)** An employer shall establish a code of practice for the safe breaking up of clogs in bulk material stored in a bin, hopper or process vessel and shall ensure that a copy of the code of practice is readily available near the bin, hopper or process vessel.

**55(2)** Where an employee is required to enter a bin, hopper or process vessel used to store bulk material, an employer shall ensure that the provisions of Part XVII are complied with.

### **Stockpiled Bulk Material**

- 56(1)** An employer shall ensure that unconsolidated bulk material that is stockpiled is
- (a) regularly inspected for hazardous conditions, and
  - (b) found to be in a safe condition before an employee is permitted to work close to or on top of the pile.
- 56(2)** Where unconsolidated bulk material is stockpiled and removed by means of powered mobile equipment, an employer shall ensure that
- (a) the working face of the unconsolidated bulk material is sloped at an angle of repose, or
  - (b) the vertical height of the working face of the unconsolidated bulk material is not more than 1.5 m above the maximum reach of the equipment.
- 56(3)** Where the face of unconsolidated bulk material that is stockpiled is undermined by means of powered mobile equipment, an employer and any employee who undermines the material shall each ensure that the undermining
- (a) is restricted to the depth of the bucket of the powered mobile equipment, and
  - (b) is permitted only when the approach by the operator of the powered mobile equipment is at a ninety degree angle to the face of the material.

### **Piled Solid Material**

- 57(1)** An employer shall ensure that piled solid material is
- (a) located so as not to interfere with
    - (i) illumination,
    - (ii) ventilation,
    - (iii) means of access and egress,
    - (iv) passageways or traffic lanes,
    - (v) the operation of machines,
    - (vi) sprinklers and fire fighting equipment, or
    - (vii) electrical panels or energized electrical lines;
  - (b) located on a firm foundation strong enough to support the load;
  - (c) located so that the pile is not resting against a partition or wall of a building unless the partition or wall is strong enough to support the load;
  - (d) subject to subsection (2), stacked in a manner to make it stable; and
  - (e) protected from conditions that may damage the structural integrity of any container used to store the material.

- 57(2)** An employer shall ensure that pipe and bar stock is stacked
- (a)* on storage racks, or
  - (b)* where storage racks are not practical,
    - (i)* in layers resting on wood strips with stop bars fixed on the ends, or
    - (ii)* on metal bars with upturned ends,

so that the storage or withdrawal of the stock does not create a hazard.

### **Hazardous Substances**

**58** An employer shall designate one or more competent employees to be responsible for the proper handling and storage of hazardous substances.

**59** An employer shall ensure that an employee involved in the handling, use, storage or disposal of a hazardous substance

- (a)* is trained in the safe handling, use, storage and disposal of the substance, and
- (b)* is provided with adequate information concerning the identity, nature and potential hazards of the substance.

**60** An employer shall ensure that a container used for a hazardous substance is

- (a)* clearly labelled
  - (i)* to identify the substance contained, and
  - (ii)* to provide information for the immediate safe handling of the substance,
- (b)* appropriate to the substance contained,
- (c)* of such material, design, construction and condition as to ensure containment of the contents,
- (d)* kept sealed or covered unless otherwise specified by the supplier, and
- (e)* is stored in accordance with the specifications of the supplier.

**61** An employer shall ensure that the precautions to be taken in the handling, use, storage and disposal of a hazardous substance are available on the container or on a separate information sheet kept near the container.

**62** An employer shall ensure that a container used for storing a liquid hazardous substance

- (a)* is supported so that any leakage from the container is noticeable,
- (b)* is placed on a foundation which resists the reaction of the contents of the container or the contents of other containers,
- (c)* is provided with overflow pipes which discharge into a safe area,
- (d)* is surrounded with pits, catch basins or depressions of sufficient size to hold the entire contents of the largest container in the event of a rupture,

(e) is covered with a protective coating to prevent corrosion if not made of non-corrodible material,

(f) is provided with a means of safe access for employees who perform inspection and maintenance duties with respect to the container, and

(g) is not placed above a passageway.

**63(1)** Where a container used for storing a liquid hazardous substance is located in a pit below ground level, an employer shall ensure that

(a) the pit

(i) is constructed of concrete, masonry or other impervious material,

(ii) has sufficient space between the walls and the tanks to permit the passage of a person, and

(iii) is kept free of water; and

(b) the container

(i) is provided with a cover and a means of safe access for employees who perform inspection and maintenance duties in respect of the container, and

(ii) is mounted at least 400 mm above the floor of the pit.

**63(2)** An employer shall ensure that the control valve on a container referred to in subsection (1) is

(a) situated or designed so that it can be turned without any employee entering the pit, and

(b) provided with a locking device operated from outside the pit.

**64** An employer shall ensure that a container that has contained or is suspected to have contained a liquid hazardous substance is adequately cleaned unless rendered unusable.

**65(1)** In this section

"carboy" means a bottle or rectangular container for liquids of at least 20 litres capacity and made of glass, plastic or metal.

**65(2)** An employer shall ensure that a carboy containing a liquid hazardous substance is

(a) individually encased in baskets or boxes cushioned with noncombustible packing,

(b) stored in a separate storage area or building with concrete floors having anti-acid protection or with brick floors that are properly drained to catch basins,

(c) not piled on top of another carboy,

(d) placed in a suitable storage rack or on wooden strips laid on the floor,

(e) not subjected to dampness, extreme heat or sudden changes in temperature,

(f) transported to and from the storage area by equipment designed for the purpose, and

(g) emptied with the use of equipment designed for the purpose.

**65(3)** An employer shall ensure that a carboy is examined and found to be in good condition before being filled with a liquid hazardous substance.

**66** An employer shall ensure that a hazardous substance is stored so as to protect the health and safety of employees, using information available on a material safety data sheet or obtained from the supplier or another reliable source.

**67** An employer shall ensure that a substance that may react with other substances to cause a fire or explosion or to liberate a flammable or toxic gas or to create any other hazardous condition is stored separately from such other substances.

**68** An employer shall ensure that piping and apparatus for a hazardous substance is

- (a) appropriate for the substance contained,
- (b) maintained in safe operating condition and regularly inspected, and
- (c) properly identified to indicate the nature of the material contained, direction of flow and other information necessary to the safe operation of that system.

**69** An employer shall ensure that

- (a) only working quantities of hazardous substances are kept in areas where employees are working,
- (b) emergency equipment appropriate for use in the event of escape of a hazardous substance is readily available,
- (c) any spillage of a hazardous substance is immediately and adequately cleaned up, and
- (d) a hazardous substance is disposed of so that it will not create a hazard to the health or safety of employees.

#### **Storage Batteries**

**70(1)** An employer shall ensure that storage batteries that discharge flammable gases are electrically charged only in rooms or areas designed for that purpose.

**70(2)** An employer shall ensure that the room or area referred to in subsection (1)

- (a) is adequately ventilated to prevent the accumulation of flammable gases,
- (b) is free from all sources of ignition,
- (c) is marked at the entrance with a notice prohibiting smoking or open flames,
- (d) has a floor of non-sparking material with adequate drainage,
- (e) when storage batteries are mounted in trays or on racks, has level trays or racks constructed or covered with non-sparking material and of sufficient strength to carry the weight of the batteries,
- (f) has a sufficient supply of fresh water for flushing and neutralizing spilled or splashed electrolyte,
- (g) has wiring and equipment that comply with sections 26-540 to 26-554 of CSA standard C22.1-98, "Canadian Electrical Code - Part I",

- (h) has equipment of adequate capacity if equipment is used for hoisting or handling batteries, and
- (i) is not used for general storage.

**70(3)** An employer shall ensure that the floor in a storage battery room or area is washed promptly when electrolyte is spilled.

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**71(1)** An employer shall ensure that only a competent person changes or charges a storage battery.

**71(2)** An employer shall provide acid resistive gloves, aprons, goggles or face shields and straps for carrying storage batteries to an employee handling storage batteries or electrolyte and shall ensure that the employee handling storage batteries or electrolyte uses the protective equipment provided.

**71(3)** An employee shall use the protective equipment referred to in subsection (2) when handling storage batteries or electrolyte.

**72** An employer shall ensure that

- (a) a storage battery is kept free from dust,
- (b) a storage battery in use is adequately secured,
- (c) when a storage battery is of no further use, it is disposed of in a manner that prevents spillage of electrolyte, and
- (d) ventilation openings in a storage battery are kept clear.

**73** An employee shall

- (a) when diluting concentrated sulphuric acid for a storage battery, add the acid to the distilled water, and
- (b) keep the charging rate of storage batteries at a rate that will prevent the too rapid generation of hydrogen in the battery.

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#### **Portable Compressed Gas Containers**

**74** An employer shall ensure that a portable compressed gas container for medical use is colour-marked in accordance with the Compressed Gas Association standard CGA C-9-1988 (third edition), "Standard Color Marking of Compressed Gas Containers Intended for Medical Use".

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**75(1)** An employer shall ensure that a portable compressed gas container is used, stored and handled so as not to endanger an employee's health or safety.

**75(2)** In complying with subsection (1), an employer shall use as a guide

- (a) information on a material safety data sheet,
- (b) the specifications provided by the supplier, and



(c) the safe handling rules in CGA G-P-1-1991, "Safe Handling of Compressed Gases in Containers".

**75(3)** An employer shall ensure that the use, storage and handling of a portable compressed gas container used for welding and cutting complies with CSA standard W117.2-94, "Safety in Welding, Cutting, and Allied Processes".

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**76(1)** An employer shall ensure that a portable compressed gas container is stored

(a) in a well ventilated and dry storage area where the temperature does not exceed 52°C,

(b) with containers grouped by types of gas and the groups arranged to take into account the gases contained,

(c) with full and empty containers in separate areas, and

(d) secure and upright.

**76(2)** An employer and an employee shall each ensure that a portable compressed gas container

(a) is not stored near readily ignitable substances,

(b) is kept at a safe distance from all operations that produce flames, sparks or molten metal or result in excessive heating of the container,

(c) is not exposed to corrosive materials or corrosion-aiding substances, and

(d) is protected from falling and from having heavy objects fall on it.

**76(3)** An employer shall ensure that a storage area for portable compressed gas containers is prominently posted with the name of the gases stored and with signs prohibiting smoking.

**77(1)** An employer shall ensure that a portable compressed gas container is not

(a) rolled on its side, dragged, slid or subjected to rough handling, or

(b) moved by a lifting magnet.

**77(2)** Where appropriate lifting mechanisms have not been provided on a portable compressed gas container, an employer shall ensure that suitable cradles or platforms for holding the container are used for lifting.

**78(1)** An employer and an employee shall each ensure that regulators, automatic reducing valves, gauges, hoses and other appliances provided for use with a particular gas or group of gases are not used on a portable compressed gas container containing a gas having different chemical properties unless information obtained from the supplier of the portable compressed gas container states that this can be safely done.

**78(2)** An employer shall ensure that

(a) connections on a portable compressed gas container to piping, regulators and other appliances are kept tight to prevent leakage,

(b) connections to a portable compressed gas container that do not fit are not forced,

(c) the valves on a portable compressed gas container are kept closed at all times whether the container is charged or empty, except when

- (i) gas is flowing from the container,
- (ii) the gas in the container is maintaining pressure in a supply line, or
- (iii) the container is on stand-by during and between operations using the gas, and

(d) check valves for a portable compressed gas container are installed as close as possible to fuel gas and oxygen regulators.

**79(1)** An employer shall ensure that hose lines for conveying flammable gas or oxygen from supply piping or cylinders to torches have threads designed in accordance with the ANSI and CGA standard ANSI/CGA V-1-1994, "Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections".

**79(2)** An employer and employee shall each ensure that hose lines for conveying flammable gas or oxygen from supply piping or cylinders to torches are spliced if necessary in accordance with CGA G-P-1-1991, "Safe Handling of Compressed Gases in Containers".

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## **PART IX**

### **TOOLS**

#### **General Duties of an Owner**

**80** An owner of a tool shall ensure that the tool

- (a) is of good quality material appropriate for its intended use,
- (b) is inspected before being used and repaired or replaced if necessary,
- (c) is maintained in proper working condition,
- (d) is tempered, dressed and repaired only by a competent person,
- (e) where necessary, is equipped with devices to ensure a secure hand grip,
- (f) is of a non-sparking type where there is risk of an explosive atmosphere being ignited by a spark, and
- (g) is kept in a proper storage place when not in use.

#### **General Duties of an Employer**

**81** An employer shall ensure that

- (a) employees are competent in the safe handling and use of tools,
- (b) employees are instructed to use tools only for the specific purposes for which they are designed, and
- (c) procedures are implemented for safely supplying tools and materials to employees located in hazardous places.

#### **General Duties of a User of a Tool**

- 82(1)** An employee who uses a tool shall use, handle and carry the tool in a safe manner.
- 82(2)** Without limiting the duties under subsection (1), an employee who uses a tool shall
- (a) inspect the tool before use,
  - (b) not use a defective tool,
  - (c) report the existence of a defective tool to the employer,
  - (d) where competent to do so, maintain the tool in proper working condition,
  - (e) use the tool only for the specific purpose for which it is designed,
  - (f) place the tool in a safe and appropriate container or place when not in use,
  - (g) not leave tools on floors, passageways, stairways or elevations from which they might fall,
  - (h) use a holding device to hold a tool that is to be struck by another employee, and
  - (i) not point at any person a tool that ejects pins, nails or any other projectile.

#### **Portable Power-Operated Hand Tools**

- 83** An employer shall ensure that
- (a) a portable power-operated hand tool is cleaned with a nonflammable, non-toxic solvent or according to the manufacturer's specifications,
  - (b) an electric portable power-operated hand tool
    - (i) is double insulated or bonded to ground or where it is not double insulated and it is not practical to bond to ground, is equipped with a double insulated portable ground fault circuit interrupter of the class A type, and
    - (ii) is tested for the effectiveness of the double insulation or bonding to ground before each use by a continuity tester or ground fault circuit interrupter,
  - (c) fittings and couplings appropriate for the intended use and meeting the manufacturer's specifications are used on all hydraulic, pneumatic, chemical and electrical lines and hoses for a portable power-operated hand tool, and
  - (d) a shut-off that is readily accessible to the user of the tool is installed on all hydraulic, pneumatic, chemical and electrical lines and hoses for a portable power-operated hand tool.

**84(1)** An employer shall ensure that hydraulic, pneumatic, chemical and electrical lines and hoses for portable power-operated hand tools are not run across aisles, travelways or work areas so as to create a hazard to employees.

**84(2)** An employee shall not run the hydraulic, pneumatic, chemical and electric lines and hoses for portable power-operated hand tools across aisles, travelways or work areas so as to create a hazard to other employees.

**84(3)** This section does not apply where a firefighter is engaged in structural fire-fighting or rescue.

- 85** An employee who uses a portable power-operated hand tool shall
- (a) keep guards on the tool in place while using it,
  - (b) disconnect the source of power before changing accessories on the tool, and
  - (c) where the tool has a flexible shaft, hold the end of the tool firmly when starting its motor to prevent whipping.

**86(1)** An employee who uses a chain saw, brush saw or clearing saw other than in a logging operation, silviculture operation or arboricultural operation shall comply with the requirements of sections 347, 349, 350 and 352.

**86(1.1)** Notwithstanding subsection (1), a firefighter engaged in structural fire-fighting or rescue is exempt from the requirements of section 347 and paragraphs 349(a), (e), (h) and (i).

**86(2)** Where an employee uses a chain saw, brush saw or clearing saw other than in a logging operation, silviculture operation or arboricultural operation, the employer shall comply with the requirements of sections 346 and 351.

**86(2.1)** Notwithstanding subsection (2), where a firefighter is engaged in structural fire-fighting or rescue, the employer is exempt from the requirements of section 346.

**86(3)** An owner of a chain saw used other than in a logging operation, silviculture operation or arboricultural operation shall comply with the requirements of section 348.

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#### **Powder Actuated Tools**

- 87** An owner of a powder actuated tool shall ensure that
- (a) the tool, power load and fastener meet the requirements of ANSI standard ANSI A10.3-1995, "American National Standard for Construction and Demolition Operations - Safety Requirements for Powder-Actuated Fastening Systems",
  - (b) the tool is legibly and durably marked to show the manufacturer's name or trademark and the model and serial number,
  - (c) guards for the tool are legibly and durably marked to show the manufacturer's name or trademark,
  - (d) the powder load of each cartridge for the tool is clearly identified,
  - (e) boxes of fasteners for the tool are legibly and durably marked to show the manufacturer's name or trademark and the type or size of fastener, and
  - (f) the tool has a storage container at the place of employment.

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- 88** An employer shall ensure that
- (a) no employee operates a powder actuated tool unless the employee
    - (i) has been trained in the use of the specific make and model of the tool to be used and is in possession of a valid operator's certificate,

(ii) is competent to use the tool, and

(iii) is authorized to use the tool, and

(b) all powder actuated tools and their explosive charges are kept in a storage area that is accessible only to persons who are authorized to handle them.

**89** An employee who uses a powder actuated tool shall

(a) inspect the tool thoroughly before using it, paying particular attention to the cleanliness of the chamber and barrel;

(b) load the tool only after inspection reveals that the breech and barrel are free of foreign matter and only to prepare the tool for immediate use;

(c) use only cartridges and fasteners designed for the tool;

(d) select cartridges of sufficient power to perform the work without the application of excessive force;

(e) not use the tool in the presence of flammable or explosive substances;

(f) not fire a fastener

(i) through an existing hole unless the tool is specifically equipped by the manufacturer for accurate alignment of the barrel with the hole,

(ii) into cast iron, glazed brick or tile, marble, granite, slate, glass or any other unusually hard or brittle material,

(iii) into a steel surface that is of greater hardness than the fastener being used,

(iv) with a high velocity tool into a hollow concrete block, and

(v) until the work area has been checked for employees working in proximity to where the fastener is going to be fired;

(g) when the hardness of a surface is not known, use a hand hammer to drive the point of the fastener into the material and not use the tool on that surface if the fastener does not penetrate the surface;

(h) if a misfire occurs, continue to hold the tool in a firing position for not less than fifteen seconds and then, until the cartridge has been ejected, keep the tool pointed in a direction which will not cause injury to the user or others;

(i) wear suitable eye protective equipment of the close fitting eyecup or cover-goggle type;

(j) return unused cartridges to a proper storage box; and

(k) operate it in accordance with the manufacturer's specifications.

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**PART X**  
**CONSTRUCTION, TRAFFIC AND BUILDING SAFETY**

2001-33

### Construction Work in Compressed Air

**90** An employer and a contractor shall each ensure that construction in compressed air complies with CSA standard CAN/ CSA-Z275.3 M-86, "Occupational Safety Code for Construction Work in Compressed Air".

### Traffic Safety

**91(1)** Where construction is being carried out in an area where an employee's safety may be endangered by vehicular traffic, an employer shall provide competent signalers to control the flow of traffic.

**91(2)** An employer shall provide and all signalers shall wear a reflectorized vest or jacket when controlling the flow of traffic.

**91(3)** An employer shall provide and all signalers shall use reflectorized paddles to control the flow of traffic.

**92(1)** Where construction is being carried out on a highway or bridge and an employee's safety may be endangered by vehicular traffic, an employer shall ensure that

(a) concrete barriers or material offering equivalent protection is erected at both ends of the construction and as a divider between the traffic and the work area of the highway or bridge, and

(b) appropriate lane control devices and flashing lights or flares are used.

**92(2)** Paragraph (1)(a) does not apply where the highway or bridge is being paved.

**93(1)** Where material is piled along the sides of any excavation or trench and interferes with the flow of vehicular traffic, an employer shall ensure that the material is adequately illuminated by warning lights or reflective materials.

**93(2)** Where work is being carried out and interferes with the flow of vehicular traffic, an employer shall ensure that adequate warning signs are posted in both directions as indicated in the following table and at any intersection between the warning sign and the work area:

Posted speed (km/hr)	Distance of Warning Sign from Work Area (m)
0 - 25	25 - 100
26 - 50	101 - 250
51 - 80	251 - 500
over 80	501 - 1000

2001-33

**93.1** Where a truck platform scale is elevated from the adjacent terrain, an employer shall ensure that a curbing having a minimum height of 250 mm and of sufficient design to safely guide the truck wheels onto the scale is installed and maintained on each side of the scale.

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**94** Repealed: 2001-33

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### Formwork and Shoring

96-61

**94.1(1)** In this section

"form" means the mould into which concrete is poured;

"formwork" means a system of forms connected together;

"shoring" means the structural supports and bracing used to support all or part of a form.

**94.1(2)** An employer shall ensure that formwork and shoring are designed by an engineer and are erected in accordance with design drawings prepared by the engineer.

**94.1(3)** An employer shall ensure that the design drawings referred to in subsection (2)

(a) identify the components, if manufactured formwork and shoring are used,

(b) show the size, grade and specifications of materials to be used, if the formwork and shoring are to be constructed on the project site,

(c) show the design loads for the formwork and shoring and detail the bracing and external ties required to adequately support the design loads,

(d) show the attachment points for rigging and hoisting, if the formwork and shoring are to be moved as a unit,

(e) set out the erection instructions specified by the manufacturer or the engineer,

(f) indicate the method, the sequence and the rate of pouring concrete, and

(g) bear the signature and seal of the engineer.

**94.1(4)** An employer shall ensure that the design drawings referred to in subsection (2)

(a) are kept on the project site, and

(b) are made available to an officer on request.

**94.1(5)** An employer shall ensure that the formwork and shoring are erected, supported and braced so that they are capable of withstanding all loads and forces likely to be applied to them

(a) without exceeding the allowable working loads established for any component of the structure, and

(b) without causing uplifting, sliding, overturning or lateral displacement of the system.

**94.1(6)** The allowable working loads referred to in paragraph (5)(a) shall be established by an engineer in accordance with good engineering practice.

**94.1(7)** An employer shall ensure, before concrete is poured,

(a) that the formwork and shoring are inspected by an engineer, or a competent person designated by the employer, and

(b) that the engineer, or the competent person designated by the employer, as the case may be, authorizes the pour in writing.

**94.1(8)** An employer shall ensure that the written authorization referred to in paragraph (7)(b)

- (a) is kept on the project site, and
- (b) is made available to an officer on request.

**94.1(9)** An employer shall ensure that the formwork and shoring are not removed unless

- (a) the concrete is strong enough to support itself and any loads that may be applied to it, or
- (b) the concrete is adequately reshored.

**94.1(10)** Where concrete is reshored under paragraph (9)(b), subsections (2), (3), (4), (5) and (6) apply, with the necessary modifications, to the reshoring.

**94.1(11)** Subsections (2), (3), (4), (5), (6), (7), (8), (9) and (10) do not apply where formwork and shoring are used no more than 3 m above the ground level.

**94.1(12)** Where formwork and shoring are used no more than 3 m above the ground level, an employer shall ensure that the formwork and shoring are erected, supported and braced so that they are capable of withstanding all loads and forces likely to be applied to them.

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### **Structural Framework**

96-61

**94.2(1)** Where structural framework is being erected using structural steel or precast concrete, an employer shall ensure

- (a) that drawings for the erection of the structural framework are prepared,
- (b) that an engineer
  - (i) certifies the drawings referred to in paragraph (a), and
  - (ii) establishes safe procedures for ensuring the stability of the structural framework, and
- (c) that a competent person, designated by the employer to supervise the erection of the structural framework,
  - (i) establishes the sequence for erecting the structural framework,
  - (ii) ensures the stability of the structural framework during its erection, and
  - (iii) is present on the project site until the structural framework is stabilized.

**94.2(2)** If it becomes necessary to modify the procedures referred to in subparagraph (1)(b)(ii), an employer shall ensure that the procedures as modified are certified by an engineer.

**94.2(3)** An employer shall ensure

- (a) that employees engaged in the erection of the structural framework are instructed in the procedures referred to in subparagraph (1)(b)(ii), or as modified under subsection (2), and
- (b) that the procedures referred to in subparagraph (1)(b)(ii), or as modified under subsection (2), are followed.



**94.2(4)** An employer shall ensure that the drawings referred to in paragraph (1)(a) and the procedures referred to in subparagraph (1)(b)(ii), or as modified under subsection (2),

- (a) are kept on the project site, and
- (b) are made available to an officer on request.

**94.2(5)** Where structural framework is being erected,

- (a) an employer shall ensure that all persons not engaged in the erection of the structural framework are clear of the immediate work area and have been instructed to remain clear until the structural framework is stabilized, and
- (b) any person not engaged in the erection of the structural framework shall remain clear of the immediate work area until the structural framework is stabilized,

unless adequate precautions have been taken to ensure the safety of all persons in the immediate work area.

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### **Buildings and Structures**

**95(1)** Where a building or structure is being constructed, an employer and a contractor shall each ensure that

- (a) work is completed on any component designed to support or give added support to a part of the building or structure before proceeding with any work that adds to the load on that part,
- (b) a free standing wall of brick, concrete blocks or similar materials is braced from both sides until the wall is attached to a rigid structure and the mortar has set adequately, and
- (c) a free standing wall or structure designed to support roof components or any load is braced from both sides until the free standing wall or structure is stabilized.

**95(2)** Where the framework of a building or structure is erected in advance of the outer walls, an employer and a contractor shall each ensure that a guardrail is installed at the perimeter of each floor.

**96(1)** Where a building or structure is being constructed, an employer and a contractor shall each ensure that bracing or shoring is retained at all floor levels beneath the floor where concrete is being poured until the removal of the bracing or shoring is authorized by an engineer.

**96(2)** An employer and a contractor shall each provide, if requested by an officer, certification by an engineer that the forms, bracing, shoring and supports for concrete to be used in construction will safely support the intended load.

### **Wooden Trusses**

96-61

**96.1(1)** An employer shall ensure

- (a) that wooden trusses are not erected unless the manufacturer's specifications for the safe erection of the wooden trusses are readily available on the project site, and
- (b) that wooden trusses are erected in accordance with the manufacturer's specifications referred to in paragraph (a).

- 96.1(2)** An employer shall ensure that the manufacturer's specifications referred to in paragraph (1)(a)
- (a) are kept on the project site, and
  - (b) are made available to an officer on request.

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### **Guardrails**

- 97(1)** A guardrail shall be made of a material prescribed in subsection (2) and shall
- (a) be of sufficient strength and rigidity to support loads which may be imposed on it,
  - (b) have a height of not less than 900 mm or more than 1.07 m from the floor level,
  - (c) have vertical supporting posts not more than 2.4 m apart along its entire length,
  - (d) have a top rail with an intermediate rail between the top rail and the floor level and have the top rail fastened to the top or inside of the vertical supporting posts and the intermediate rail fastened to the inside of the vertical supporting posts midway between the top rail and the floor level, and
  - (e) have a toeboard
    - (i) at least 127 mm high,
    - (ii) fastened to the inside of the vertical supporting posts, and
    - (iii) with a space not more than 6 mm between the bottom of the toeboard and the floor.
- 97(2)** A guardrail shall be made of wood, metal pipe, angle iron or wire rope and
- (a) if made of wood, the top rail, vertical supporting posts and intermediate rail shall be constructed of at least 50 mm × 100 mm No. 1 grade or better spruce or fir;
  - (b) if made of metal pipe,
    - (i) the top rail and vertical supporting posts shall be at least 40 mm in diameter, and
    - (ii) the intermediate rail shall be at least 25 mm in diameter;
  - (c) if made of angle iron,
    - (i) the top rail and vertical supporting posts shall be at least 40 mm × 40 mm × 5 mm, and
    - (ii) the intermediate rail shall be at least 32 mm × 32 mm × 3 mm; or
  - (d) if made of wire rope,
    - (i) the vertical supporting posts shall be made of steel at least 40 mm in diameter or of a material of equivalent strength, and
    - (ii) the top rail and intermediate rail shall be at least 10 mm in diameter, be attached to a welded fastening on the vertical supporting posts with metal clips to prevent unnecessary sagging and be easily distinguishable from the background.
- 97(3)** Measurements of lumber in paragraph (2)(a) are nominal.

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**98** An employer and a contractor shall each ensure that a guardrail is inspected by a competent person on a regular basis and if the guardrail does not meet the requirements of section 97, that it is immediately repaired so as to meet those requirements or is replaced.

**99** An employer and a contractor shall each ensure that an opening for passage through a guardrail is equipped with a barrier or gate that may be removed temporarily to permit passage.

**100(1)** Where a guardrail is removed in order for work to be done, an employer and a contractor shall each ensure that

(a) adequate precautions are taken to ensure the safety of the employee doing the work and any other employee, and

(b) the area is not left unguarded.

**100(2)** An employee who removes a guardrail in order to do work shall replace the guardrail before leaving the area.

#### **Allowable Unit Stresses**

**101(1)** An employer, a contractor and an owner of a place of employment shall each ensure that the floor, roof or other part of a building or structure that is a place of employment is not subjected to a load that exceeds the allowable unit stresses for the materials used as established in the "National Building Code of Canada, 1995", issued by the Canadian Commission on Building and Fire Codes, National Research Council of Canada.

**101(2)** An employer, a contractor and an owner of a place of employment shall each provide, if requested by an officer, an engineer's certification of the load that the floor, roof or other part of a building or structure that is a place of employment can support without exceeding the allowable unit stresses referred to in subsection (1).

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#### **Walking Surfaces**

**102(1)** An employer and a contractor shall each ensure that a surface on which an employee walks is free from structural defects, projections, openings, scrap waste, loose material, stored material, equipment or other obstructions which may create a hazard to the employee.

**102(2)** Subject to subsection (6), an employer and a contractor shall each ensure that a guardrail which meets the requirements of section 97 is provided at the open sides and open ends of

(a) a floor, mezzanine, balcony, walkway or platform,

(b) the surface of a bridge or overpass, and

(c) a concrete roof while the formwork remains in place,

to which an employee has access and from which the employee may fall a vertical distance of 1.2 m or more.

**102(3)** Notwithstanding subsection (2), where a walkway or platform in an underground mine was constructed before the commencement of this section and is more than 1.5 m above the ground or floor level, an employer shall ensure that the walkway or platform is provided with handrails and toeboards in accordance with subsections (4) and (5).

**102(4)** The top rail of a handrail for a walkway or platform referred to in subsection (3) shall not be less than 900 mm and not more than 1.07 m above the floor level of the walkway or platform and a second rail shall be placed at the midpoint between the top rail and the floor level of the walkway or platform, unless the intervening space is closed by a screen or other suitable means, and the handrail shall be capable of withstanding a load applied to the rail of at least 90 kg applied in any direction.

**102(5)** A toeboard for a walkway or platform referred to in subsection (3) shall extend from the floor of the walkway or platform to not less than 120 mm in height.

**102(6)** Subsection (2) does not apply to a walkway or platform in an underground mine that was constructed before the commencement of this section and that is not more than 1.5 m above the ground or floor level.

**102(7)** Where a floor is wet because of the work process, an employer and a contractor shall each use such devices as matting or grating where necessary on the floor to eliminate the hazard of slipping and where such devices are used and are insufficient to eliminate the hazard of slipping, the employer and the contractor shall provide non-slip footwear to employees who are required to walk on the floor and shall ensure that such employees wear the non-slip footwear.

**102(8)** An employer and a contractor shall each keep outdoor passageways from becoming slippery by removing ice or snow and using materials such as ashes, sand or salt where necessary.

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**103** An employer and a contractor shall each ensure during the construction of a building or structure that a floor area in the building or structure is adequately closed in, except for necessary openings, before the floor above is started.

**104(1)** An employer and a contractor shall each ensure that a temporary working floor

(a) will support a minimum live load of 2.4 kPa,

(b) has planks that are securely fastened and supported on each end 300 mm beyond the opening that is being covered, and

(c) has no unsupported projection of a length that would be unstable if an employee were to stand on the projection or that exceeds 450 mm, whichever is the lesser.

**104(2)** Where it is impracticable to install a temporary working floor, an employer and a contractor shall each ensure that a safety net that meets the requirements of subsection 50(2) is installed under the area where an employee is working or that an individual fall-arresting system is used by the employee.

### **Roofs**

**105(1)** In this section and sections 106 and 106.1

"fall-restraint system" means a mechanism

(a) that restricts the movement of an employee so that the employee is prevented from falling from the work surface, and

(b) that meets the requirements of subsection (6);

"unguarded edge" means an edge of a roof that is not guarded by a guardrail;

"warning line" means a warning line that meets the requirements of subsection (5);

"weatherproofing" means the application of tar, gravel, insulation, shingles or membrane material to a roof but does not include the installation of decking material or the stripping of materials from the roof.

**105(2)** Where an employee is engaged in the weatherproofing of a roof that

- (a) is 3 m or more above the ground or other safe working level,
- (b) has a slope of 4 in 12 or less, and
- (c) has an unguarded edge,

and the employee is not using an individual fall-arresting system or a fall-restraint system, an employer shall ensure that a warning line is installed and maintained 1 m from the unguarded edge.

**105(3)** Where a warning line is installed under subsection (2), an employer shall ensure

- (a) that an employee who is working between the warning line and the unguarded edge has been fully instructed in work procedures and hazards, and
- (b) that a competent person monitors all employees who are working between the warning line and the unguarded edge.

**105(4)** An employer shall ensure that no employee enters the area 1 m or less from the unguarded edge of a roof described in subsection (2) unless the employee is required to do so by reason of the employee's work duties.

**105(5)** A warning line shall

- (a) have a minimum diameter of 13 mm,
- (b) be suspended at a height of not more than 900 mm and not less than 750 mm,
- (c) be supported by corner and intermediate posts sufficient to keep the line taut, and
- (d) have readily visible markers placed every 1.5 m along the length of the line.

**105(6)** A fall-restraint system shall

- (a) be rigged to allow the movement of employees only as far as the edge of the roof,
- (b) be attached to a secure anchor capable of supporting the loads that may be applied to it, and
- (c) conform to CSA standard Z259.1-1976, "Fall Arresting Safety Belts and Lanyards for the Construction and Mining Industries".

**105(7)** This section does not apply

- (a) where an employee is engaged in the installation or removal of a guardrail, an individual fall-arresting system or a fall-restraint system, if the employee has been fully instructed in work procedures and hazards, or
- (b) where an employee is engaged in the weatherproofing of a roof that has a total area of less than 23 m<sup>2</sup> or of a roof of a canopy or a walkway, and it is not practicable to use a guardrail, an individual fall-arresting system, a fall-restraint system or a warning line.

**106** An employer shall ensure that an employee who is engaged in the weatherproofing of a roof that

- (a) is 3 m or more above the ground or other safe working level,
- (b) has a slope exceeding 4 in 12, and
- (c) has an unguarded edge,

uses an individual fall-arresting system and the employee shall use the individual fall-arresting system.

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**106.1** Notwithstanding paragraphs 97(1)(c) and (e), where an employee is engaged in the weatherproofing of a roof and a guardrail is used,

- (a) the employer shall ensure that the guardrail has vertical supporting posts not more than 3 m apart along its entire length, and
- (b) a toeboard is not required.

96-60

**107** Repealed: 96-60

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**108** Repealed: 96-60

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**109(1)** An employer shall ensure that a hoist used to raise materials to a roof is

- (a) sufficiently strong and stable, and
- (b) equipped with suitable ropes, chains, slings, hooks and other fittings,

so as to ensure the safety of the person who uses the hoist or works in its vicinity.

**109(2)** An employer shall ensure that the weights used to counterbalance a hoist used to raise materials to a roof are

- (a) adequate for the equipment used, and
- (b) secured to the hoist to prevent their premature removal.

**110** An employer shall ensure that guardrails, or a safety fence manufactured as part of a hoist, are installed in perimeter travel areas on a roof near the hoist areas and the dumping areas.

96-60

### **Openings**

**111(1)** An employer and a contractor shall each ensure that an opening into which an employee may fall, other than a hatchway, chute, pit or trap-door opening, is guarded

- (a) on all exposed sides by guardrails, or
- (b) by an adequately strong and supported cover secured over the opening.

**111(2)** Notwithstanding subsection (1), where an opening leads to a stairway or ladder, an employer and a contractor shall each ensure that the opening is guarded on all exposed sides, other than the entrance to the stairway or ladder, by guardrails.

**111(3)** Where a cover is used over an opening and is not in place, an employer and a contractor shall each ensure that the opening is constantly attended by a person or is guarded by a guardrail on all exposed sides.

**112(1)** An employer and a contractor shall each ensure that a hatchway, chute, pit or trap-door opening into which an employee may fall is guarded

(a) by guardrails that are removable on not more than two sides and that are fixed on the other exposed sides, or

(b) by a flush hinged cover of adequate strength and adequately supported with attached railings so as to leave only one side of the opening exposed when the cover is open.

**112(2)** Subsections 111(2) and (3) apply with the necessary modifications to a hatchway, chute, pit or trap-door opening referred to in subsection (1).

2001-33

### **Access and Egress**

**113(1)** An employer shall provide a safe means of access to and egress from all areas where work is performed.

**113(2)** An employer shall ensure that an emergency means of escape is provided from any area where the normal means of escape may be rendered dangerous or unusable.

**113(2.1)** This section does not apply where a firefighter is engaged in structural fire-fighting or rescue.

**113(3)** Repealed: 96-106

96-106; 97-121

**114(1)** Where a door is installed, an employer shall ensure that the door is installed and maintained according to the manufacturer's specifications and is working properly.

**114(2)** Where a door stored above the door opening is spring-loaded or presents a hazard in some other way by its mechanism, an employer shall ensure that the door is

(a) inspected at regular intervals by a competent person, and

(b) where necessary, repaired by a competent person.

97-121

### **Stairways**

**115(1)** An employer shall ensure that a stairway

(a) is of sufficient strength to sustain a live load of 4.8 kPa,

(b) is a minimum of 1.12 m in width,

(c) is pitched not less than 20 degrees and not more than 35 degrees from the horizontal,

(d) has risers constant in height that are not less than 127 mm and not more than 200 mm,

- (e) has a maximum height of 3.7 m between landings,
- (f) has landings, if any, with a minimum clearance of 1.12 m measured in the direction of the run,
- (g) has a vertical clearance of 2.05 m from the top of the tread at all points in the stairway,
- (h) has treads constant in width and not less than 225 mm in width, and
- (i) has a non-slip nosing or a strip of non-slip material not less than 50 mm in width and installed 25 mm from the front edge of the tread on all treads where there may be a hazard of slipping due to the material of the tread.

**115(2)** Paragraphs (1)(b), (c) and (h) do not apply to a service stairway.

**115(3)** An employer shall ensure that a service stairway

- (a) is a minimum of 900 mm in width,
- (b) is pitched not less than 20 degrees and not more than 50 degrees from the horizontal, and
- (c) has treads constant in width and not less than 150 mm in width.

**115(4)** An employer shall ensure that a stairway having four or more risers

- (a) that are 2.24 m or less in width, has a handrail and supporting structure on any open side and a handrail on any enclosed side, and
- (b) that are more than 2.24 m in width, has a handrail and supporting structure on any open side and in the centre and a handrail on any enclosed side.

**115(5)** An employer shall ensure that a handrail and supporting structure referred to in subsection (4) is constructed so that

- (a) the height of the handrail and supporting structure from the upper surface of the handrail to the surface of the tread in line with the face of the riser at the forward edge of the tread is not less than 750 mm and not more than 900 mm,
- (b) the supporting structure is capable of withstanding a load of 100 kg applied in any direction,
- (c) the handrail is
  - (i) continuous throughout the flight of stairs and landings,
  - (ii) capable of withstanding a load of 100 kg applied in any direction, and
  - (iii) at least 40 mm wide,
- (d) a handrail mounted directly on a wall or partition is fixed so as not to interfere with the smoothness of the top and side surfaces, and
- (e) if brackets are used, the brackets to which a handrail is fixed are spaced not more than 2.4 m apart and have a clearance of at least 40 mm between the handrail and any wall or partition or any obstruction on the wall or partition to which the brackets are attached.



**115(6)** Notwithstanding subsections (1) to (5), where a stairway was installed in an underground mine before the commencement of this section, an employer shall ensure that the stairway

- (a) is installed at an angle not greater than 50 degrees,
- (b) has a rise or vertical distance between landings of a flight that does not exceed 3.5 m,
- (c) has treads and risers of uniform width and height in any one flight, and
- (d) has guardrails and handrails of adequate strength that are not less than 900 mm and not more than 1.2 m in height above the treads of the stairs.

**116** Where a stairway has treads or landings made of perforated material, an employer shall ensure that the perforated material does not have openings larger than 11 mm.

**117(1)** Where work on a building or structure progresses to one storey or 4.5 m above the lowest floor level, whichever is the lower, an employer shall ensure that permanent stairs or temporary stairs are installed in the building or structure leading from the lowest floor level to all the floors above.

**117(2)** An employer may use guardrails for temporary stairs and landings in place of the handrails and supporting structures required under subsections 115(4) and (5).

**118** An employer shall ensure that a skeleton steel stairway with treads that are not completed during the construction stages has temporary wooden treads set into the full length and width of the steps and landings.

### **Ramps**

**119(1)** Repealed: 96-106

**119(2)** Where the pitch of a stairway would be less than 20 degrees from the horizontal, an employer shall provide a ramp.

**119(3)** An employer shall ensure that a ramp

- (a) has a maximum slope of 20 degrees from the horizontal,
- (b) is equipped with a non-slip surface or cleats spaced 400 mm apart where the slope is greater than five degrees,
- (c) that is 2.24 m or less in width, has a handrail and supporting structure on any side and a handrail on any enclosed side, and
- (d) that is more than 2.24 m in width, has a handrail and supporting structure on any open side and in the centre and a handrail on any enclosed side.

**119(4)** An employer shall ensure that a handrail and supporting structure referred to in subsection (3) are constructed so that

- (a) the height of the handrail and supporting structure from the upper surface of the handrail to the surface of the ramp is not less than 750 mm and not more than 900 mm,
- (b) the supporting structure is capable of withstanding a load of 100 kg applied in any direction,
- (c) the handrail is
  - (i) continuous throughout the slope and landings of the ramp,

- (ii) capable of withstanding a load of 100 kg applied in any direction, and
  - (iii) at least 40 mm wide,
- (d) a handrail mounted directly to the wall or partition is fixed so as not to interfere with the smoothness of the top and side surfaces, and
- (e) if brackets are used, the brackets to which a handrail is fixed are spaced not more than 2.4 m apart, and have a clearance of at least 40 mm between the handrail and any wall or partition or any obstruction on the wall or partition to which the brackets are attached.

96-106

### **Catwalks**

**120(1)** An employer shall ensure that a catwalk that is 1.2 m or more above the ground or floor level has a minimum clear width of 500 mm and is equipped with guardrails.

**120(2)** Notwithstanding subsection (1), where a catwalk was constructed before the commencement of this section, an employer shall ensure that the catwalk has a minimum clear width of 450 mm and is equipped with guardrails.

**120(3)** Notwithstanding subsections (1) and (2), where a catwalk in an underground mine was constructed before the commencement of this section and is more than 1.5 m above the ground or floor level, an employer shall ensure that the catwalk is provided with handrails and a toeboard in accordance with subsections (4) and (5).

**120(4)** The top rail of a handrail for a catwalk referred to in subsection (3) shall be not less than 900 mm and not more than 1.07 m above the floor level of the catwalk and a second rail shall be placed at the midpoint between the top rail and the floor level of the catwalk, unless the intervening space is closed by a screen or other suitable means and the handrail shall be capable of withstanding a load applied to the rail of at least 90 kg applied in any direction.

**120(5)** A toeboard for a catwalk referred to in subsection (3) shall extend from the floor of the catwalk to not less than 120 mm in height.

**120(6)** Sections (1) and (2) do not apply to a catwalk in an underground mine that was constructed before the commencement of this section and that is not more than 1.5 m above the ground or floor level.

2001-33

### **Fixed Ladders**

- 121(1)** An employer shall ensure that a fixed ladder
- (a) is of adequate strength and length,
  - (b) is clean and free from grease,
  - (c) is maintained in a safe condition,
  - (d) is securely held in place at the top and bottom and at such intermediate points as are required to prevent sway,
  - (e) has a clearance of at least 165 mm maintained between the rungs and the structure to which the ladder is affixed,

- (f) does not have any rungs that extend above a landing,
- (g) has side rails or other secure hand holds that extend at least 1.07 m above the landing and are spaced not less than 685 mm apart, and
- (h) is removed from service when it has loose, broken or missing rungs, split side rails or other defects that may be hazardous to an employee.

**121(2)** An employer shall ensure that a fixed ladder that is more than 6 m in height is equipped with

- (a) ladder cages, or
- (b) a safety device that is designed and constructed to lock and to suspend an employee using the device if the employee loses hold of the ladder.

**121(3)** Subsection (2) does not apply where an employee on the ladder uses an individual fall-arresting system.

**121(4)** Where a ladder cage is used on a fixed ladder, an employer shall ensure that

- (a) the cage is provided with metal hoops spaced to prevent an employee from falling away from the ladder and to contain an employee who may lean or fall against the cage,
- (b) the cage extends not less than 685 mm and not more than 725 mm from the centre line of the rungs of the ladder,
- (c) the cage is not less than 685 mm wide where it attaches to the ladder,
- (d) the cage extends from a point 2.5 m from the base of the ladder to the top of the ladder,
- (e) the inside of the cage is free of projections, and
- (f) if the fixed ladder is more than 9 m in height, it is equipped with a rest platform at intervals of no more than 9 m.

96-106

## **PART XI TEMPORARY STRUCTURES**

### **Portable Ladders**

**122(1)** An employer shall ensure that a portable ladder used at a place of employment is

- (a) of adequate strength and length,
- (b) clean and free of grease, and
- (c) maintained in a safe condition.

**122(2)** An employer shall ensure that a portable ladder is removed from service when it has loose, broken or missing rungs, split side rails or other defects that may be hazardous to the safety of an employee.

**123** An employer shall ensure that a wooden portable ladder

- (a) is made of No. 1 grade or better spruce or fir,

- (b) is not painted other than by being preserved with a transparent protective coating,
- (c) if a single ladder, does not exceed 6 m in length,
- (d) has rungs
  - (i) free of knots,
  - (ii) designed to carry a load of 200 kg placed at the centre,
  - (iii) uniformly spaced with a maximum rise of 300 mm,
  - (iv) secured to each side of the side rail of the ladder by at least three screws or barbed nails of adequate length or by attachments giving equivalent or better strength, and
  - (v) notched into the side rails of the ladder at least 13 mm on the lower side or with fillers installed between the rungs, and
- (e) has side rails
  - (i) dressed on all sides and without sharp edges, and
  - (ii) with a uniform clear width between them of not less than 300 mm for ladders 3 m in length or less, and increasing 1 mm in width for each 100 mm in excess of 3 m.

2001-33

**124(1)** An employer shall ensure that a portable ladder complies with and is used in accordance with CSA standard CAN 3-Z11-M81, "Portable Ladders".

**124(2)** An employer shall ensure that a portable extension ladder

- (a) has no more than three sections,
- (b) has locks that securely hold the sections of the ladder in an extended position, and
- (c) when extended, maintains a minimum overlap as follows:
  - (i) where the ladder is 11 m or less, the overlap shall be 1 m;
  - (ii) where the ladder exceeds 11 m and is 15 m or less, the overlap shall be 1.25 m; and
  - (iii) where the ladder exceeds 15 m and is 22 m or less, the overlap shall be 1.5 m.

**125(1)** An employee who uses a portable ladder shall

- (a) inspect the ladder before use,
- (b) report any unsafe condition of the ladder to the employer,
- (c) face the ladder and use both hands when climbing or descending, and
- (d) when standing on a ladder, stand in the centre between the side rails.

**125(2)** An employee who uses a portable ladder shall ensure that

- (a) the ladder is secured against movement,
- (b) the side rails of the ladder extend at least 1 m above any platform or landing to which the ladder is a means of access, and
- (c) if a step ladder, the legs are securely held in position by means of metal braces or an equivalent rigid support.

**125(3)** An employee who uses a portable ladder shall not

- (a) splice ladders together unless the spliced section is braced so that the spliced side rails are as strong as the original side rails,
- (b) place a ladder in front of or against a door unless the door is blocked in the open position, locked or guarded,
- (c) use a ladder as scaffold flooring or as support for scaffold flooring,
- (d) stand on the material shelf, the top or the top step of a portable step ladder, or
- (e) work from the top three rungs of a portable single or extension ladder.

**125(4)** Paragraphs (1)(d) and (3)(c) and (e) do not apply to a firefighter engaged in structural fire-fighting or rescue.

97-121

**126** Where an employee is using a portable ladder and is working close to an energized electrical utility line or utility line equipment, the employer and the employee shall each comply with the appropriate provisions of Part XIX.

#### **Work Platforms**

**127** Measurements of lumber in sections 128 to 142, other than measurements for wood planks, are nominal.

**128** An employer shall ensure that all wood used in a work platform is

- (a) made of No. 1 grade or better spruce or fir, and
- (b) not painted other than by being preserved with a transparent protective coating.

**129** Repealed: 2001-33

2001-33

#### **Forklift Platforms**

2001-33

**129.1(1)** In this section,

"forklift platform" means a work platform that is supported on the forks of an industrial lift truck.

**129.1(2)** An employer shall ensure that a forklift platform

- (a) is securely attached to the lift truck so as to prevent accidental movement of the platform or the tipping of the forklift,

(b) is designed and constructed of material of sufficient strength to support safely the loads to which it may be subjected, and

(c) if a manufactured platform, is erected, used, maintained and dismantled in accordance with the manufacturer's specifications.

**129.1(3)** An employer shall ensure that an industrial lift truck supporting a forklift platform

(a) is on a firm flat surface to ensure the truck's stability, and

(b) is operated by a competent person.

**129.1(4)** An employer shall ensure that a forklift platform is equipped with

(a) guardrails, or

(b) an individual fall-arresting system.

**129.1(5)** An employer shall ensure that an employee on a forklift platform that is not equipped with guardrails uses an individual fall-arresting system as soon as the platform commences to be raised.

**129.1(6)** An employer shall ensure that an individual fall-arresting system referred to in paragraph (4)(b) is tied to a secure anchor in a manner that does not interfere with the raising and lowering of the platform.

2001-33

**129.2** A person who operates an industrial lift truck with a forklift platform shall, if the platform is elevated more than 1.2 m and there is a person on the platform,

(a) not move the truck, and

(b) remain at the controls of the truck.

2001-33

**129.3(1)** An employee shall not work on a forklift platform unless

(a) the industrial lift truck is on a firm flat surface, and

(b) the platform is equipped with guardrails or an individual fall-arresting system.

**129.3(2)** An employee on a forklift platform that is not equipped with guardrails shall use an individual fall-arresting system as soon as the platform commences to be raised.

2001-33

### **Elevating Work Platforms**

2001-33

**130** An employer shall ensure that an elevating work platform is designed, constructed, erected, maintained, inspected, monitored and used in accordance with the following CSA standards, where applicable:

(a) CAN3-B354.1-M82, "Elevating Rolling Work Platforms";

- (b) CAN3-B354.2-M82, "Self-Propelled Elevating Work Platforms for Use on Paved/Slab Surfaces";
- (c) CAN3-B354.3-M82, "Self-Propelled Elevating Work Platforms for Use as 'Off-Slab' Units";  
and
- (d) CAN3-B354.4-M82, "Boom-Type Elevating Work Platforms".

### **General Provisions Applicable to Scaffolds**

2001-33

- 131(1)** An employer shall ensure that a scaffold
- (a) is capable of sustaining a minimum uniformly distributed load of 1.4 kPa,
  - (b) is at no time subjected to a load that exceeds the equivalent of one-quarter of the load for which it is designed,
  - (c) is designed and constructed to support at least four times the load that may be imposed on it,
  - (d) if over 3 m, has a back rail at least 900 mm and not more than 1.07 m in height that is capable of withstanding a static load of at least 100 kg applied at any point in any direction,
  - (e) is erected plumb and level,
  - (f) has vertical supports resting upon a firm foundation or sills,
  - (g) is adequately secured at vertical intervals not exceeding three times the least lateral dimension of the scaffold, measured at the base, to prevent lateral movement,
  - (h) has a platform that is at least 500 mm wide.
- 131(2)** Paragraph (1)(d) does not apply to a mobile rolling scaffold.
- 131(3)** Subject to subsection (4), an employer shall ensure that the spacing of vertical supports and bearers of a scaffold does not exceed 3 m on centres.
- 131(4)** Where a scaffold is to be used for bricklaying, masonry or other heavy work, an employer shall ensure that the spacing of vertical supports and bearers of a scaffold does not exceed 2.1 m on centres.

2001-33

- 132** An employer shall ensure that a wood plank in a scaffold
- (a) is at least 50 mm thick by 250 mm wide,
  - (b) has a span not longer than 3 m,
  - (c) extends at least 150 mm and not more than 300 mm beyond a supporting member,
  - (d) is laid flat with an overlap of 300 mm with another plank, with the centre of the overlap directly over a bearer, and
  - (e) is secured to prevent movement in any direction that may create a danger to an employee.
- 133(1)** An employer shall ensure that

- (a) lean-to scaffolds on wall brackets are not used,
- (b) the inner supports of the supporting members on a single pole scaffold are of adequate construction and securely fastened to a wall,
- (c) a safe means of access is provided to all working levels of a scaffold, and
- (d) no person uses cross-bracing or diagonal bracing on a scaffold for climbing.

**133(2)** Where an employee is working on a scaffold above another employee, the employee working above shall ensure that the employee below is protected from the hazard of objects falling from the higher level by overhead protection or by such means as tying off tools and other unsecured objects on the higher level.

**134** An employee who works on a scaffold and an employer shall each ensure that

- (a) only materials for current use are kept on the scaffold,
- (b) the scaffold is not moved with employees or unsecured tools, materials or equipment on the scaffold, and
- (c) a diagonal supporting brace is removed at the working face level only for access and only if precautions are taken to ensure that the strength of the scaffold is not weakened and the brace is replaced after the work is completed.

#### **Wood Scaffolds**

2001-33

**135(1)** An employer shall ensure that the wooden vertical supports of a wood scaffold

- (a) when 6 m or less in height, are not less than 50 mm thick by 100 mm wide, and
- (b) when greater than 6 m in height, are not less than
  - (i) 100 mm thick by 100 mm wide, or
  - (ii) two 50 mm thick by 125 mm wide pieces laminated together.

**135(2)** An employer shall ensure that single wooden vertical supports of a wood scaffold are extended by means of a butt joint that has been strengthened by four pieces of material at least 25 mm thick and of the same width as the vertical supports and extending at least 740 mm on both sides of the butt joint.

**135(3)** An employer shall ensure that the distance between the joints of laminated vertical supports of a wood scaffold is not less than 1.2 m.

**135(4)** An employer shall ensure that the minimum size of a bearer on a wood scaffold is 50 mm thick by 125 mm wide.

97-121

#### **Metal Scaffolds**

2001-33

**136(1)** An employer shall ensure that a metal scaffold



(a) is erected, used, maintained and dismantled in accordance with the manufacturer's specifications,

(b) if less than 6 m in height, is equipped with a continuous access ladder or stairway commencing at ground level, and

(c) if 6 m or greater in height, is equipped with a continuous access stairway commencing at ground level.

**136(2)** An employer shall ensure that

(a) a metal scaffold is regularly inspected for any damage, deterioration or loosening of the connections of its structural members that may affect its strength and if such damage, deterioration or loosening is found, that the scaffold is removed from use until repaired,

(b) cross-bracing and diagonal bracing is installed at each level of a metal scaffold as the erection of the scaffold progresses, and

(c) no person works on a metal scaffold before the cross-bracing and diagonal bracing is in place, except to erect the scaffold.

2001-33

#### **Horse Scaffolds**

2001-33

**137(1)** Where the horses for a horse scaffold are constructed of wood, an employer shall ensure that

(a) the horizontal members of bearers are not smaller than 50 mm thick by 125 mm wide,

(b) the legs are not smaller than 50 mm thick by 100 mm wide,

(c) the longitudinal braces between legs are not smaller than 25 mm thick by 150 mm wide,

(d) the gusset braces at the top of the legs are not smaller than 25 mm thick by 200 mm wide, and

(e) the half diagonal braces are not smaller than 25 mm thick by 100 mm wide.

**137(2)** An employer shall ensure that the horses for a horse scaffold are

(a) placed on a secure footing and not raised in height by blocking or extensions,

(b) spaced not more than

(i) 1.5 m apart for a scaffold supporting 3.6 kPa or more,

(ii) 2.3 m apart for a scaffold supporting 1.2 kPa to 3.5 kPa, and

(iii) 3 m apart for a scaffold supporting less than 1.2 kPa, and

(c) placed directly over one another and, if more than two tiers high, each tier is secured to a building or structure.

**137(3)** An employer shall ensure that a platform of a horse scaffold

(a) if supported by single tier horses, does not exceed 5 m in height,

(b) if supported by tiered horses, does not exceed three tiers or 3.7 m in height, whichever is the lower, and

(c) is secured to the legs of the horses to prevent movement.

#### **Ladderjack Scaffolds**

2001-33

**138(1)** An employer shall ensure that a ladder-jack scaffold

(a) is not more than 5 m in height,

(b) has supporting ladders properly secured against displacement,

(c) is used only for operations where the work period between changes of scaffold position is of short duration and the load on the scaffold does not exceed 1.2 kPa, and

(d) is not used by more than two employees at any one time.

**138(2)** An employer shall ensure that a ladder-jack assembly is securely fastened to the ladder so that it bears on the side rails.

**138(3)** Where a manufactured platform is used on a ladder-jack scaffold, an employer shall ensure that the platform is a minimum of 500 mm in width and is supported at intervals not exceeding 3 m.

2001-03

#### **Pump-jack Scaffolds**

2001-03

**139** An employer shall ensure that a pump-jack scaffold

(a) if made of metal, is not more than 15 m in height and is erected, installed and used according to the manufacturer's specifications, and

(b) if made of wood, is not more than 9 m in height.

#### **Mobile Rolling Scaffolds**

2001-03

**140(1)** An employer shall ensure that a mobile rolling scaffold

(a) is not higher than four times the width of the smallest base dimension, unless it is guyed or otherwise secured at the top,

(b) has diagonal and horizontal cross-bracing installed at every level,

(c) has a solid platform covering the entire area from which an employee works,

(d) has lockable wheels, and

(e) has guardrails.

**140(2)** Where a mobile rolling scaffold is equipped with pneumatic tires, an employer and any person who uses the scaffold shall each ensure that the wheels are blocked separately in such a way as to raise the wheels off the ground or floor before the scaffold is used.

**140(3)** An employer and any person who uses a mobile rolling scaffold shall each ensure that the scaffold is not used until inspected before each day's use by a competent person and by the person who is to use the scaffold.

### **Suspended Work Platform**

2001-33

**141(1)** An employer shall ensure that a suspended work platform

- (a) is designed and certified by an engineer as being able to withstand the stresses that are to be imposed upon it,
- (b) is equipped with guardrails,
- (c) is provided with a safe means of access and egress for the employees using the platform,
- (d) is suspended by adequate means securely anchored to the platform and to the overhead supporting structure, and
- (e) when in use, is inspected daily by a competent person.

**141(2)** Notwithstanding paragraph (1)(b), guardrails are not required if each employee on the suspended work platform uses an individual fall-arresting system or a safety net that meets the requirements of subsection 50(2).

**141(3)** An employer shall ensure that the planks of a suspended work platform

- (a) if made of wood, are of a minimum of 50 mm thick by 250 mm wide supported at intervals not exceeding 3 m,
- (b) overlap the supporting ledgers at each end by at least 300 mm, and
- (c) are laid tightly together and secured to prevent movement in any direction.

### **Swing Staging**

2001-33

**142(1)** An employer shall ensure that swing staging, when attached to a fixed support, is capable of supporting at least four times the maximum load to which the fixed support is likely to be subjected

- (a) without overturning, and
- (b) without exceeding the allowable unit stresses for the material used in the fixed support.

**142(2)** An employer shall ensure that

- (a) a hook used to suspend swing staging
  - (i) has safety devices to prevent dislodgement, and

(ii) is securely tied back to an adequate independent anchorage on the same level as the hook or above the hook, and

(b) a thrust-out used to suspend swing staging

(i) is rigidly fastened to another thrust-out,

(ii) is securely tied back to an adequate independent anchorage on the same level as the hook or above the hook,

(iii) is counter-balanced with sufficient solid material to ensure stability, and

(iv) has cleats or bolts fastened at the outer ends of the thrust-out to act as safety stops.

**142(3)** An employer shall ensure that wire rope used to suspend swing staging

(a) provides a safety factor of not less than ten, based on the ratio of the manufacturer's rated breaking strength of the wire rope to the static load,

(b) is not less than 10 mm in diameter,

(c) is securely fastened to the drum of a winch, and has at least three turns of wire rope on the drum when the swing staging is in its lowest position, and

(d) is inspected in accordance with the manufacturer's specifications.

**142(4)** An employer shall ensure that

(a) where hangers are used to support swing staging, the hangers are made of wrought iron or mild steel with a cross section equal to 10 mm by 32 mm or a diameter of at least 19 mm and are securely attached to the platform,

(b) where wire rope is used as a sling to support swing staging, the wire rope is at least 13 mm in diameter, and

(c) where another material is used to support swing staging, it has been certified by an engineer as being of a strength equivalent to that prescribed in paragraph (a) or (b).

**142(5)** An employer shall ensure that the platform of swing staging is not less than 500 mm in clear width and is either a ladder type platform or a plank type platform.

**142(6)** An employer shall ensure that the side stringers, rungs and tie rods of a ladder type platform for swing staging conform to the following table:

### [LADDER TYPE PLATFORMS FOR SWING STAGING](#)

**142(7)** An employer shall ensure that the flooring of a ladder type platform on swing staging is at least 19 mm thick plywood or another material of equivalent strength.

**142(8)** An employer shall ensure that the planks in a plank type platform on swing staging

(a) are made of wood and are a uniform thickness of not less than 50 mm,

- (b) are tied together on the underside by cleats
  - (i) a minimum size of 25 mm by 150 mm,
  - (ii) securely fastened, and
  - (iii) spaced at intervals of not more than 1.2 m,
- (c) do not exceed 3.7 m in length, and
- (d) are located so that the span does not exceed 3 m between the fixed supports.

**142(9)** An employer shall ensure that

- (a) swing staging is equipped with a guardrail,
- (b) two or more pieces of swing staging are not joined together, and
- (c) swing staging is lowered to the ground or lashed to the building to which it is attached when employees leave the building.

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**143(1)** An employer shall ensure that the winches used for hoisting and lowering swing staging have a ratchet device, a worm and gear mechanism and a locking key or a similar device for preventing the slipping or free running of the winch drum.

**143(2)** An employer shall ensure that the tools used to operate the release mechanism on the drive units of powered swing staging are kept at all times on the platform and are readily available to an employee.

**144** Where an employee is working on swing staging above another employee, the employee working above shall ensure that the employee below is protected from the hazards of objects falling from the higher level by such means as tying off tools and other unsecured objects on the higher level.

**145** An employer shall ensure that a bosun's chair is adequately suspended from four corners with ropes crossed diagonally beneath the seat or is suspended in an equally stable and strong manner.

## **PART XII EXPLOSIVES**

**146** This Part does not apply to an underground mine.

### **Control of Blasting Operation**

**147(1)** Subject to subsection 148(2), an employer shall ensure that a blasting operation is conducted by a blaster who holds an appropriate certificate of qualification issued under the *Apprenticeship and Occupational Certification Act* for the work involved.

**147(2)** Where more than one blaster is involved in a blasting operation, an employer shall designate one of the blasters to supervise the blasting operation.

93-8

**148(1)** No person other than a blaster with the appropriate certificate of qualification shall conduct or supervise a blasting operation.

**148(2)** Notwithstanding subsection (1), a person who, as of December 31, 1991, has conducted or supervised blasting operations for a period of not less than six months in the open pit mining industry may continue to do such work until June 1, 1993 without holding a certificate of qualification as a blaster issued under the *Apprenticeship and Occupational Certification Act*.

**148(3)** The provisions of this Part that apply to a blaster apply to a person referred to in subsection (2) with the necessary modifications.

93-8

**149(1)** A blaster who conducts a blasting operation or, where there is more than one blaster involved, the blaster who supervises the blasting operation, shall ensure the safety of all persons within and adjacent to the blasting area.

**149(2)** All persons within or adjacent to a blasting area shall comply with the directions or instructions given by the blaster responsible for ensuring the safety of persons within or adjacent to the blasting area.

93-8

**150(1)** A person who is not a blaster or a blaster who does not hold the appropriate certificate of qualification may assist in a blasting operation.

**150(2)** A blaster conducting or supervising a blasting operation shall exercise continuous visual supervision over a person or blaster referred to in subsection (1).

93-8

### **General Safety**

**151** An employer shall ensure that

- (a) only an authorized employee has access to explosives,
- (b) no person carries explosives in clothing,
- (c) no smoking or open flame is permitted
  - (i) within 30 m of any place where an explosive is stored, or
  - (ii) within 15 m of any place where an explosive is being handled, used or transported, and
- (d) primed explosives are not transported, stored or handled inside a vehicle or near any electrical equipment.

**152** Where it is necessary to transport electrical detonators in a vehicle equipped with a radio transmitter, an employer shall ensure that

- (a) the detonators are transported in a resilient rubber-lined or felt-lined closed metal container, electrically bonded to the vehicle,
- (b) the radio transmitter is switched off whenever the box is open, and
- (c) the detonators are transported in their original containers with their leg wires folded and shunted, as shipped by the supplier.

**153(1)** Where explosives are unloaded from a transport vehicle and are to be used the same day, an employer shall ensure that blasting explosives and detonator products are placed at least 50 m apart where possible and are

- (a) under visual observation at all times, or
- (b) locked in separate dayboxes that meet the standards set out in "Magazine Standards for Blasting Explosives and Detonators", revised in 1982 and published by the federal Department of Energy, Mines and Resources.

**153(2)** Where blasting explosives or detonator products are to be stored overnight, an employer shall ensure that they are stored in accordance with the requirements of the *Explosives Act* (Canada).

**154** An employer shall ensure that

- (a) no article or thing liable to ignite spontaneously or likely to cause an explosion or fire is taken into or stored beside a magazine used to keep or store explosives, and
- (b) tools and implements used to open containers of explosives are made only of non-sparking materials.

**155** An employer shall ensure that a blasting machine is inspected at least annually by a competent person and that the blasting machine is maintained in good working condition.

### **Handling**

**156** A blaster shall ensure that

- (a) blasting explosives and detonator products are kept and handled separately until the last practicable moment when the blaster primes the explosive;
- (b) no explosive is primed in any place where explosives are stored;
- (c) primed explosives are not slit or tamped;
- (d) the wrapping is not removed from nitroglycerine-based products;
- (e) only commercially manufactured safety fuse assemblies are used;
- (f) safety fuse assemblies are not less than 1 m in length;
- (g) time expired, deteriorated or damaged explosives are not used;
- (h) where more than one drill hole is fired in any one round using safety fuses, the holes are fired by means of one igniter cord;
- (i) where there is any danger to property or persons from flyrock from a blast, blasting mats of adequate size and strength are used;
- (j) frozen explosives are used in accordance with the manufacturer's recommended procedure;
- (k) drill holes are of sufficient size to admit the free insertion to the bottom of the hole of the explosive to be used without ramming, pounding or undue pressure;
- (l) only tamping rods of wood or other non-metallic, non-sparking material are used;
- (m) drill holes are not tied in until the last practicable moment before firing and are fired in a single operation;

(n) no drilling is done in a previously blasted area until the surface to be drilled is exposed and carefully examined for remnants of explosives or holes containing explosives; and

(o) where remnants of explosives or holes containing explosives are found, the explosives are detonated or removed before drilling commences.

93-8

**157** At the approach of an electrical storm and until the electrical storm has passed, a blaster shall ensure that

(a) blasting operations cease,

(b) if an electric means of initiation is being used, lead wires are short-circuited, and

(c) all persons leave the danger area and no one enters the danger area.

93-8

**158(1)** An employer and a blaster shall each ensure that no drilling is done within a distance equal to one and one-half times the depth of the drill hole to any drill hole containing explosives and that notwithstanding the depth of the drill hole, a minimum distance of 6.5 m is maintained at all times.

**158(2)** Where, due to the nature of the ground being drilled, it is necessary to load a drill hole immediately after drilling is complete and subsequently to drill adjacent holes, an employer shall establish a code of practice detailing the procedure to be followed in such a situation to ensure employee safety.

93-8

**159** An employer and a blaster shall each ensure that loaded drill holes are clearly identified and secured and are protected from the passage of machines or equipment over them.

93-8

**160(1)** No person shall conduct or direct any work in a blasting area without the approval of the blaster conducting the blasting operation or, where there is more than one blaster involved, the blaster supervising the blasting operation.

**160(2)** Except for the tools and equipment used by a person who has obtained the approval required under subsection (1), a blaster shall ensure that only tools and equipment necessary to the blasting operation are brought into a blasting area.

93-8

**161** An employer shall ensure that

(a) no person other than a blaster with the appropriate certificate of qualification, a person referred to in subsection 148(2) or a person referred to in subsection 150(1) fires a charge, and

(b) a blaster, a person referred to in subsection 148(2) or a person referred to in subsection 150(1) who fires a charge by lighting a safety fuse is accompanied by another person.

93-8

**162** No person other than a blaster with the appropriate certificate of qualification, a person referred to in subsection 148(2) or a person referred to in subsection 150(1) shall

(a) prime an explosive,

(b) make any connection that leads or will lead from the primed charge to an initiating device,



- (c) connect any delay or sequencing device or program the delay or sequence for the blast, or
  - (d) fire a charge.
- 93-8

#### **Before Firing**

**163** Before firing a charge, a blaster shall ensure that electric detonators are

- (a) tested for continuity with a blasting meter before being used, and
- (b) shunted or short-circuited after being tested until they are connected in circuits.

93-8

**164** Before connecting an electric blasting circuit to the lead wires and before connecting the lead wires to the power source, a blaster shall ensure that the electric blasting circuit is tested with a blasting meter for continuity and resistance as calculated.

93-8

**165** Before making the final connection of lead wires to the power source when using an electric initiation of blasting or before firing when using any other initiation method, a blaster conducting the firing of a charge shall ensure that

- (a) sufficient audible warning is given to all persons in the danger area,
- (b) all persons have moved out of the danger area,
- (c) all roads and approaches to the danger area are guarded in order to prevent anyone from entering, and
- (d) all machines and equipment are clear of the effects of the blast.

93-8

**166(1)** Where an electric initiation of blasting is used, a blaster shall ensure that

- (a) only a blasting machine or a safety switch box referred to in subsection (2) is used, and
- (b) the blasting machine does not exceed the manufacturer's rated capacity.

**166(2)** Where firing of a charge is done from power lines, an employer shall ensure that a safety switch box

- (a) is provided to the blaster and is constructed so that the door may be closed and locked only in the "OFF" position, and
- (b) is kept locked and is not accessible to anyone other than the blaster responsible for firing the charge.

93-8

**167(1)** In this section

"extraneous electricity" means unwanted electrical energy greater than 50 mA that is present at a blasting area and that may enter an electric blasting circuit, and includes stray electrical current, static electricity, radio frequency energy and time-varying electric and magnetic fields.

**167(2)** Where an electric initiation of blasting is used, a blaster shall ensure that electric blasting circuits are kept on the ground, except that bare connections may be elevated to prevent current leakage.

**167(3)** A blaster shall ensure that electric initiation of blasting is not used

(a) where there is a danger from extraneous electricity, or

(b) when blasting within 100 m of electric power lines.

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**168** An employer and a blaster shall each ensure that electric initiation of blasting is not carried out at a distance from any transmitter less than the minimum distances shown in the following tables:

**MINIMUM DISTANCES FROM COMMERCIAL AM BROADCAST TRANSMITTERS (0.535 to 1.705 MHz)**

<b>TRANSMITTER POWER(1) (Watts)</b>	<b>MINIMUM DISTANCE (Metres)</b>
Up to 4,000	245
4,001 - 5,000	275
5,001 - 10,000	395
10,001 - 25,000	610
25,001 - 50,000	885
50,001 - 100,000	1,250

(1) Power delivered to antenna.

**MINIMUM DISTANCES FROM TRANSMITTERS UP TO 50 MHz (excluding Commercial AM Broadcast Transmitters)**

**CALCULATED FOR A SPECIFIC LOOP PICKUP CONFIGURATION**

<b>TRANSMITTER POWER(1) (Watts)</b>	<b>MINIMUM DISTANCE (Metres)</b>
Up to 100	245
101 - 500	520
501 - 1,000	760
1,001 - 5,000	1,680
5,001 - 50,000	5,185
50,001 - 500,000	16,770

(1) Power delivered to antenna.

**MINIMUM DISTANCES FROM MOBILE TRANSMITTERS  
INCLUDING AMATEUR AND CITIZEN'S BAND  
TRANSMISSION FREQUENCY IN MHz**

**VHF**

<b>TRANSMITTER POWER (Watts)</b>	<b>MF 1.6-3.4 (Metres)</b>	<b>HF 28-29.7 (Metres)</b>	<b>35-36 42-44 50-54 (Metres)</b>	<b>VHF 144-148 150.8-161.6 (Metres)</b>	<b>UHF 450-470 (Metres)</b>
0 - 5	10	20	20	6	3
6 - 10	15	30	25	9	6
11 - 30	20	55	45	16	10
31 - 50	25	70	55	21	12
51 - 60	30	75	60	23	13
61 - 100	35	100	80	30	18
101 - 180	50	130	110	40	25
181 - 250	60	150	125	50	30
251 - 350	70	180	150	60	35
351 - 500	85	220	180	70	40
501 - 600	90	240	195	75	45
601 - 1000	125	310	250	95	55
1001 - 1500	135	345	280	110	65
1501 - 10000	380	975	795	305	175

**MINIMUM DISTANCES FROM CITIZEN'S BAND CLASS D TRANSMITTERS (26.96 - 27.41 MHz)**

<b>TYPE</b>	<b>MINIMUM DISTANCE (Metres)</b>
Double Sideband (hand-held) (4 watts max.)	1.5
Double Sideband (vehicle-mounted) (4 watts max.)	20.0
Side Sideband (hand-held) (12 watts peak)	6.0
Side Sideband (vehicle-mounted) (12 watts peak)	34.0

**MINIMUM DISTANCES FROM VHF TV AND FM BROADCASTING TRANSMITTERS**

<b>EFFECTIVE RADIATED POWER (Watts)</b>	<b>CHANNELS 2 to 6 (Metres)</b>	<b>CHANNELS 7 to 13 (Metres)</b>	<b>FM RADIO (Metres)</b>
Up to 1,000	305	185	245
1,001 - 10,000	550	305	430
10,001 - 100,000	980	580	795
100,001 - 325,000	1,315	765	1,040
325,001 - 1,000,000	1,770	915	1,405

**MINIMUM DISTANCES FROM UHF TV TRANSMITTERS**

<b>EFFECTIVE RADIATED POWER (Watts)</b>	<b>MINIMUM DISTANCE (Metres)</b>
-------------------------------------------------	------------------------------------------

Up to 10,000	185
10,001 - 1,000,000	610
1,000,001 - 5,000,000	915
5,000,001 - 100,000,000	1,830

#### MINIMUM DISTANCES FROM MARITIME RADIONAVIGATIONAL RADAR

TYPE OF VESSEL	EFFECTIVE RADIATED POWER (Watts)	MINIMUM DISTANCE (Metres)
Small Pleasure Craft	Up to 500 (1)	10
Harbour/River Craft	501 - 5,000 (1)	15
Large Commercial Ships	5,001 - 50,000 (2)	95

(1) 3 cm (9000 MHz) frequency

(2) 10 cm (3000 MHz) frequency

NOTE: Department of National Defence and Coast Guard operate at a much higher frequency (200,000,000 watts)

93-8; 97-121

#### After Firing

**169(1)** A blaster who fires a charge shall ensure that no person other than the blaster enters a danger area where the charge has been fired until the blaster makes a thorough inspection of the site after the charge has been fired and approves the danger area as safe.

**169(2)** A blaster who fires a charge by an electric means of initiation shall ensure that no person enters a danger area where the charge has been fired until the blaster disconnects the lead wires from the power source, short-circuits the leads and, where applicable, locks the safety switch box.

**169(3)** Notwithstanding subsection (1), a blaster may be accompanied by an assistant when making an inspection under subsection (1).

93-8

#### Misfires

**170(1)** Where a charge has misfired or is suspected of having misfired, the blaster who fired the charge shall remain outside the danger area until

(a) thirty minutes after the last charge was due to explode if a safety fuse was used, and

(b) ten minutes after the last charge was due to explode for all other means of initiation.

**170(2)** On expiration of the time referred to in subsection (1), the blaster who fired the charge shall enter the danger area, make a thorough inspection of the site and approach the misfired or suspected misfired charge to assess the situation or potential hazard.

**170(3)** Where no misfired charge is found, the blaster who fired the charge may approve the danger area as safe and shall cause an all clear signal to be sounded.

**170(4)** Where one or more misfired charges are found, the blaster who fired the charge

- (a) shall readjust the danger area boundary if required,
- (b) shall inform the employer of the situation,
- (c) shall conspicuously mark all misfired charges, and
- (d) notwithstanding subsection 169(1), may allow sufficient personnel to enter the danger area to assist in treating the misfire.

93-8

**171(1)** An employer shall establish a code of practice for the safe handling of misfired charges and shall have the code of practice available for inspection by an officer.

**171(2)** A blaster shall follow the code of practice referred to in subsection (1).

93-8

**172** An employer shall, as far as practicable, ensure that the cause of a misfired charge is established and that corrective action is taken to prevent recurrence.

### **Records**

**173(1)** A blaster who conducts or supervises a blast shall maintain a log book recording the following:

- (a) before the blast:
  - (i) job location;
  - (ii) names of blaster and assistants;
  - (iii) diagram of blasting pattern and sequence of firing;
  - (iv) type and the amount of blasting explosives and detonators;
  - (v) number, depth and placement of charges in each hole;
  - (vi) resistance calculations for each series and circuit when using an electric means of initiation;
  - (vii) precautions taken to control fly rock, air blast and ground vibrations;
  - (viii) placement of persons to guard the danger area; and
  - (ix) reason for any delay in blasting; and
- (b) after the blast:
  - (i) date and time of blast;
  - (ii) weather conditions at time of blast; and
  - (iii) results of post-blast examination for misfires and other dangers.

**173(2)** A blaster shall keep a log book referred to in subsection (1) for three years after the last blast recorded in the log book and shall make the log book available for inspection by an officer.

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**174** A blaster who conducts, supervises or participates in a blasting operation shall keep the certificate of qualification referred to in subsection 147(1) in a safe place at the place of employment and make it available for inspection by an officer.

93-8

**175(1)** An employer shall ensure that an employee in charge of a magazine maintains a log book for the magazine and records the amount of blasting explosives by type, detonators by period, leg wire length and series that are or have been stored in the magazine from the time the magazine was first used or for the three years previous to the date of the most recent entry, whichever is the shorter period.

**175(2)** An employer shall ensure that the log book referred to in subsection (1) is not kept in the magazine and that it is made available for inspection by an officer.

#### **Warning Signs**

**176(1)** Where a blasting operation by an electric means of initiation is about to commence and while it is in progress, an employer shall ensure that signs bearing the words "Blasting Operations - Turn Off Radio Transmitters" and "Opérations de sautage - éteindre les émetteurs radio" in letters of luminous paint not less than 150 mm high on a contrasting background are posted on all roads within 100 m of the blasting area.

**176(2)** An employer shall ensure that signs bearing the words "End of Blasting" and "Fin de sautage" indicate to drivers of vehicles when they are leaving the area referred to in subsection (1).

**176(3)** An employer shall ensure that the signs described in subsections (1) and (2) are removed or covered after each blast is completed.

97-121

#### **Housekeeping**

**177(1)** An employer shall ensure that empty explosives cartons and wrappings are

- (a) collected from the site before blasting, and
- (b) disposed of after the blast is completed.

**177(2)** An employer shall ensure that time-expired, surplus or damaged explosives are destroyed only by a blaster or other qualified person using methods approved by the supplier.

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**178** An employer shall ensure that

- (a) blasting mats are used where there may be a hazard to persons or property from flying debris, and
- (b) loose rocks are scaled off the sides of excavations and removed from the crest after blasting and before any work is resumed.

#### **Code of Practice**

**179(1)** Where black powder is to be used, an employer shall establish a code of practice for the safe use of the black powder.

**179(2)** Where any explosive other than black powder is to be used

- (a) in a confined space,

- (b) underwater,
- (c) for demolition of buildings and other structures,
- (d) for river ice control,
- (e) in theatrical applications where the special effects includes explosives used alone or in conjunction with fireworks,
- (f) for oil well or wild gas well control,
- (g) for seismic operations, or
- (h) for any other unusual use as determined by the Chief Compliance Officer,

an employer shall establish a code of practice for the safe use of the explosive.

2001-33

### **PART XIII**

#### **EXCAVATIONS AND TRENCHES**

**180(1)** Before beginning an excavation or trench, an employer shall ensure that the location of any underground utility line or piping is determined.

**180(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.

**180(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.

**181(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.

**181(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.

**181(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.

**181(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.

2001-33

**182(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.

**182(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.

**182(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.

2001-33

**183(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.

**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.

**184(1)** An employer shall ensure that an excavation or trench in which an employee works is kept reasonably free of water.

**184(2)** Where an employee may be exposed to a hazardous gas or to an oxygen deficient or oxygen rich atmosphere in an excavation or trench, an employer shall ensure that testing is carried out in accordance with section 263 before the employee enters the excavation or trench.

**184(3)** An employer shall ensure that no hazardous substance is stored in an excavation or trench.

**184(4)** An employer shall ensure that precautions are taken to prevent the accumulation of hazardous gases in an excavation or trench and that adequate ventilation is provided in the excavation or trench.

**185** Where an employee is working in an excavation or trench, an employer shall ensure that there is an employee working on the surface who is able to observe the employee working in the excavation or trench.



**186** An employer shall ensure that an operator of powered mobile equipment or a mobile crane does not lower material into an excavation or trench, and no such operator shall lower material into an excavation or trench, unless

- (a) the operator has unrestricted visibility, or
- (b) a signaller is used to direct the movement of the material.

2001-33

**187** An employee shall not move under or stay under any material being lowered into an excavation or trench.

**188(1)** An employer shall ensure that an excavation or trench is adequately illuminated

- (a) when work is being carried out in or near the excavation or trench, and
- (b) by warning lights or reflective materials to prevent inadvertent entry.

**188(2)** An employer shall ensure that an adequate barrier is set up around the excavation or trench so as to protect employees working in the excavation or trench from vehicular traffic.

97-121

#### **PART XIV PITS AND QUARRIES**

**189** In this Part

"pit" means a work or undertaking for the purpose of opening up, proving, removing or extracting any unconsolidated metallic or non-metallic mineral or mineral bearing substance, rock, earth, clay, sand or gravel by means of an open excavation in order to supply it for construction, industrial or manufacturing purposes;

"quarry" means a work or undertaking for the purpose of opening up, proving, removing or extracting consolidated rock by means of an open excavation in order to supply it for construction, industrial or manufacturing purposes and includes an open pit mine.

**190** Where required to do so by the Chief Compliance Officer, an owner of a pit or quarry and an employer shall submit detailed drawings with specifications for the development of the pit or quarry to the Chief Compliance Officer.

**191** An owner of a pit or quarry and an employer shall each ensure that a haulage road in a pit or quarry is designed, constructed and maintained

- (a) to minimize hazards from the slipping or skidding of vehicles,
- (b) to enable vehicles to pass each other safely, and
- (c) so that grades do not exceed the design capacity of vehicles that are used in the pit or quarry.

**192(1)** Where an employee is required to walk from the working level of a pit or quarry to the surface, an employer shall provide a walkway from the working level to the surface for the employee.

**192(2)** Where a walkway under subsection (1) is inclined at more than 20 degrees and less than 50 degrees to the horizontal, an employer shall provide stairways or ladderways.

**192(3)** Where a walkway under subsection (1) is inclined at more than 50 degrees to the horizontal, an employer shall provide ladderways.

**193(1)** An employer shall ensure that material excavated from a pit or quarry is piled at a distance from the edge of the pit or quarry so that the material does not subside into the pit or quarry or cause ground failure.

**193(2)** Where material excavated from a pit or quarry is dumped from a vehicle to a stockpile, an employer shall ensure that precautions are taken to keep the vehicle at a safe distance from the edge of the stockpile.

97-121

**194** An employer shall ensure that unconsolidated overburden

(a) is moved from the edge of a pit or quarry a sufficient distance to prevent the overburden from falling into the pit or quarry,

(b) is at least 7 m from the edge of the pit or quarry, and

(c) is sloped to its natural angle of repose.

**195** An employer shall ensure that utility poles, posts and similar structures are supported or removed if they are within 3 m of a pit that is more than 1.2 m deep.

#### **Work Procedures for Quarries**

**196** Where quarrying activities are initially started or where activities are resumed after a cessation of production of four months or more, the owner of the quarry or the employer shall notify the Chief Compliance Officer of the intention to begin or resume operations in the quarry at least two weeks before the operations are to begin or resume.

**197(1)** An employer shall ensure that an examination of all work faces in a quarry is made at the beginning of each operating shift and the results are recorded by the person in charge of the shift in a daily examination and record book together with a daily recording of all areas worked and of all unusual occurrences or hazardous conditions.

**197(2)** The person in charge of a shift shall read the record in the daily examination and record book made by the person in charge of the previous shift and sign it before assigning work for the shift about to begin.

**197(3)** An employer shall ensure that the daily examination and record book referred to in subsection (1) is available on request to a joint health and safety committee or health and safety representative, if any, and to an officer on request.

**197(4)** An employer shall ensure that no employee works close to a face of a quarry until the face has been examined and declared safe before the start of each shift by the person in charge of the shift.

**198(1)** An employer shall ensure that a quarry 20 m or over in depth is worked in benches that are not more than 20 m high.

**198(2)** Subsection (1) does not apply when the side cast method of stripping is used.

**198(3)** Where the walls of a quarry under 20 m cannot be excavated safely, an employer shall ensure that the quarry is worked in benches.

**199(1)** An employer shall ensure that a berm or ledge in a quarry is constructed of sufficient width to catch and retain rocks that fall from the bench or face above.

**199(2)** An employer shall ensure that loose material that may endanger a person on a lower bench in a quarry is not permitted to accumulate on a berm or ledge in the quarry.

97-121

**200(1)** An employer shall ensure that there is no undercutting of the working face of a quarry except where a tunnelling method is used to remove rock.

**200(2)** Where a tunnelling method is used to remove rock in a quarry and the enclosing ground is not secure, an employer shall ensure that

(a) every tunnel in which work is being carried on or through which persons pass is securely cased, lined, timbered, screened, rockbolted or otherwise made secure, and

(b) no person is allowed to go beyond a cased, lined, timbered, screened, rockbolted or otherwise secured ground.

97-121

**201** Where the wall of the quarry exceeds 37.5 degrees from the horizontal, an employer shall ensure that all adits, declines and tunnel openings collared within the wall are protected against slides or other runs of material and that such protection is established once the distance of the adits, declines and tunnel openings from the collar have reached 20 m.

97-121; 2001-33

#### **Work Procedures for Pits**

**202** Where material in a pit is being removed by means of powered mobile equipment, an employer shall ensure that the working face of the pit is

(a) sloped at its angle of repose, or

(b) benched to limit the vertical height to not more than 1.5 m above the maximum reach of the equipment in use.

**203** Where material in a pit is being removed by means other than powered mobile equipment, an employer shall ensure that the working face of the pit is

(a) sloped at its angle of repose, or

(b) benched to limit the vertical height of the working face to not more than 1.2 m.

**204** An employer shall ensure that undercutting by means of powered mobile equipment at the face of a pit is

(a) restricted to the depth of the bucket of the powered mobile equipment in use, and

(b) permitted only when the approach by the operator of the powered mobile equipment is at a 90 degree angle to the face.

**205** An employer shall ensure that an employee on foot comes no closer to the working face of a pit than 1.3 times the height of the working face unless the working face is sloped at its angle of repose or is benched to limit the vertical height of the working face to not more than 1.2 m.

**206** An owner of a pit and an employer shall each ensure that the top of a pit is adequately marked to indicate the existence of the pit.

2001-33

## **PART XV**

### **MATERIALS HANDLING EQUIPMENT AND PERSONNEL CARRYING EQUIPMENT**

#### **Hoisting Apparatus**

**207(1)** An employer shall ensure that a hoisting apparatus is

- (a) sufficiently strong and stable for the intended lift, and
- (b) equipped with suitable ropes, chains, slings, hooks and other fittings,

so as to ensure the safety of a person who uses the apparatus or works in its vicinity.

**207(2)** An employer shall ensure that hoisting apparatus is designed, installed, erected, checked, examined, inspected, operated and maintained in accordance with the appropriate following CSA standards:

- (a) B167-1964, "General Purpose Electric Overhead Travelling Cranes";
- (b) B167-96, "Safety Standard for Maintenance and Inspection of Overhead Cranes, Gantry Cranes, Monorails, Hoists, and Trolleys";
- (c) C22.2 No. 33-M1984, "Construction and Test of Electric Cranes and Hoists";
- (d) Z248-1975, "Code for Tower Cranes";
- (e) Z150-98, "Safety Code on Mobile Cranes".

**207(3)** Subsection (2) applies with the necessary modifications to a person who owns a hoisting apparatus.

97-121; 98-78; 2001-33

**207.1(1)** This section applies to a mobile crane manufactured before 1995 that, before the commencement of this subsection, has not undergone a complete structural inspection of its telescopic boom in accordance with CSA standard Z150-98, "Safety Code on Mobile Cranes".

**207.1(2)** Notwithstanding the time frame specified in clause 4.3.2.2(d) of CSA standard Z150-98, "Safety Code on Mobile Cranes" for an inspection of a telescopic boom, an employer and an owner of a mobile crane shall each ensure that a mobile crane undergoes a complete structural inspection of its telescopic boom in accordance with CSA standard Z150-98, "Safety Code on Mobile Cranes" in accordance with the following time frame:

- (a) when the boom is disassembled, if it is disassembled before the date specified in paragraph (b) applicable to the year of manufacture of the crane; or
- (b) no later than December 31<sup>st</sup> of the year
  - (i) 2001, if the crane was manufactured before 1970,
  - (ii) 2002, if the crane was manufactured after 1970 and before 1973,
  - (iii) 2003, if the crane was manufactured after 1973 and before 1977,

- (iv) 2004, if the crane was manufactured after 1977 and before 1980,
- (v) 2005, if the crane was manufactured after 1980 and before 1990, and
- (vi) 2006, if the crane was manufactured after 1990 and before 1995.

**207.1(3)** After an inspection under this section, an employer and an owner of a mobile crane shall ensure that subsequent inspections comply with the requirements of CSA standard Z150-98, "Safety Code on Mobile Cranes".

2001-33

**207.2(1)** This section applies to a mobile crane manufactured before 2000 that, before the commencement of this subsection, has not undergone an inspection of its swivel, hook and block assembly and hooknut in accordance with CSA standard Z150-98, "Safety Code on Mobile Cranes".

**207.2(2)** Notwithstanding the time frame specified by clause 4.3.5.2 of CSA standard Z150-98, "Safety Code on Mobile Cranes" for an inspection of a swivel, hook and block assembly and hooknut, an employer and an owner of a mobile crane shall each ensure that a mobile crane undergoes an inspection in accordance with clause 4.3.5.2 of CSA standard Z150-98, "Safety Code on Mobile Cranes" no later than December 31<sup>st</sup> of the year

- (a) 2001, if the crane was manufactured before 1970,
- (b) 2002, if the crane was manufactured after 1970 and before 1980,
- (c) 2003, if the crane was manufactured after 1980 and before 1990, and
- (d) 2004, if the crane was manufactured after 1990 and before 2000.

**207.2(3)** After an inspection under this section, an employer and an owner of a mobile crane shall ensure that subsequent inspections of its swivel, hook and block assembly and hooknut comply with the requirements of CSA standard Z150-98, "Safety Code on Mobile Cranes".

2001-33

**208(1)** Subject to subsection (2), an employer shall obtain a statement of the safe working load of a hoisting apparatus from the manufacturer of the hoisting apparatus.

**208(2)** Where an employer is unable to obtain the statement referred to in subsection (1), the employer shall obtain a statement of the safe working load of the hoisting apparatus from an engineer.

**208(3)** An employer shall ensure that the statement of the safe working load referred to in subsection (1) or (2) is posted legibly on the hoisting apparatus so that the operator of the apparatus is able to see it when operating the apparatus.

**208(4)** An employer shall ensure that an operator of a hoisting apparatus has sufficient information to enable the operator to determine the load that the hoisting apparatus is capable of hoisting safely under any operating condition.

**208(5)** If the boom, counterweight or another part of a hoisting apparatus is modified, extended, altered or repaired so as to affect the safe working load of the hoisting apparatus, an employer shall obtain a statement of the revised safe working load of the hoisting apparatus from an engineer and post it in accordance with subsection (3).

**208(6)** Subsections (1) to (4) do not apply to mobile cranes.

97-121; 2001-33

**209(1)** An employer shall ensure that a hoisting apparatus is not subjected to a load in excess of its safe working load.

**209(2)** An operator of a hoisting apparatus shall not subject the hoisting apparatus to a load in excess of its safe working load.

**210(1)** An employer shall ensure that a hoisting apparatus is maintained in accordance with the manufacturer's specifications.

**210(2)** An employer shall ensure that a competent person thoroughly inspects and tests a hoisting apparatus, including any safety devices,

(a) before it is first put into use, and

(b) after any incident that may have damaged some part of the hoisting apparatus.

**210(3)** An employer shall ensure that a log book recording inspections and repairs to a hoisting apparatus is maintained and made available to an officer on request.

**210(4)** Subsection (3)

(a) applies only to hoisting apparatus with a lifting capacity of 1815 kg or greater, and

(b) does not apply to a mobile crane.

**210(5)** Subsections (1) and (2) apply with the necessary modifications to a person who owns a hoisting apparatus.

2001-33

**210.01(1)** An employer shall ensure that a hoisting apparatus is inspected every twelve months by a competent person to ensure that the apparatus meets the manufacturer's specifications.

**210.01(2)** A person who inspects a hoisting apparatus under this section shall certify in writing that the apparatus meets the manufacturer's specifications.

**210.01(3)** A certificate referred to in subsection (2) shall provide details on the conditions under which the hoisting apparatus was inspected.

**210.01(4)** Subsections (1) and (2) do not apply to a mobile crane.

**210.01(5)** Subsection (1) applies with the necessary modifications to an owner of a hoisting apparatus.

2001-33

**210.1(1)** An employer shall ensure that a person who operates a hoisting apparatus is competent or is under the direct supervision of a competent person.

**210.1(2)** No person shall operate a hoisting apparatus unless the person is competent or is under the direct supervision of a competent person.

98-78

**211(1)** An employer shall ensure that an operator of a hoisting apparatus follows the procedures prescribed in subsection (2).

- 211(2)** An operator of a hoisting apparatus shall
- (a) visually inspect the hoisting apparatus before use to verify that it is in safe working order,
  - (b) where the operator has restricted vision, including restricted vision of electrical utility lines, move a load only on a signal from a signaller designated under section 212,
  - (c) raise a load vertically unless it is necessary to raise a load obliquely,
  - (d) when raising a load obliquely, ensure that the hoisting apparatus is suitable for lifting a load at an oblique angle and that any pendulum effect does not constitute a hazard to persons working in the vicinity,
  - (e) not carry a load over any person,
  - (f) not leave a suspended load unattended if a person may be in the area under the load, and
  - (g) ensure that where a pendulum effect may constitute a hazard to persons working in the vicinity, one or more guide ropes are used to control the load,

2001-33

**212** An employer shall designate a competent employee to be a signaller to direct, by means of visual or auditory signals, the safe movement and operation of a hoisting apparatus by an operator, and shall ensure that the signaller

- (a) is readily identifiable by the operator,
- (b) governs the movement of a load by a well understood distinctive code of signals or another effective communication system,
- (c) obtains the assistance of another signaller if part of the view of the load is obstructed from both the signaller and the operator, and
- (d) verifies that all ropes, chains, slings or other attachments are properly applied to the load and secured to the hooks of the hoisting apparatus and that the area is clear before signalling to move the load.

#### **Mobile Cranes**

- 213(1)** An employer shall ensure that a mobile crane
- (a) has a cab, screen, canopy guard or other adequate protection for the operator of the crane if the operator may be exposed to the hazard of falling material,
  - (b) is equipped with load limit brakes capable of effectively braking the load being lifted,
    - (b.1) has a two-blocking damage prevention mechanism or an audible device that warns the operator of an impending two-block condition,
  - (c) has safety devices and limit switches installed and used as specified by the manufacturer, and
  - (d) has a boom angle indicator clearly visible to the operator.

**213(1.1)** Paragraph (1)(a) does not apply to mobile cranes with controls that are externally mounted outside the cab.

**213(2)** Where a mobile crane is being operated in an area where the swing clearance of any obstruction is less than 600 mm, an employer shall ensure that barriers are installed to prevent a person from entering the area.

97-121; 2001-33

**213.1** An employer shall ensure that a load chart from the manufacturer of a mobile crane is kept with the crane and is accessible to the operator when operating the crane.

2001-33

**213.11** An employer shall ensure that a mobile crane

- (a) is used only for the purposes for which it is designed and equipped,
- (b) is operated by a competent person,
- (c) is equipped with adequate chassis brakes,
- (d) is equipped with a manually operated horn,
- (e) has a rear-view mirror or other means of ensuring that the equipment can be safely manoeuvred back and forth,
- (f) when wheel mounted, is equipped with an audible back-up alarm that operates automatically when the equipment is in reverse and that is clearly audible above the background noise,
- (g) when crawler mounted, is equipped with an audible motion detector that operates automatically when the crane is in motion and that is clearly audible above the background noise,
- (h) is equipped with adequate headlights and tail lights when used after dark or in dimly lit areas,
- (i) has gears and moving parts adequately guarded,
- (j) has controls that cannot be operated from outside the cab unless the controls are designed to be operated from outside the cab,
- (k) has any load on it adequately secured, and
- (l) is provided with a three point contact to access the operator's cab.

2001-33

**213.2(1)** An operator of a mobile crane shall

- (a) ensure that a person does not ride on any part of the crane not designed to carry passengers,
- (b) not set a crane in motion until all air and hydraulic pressures are fully built up to specified operating pressures,
- (c) follow a safe refueling procedure,
- (d) not store containers of gasoline, diesel oil or other flammable substances in the cab,
- (e) not carry loose articles in the cab that would pose a hazard to the safe operation of the crane,  
and
- (f) keep the crane in gear when going downhill.



**213.2(2)** An operator of a mobile crane shall, when leaving the crane unattended,

- (a) secure it against movement,
- (b) set the brake,
- (c) not leave a load suspended,
- (d) engage the swing lock and swing brake,
- (e) leave the controls in neutral,
- (f) disengage the master clutch,
- (g) stop the engine, and
- (h) remove the key.

2001-33

**213.21(1)** An employer shall ensure that a mobile crane is inspected every twelve months by an engineer or a competent person who is supervised by an engineer.

**213.21(2)** An engineer referred to in subsection (1) shall certify in writing that the inspection complies with the requirements of subsection (4) and that the crane is in safe working order.

**213.21(3)** A certification under subsection (2) shall provide details on the conditions under which the mobile crane was inspected.

**213.21(4)** An engineer referred to in subsection (1) shall ensure that the inspection under subsection (1), including a visual weld inspection, is conducted in accordance with the requirements of clause 4.3.5.1 of CSA standard Z150-98, "Safety Code on Mobile Cranes".

**213.21(5)** An employer may accept a certification from an engineer in another jurisdiction with respect to a mobile crane if the crane has been inspected and certified in that jurisdiction in accordance with subsection (2) and the certification would otherwise be valid under this section.

**213.21(6)** An employer shall ensure that a copy of the certification provided under this section is accessible to the operator when in the cab and is available to an officer on request.

**213.21(7)** An employer shall ensure that a mobile crane that

- (a) does not have a certification that meets the requirements of subsection (2), is inspected and certified under this section no later than twelve months after the commencement of this provision, and
- (b) has a certification that meets the requirements of subsection (2), is inspected and certified no later than twelve months after the date of the certification.

2001-33

**213.3** Section 213.1 and subsections 213.21(1), (5), (6) and (7) apply with the necessary modifications to a person who owns a mobile crane.

2001-33

**213.31(1)** An operator of a mobile crane shall visually inspect the mobile crane daily before commencing work with the crane.

**213.31(2)** If more than one operator uses a mobile crane in the course of a day or if the crane is used on more than one shift, each operator shall visually inspect the crane before commencing work with the crane.

**213.31(3)** A visual inspection under this section shall be of all components that have a direct bearing on the safe operation of the crane and whose status may change from day to day with use and shall include, but is not limited to,

- (a) where practicable, all rope reeving, including load lines, jib suspension, boom hoist and mid-point suspension, for compliance with the crane and wire rope manufacturer's specifications,
- (b) all control mechanisms, before operation, for maladjustments or malfunctions interfering with proper operation,
- (c) all control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter,
- (d) all safety devices for malfunction,
- (e) all air, hydraulic, lubricating and cooling systems for deterioration or leakage,
- (f) electrical apparatus for malfunction, signs of excessive deterioration, dirt, icing or moisture accumulation,
- (g) all exposed hydraulic hoses, particularly those that flex during the operation of the crane,
- (h) hooks and latches, for deformation, chemical and heat damage, cracks and wear,
- (i) the hydraulic system for proper oil level,
- (j) swivels for freedom of rotation,
- (k) clutches, brakes and attachments for malfunctions,
- (l) where practicable, outriggers for their ability to retract and extend and to bear the load,
- (m) outrigger boxes for structural damage,
- (n) tires for recommended pressure,
- (o) where practicable, all running ropes for any appreciable loss of original strength as indicated by general corrosion, broken or cut strands and visible broken wires and for distortion of the rope, such as kinking, crushing, unstranding, birdcaging, main-strand displacement or core protrusion,
- (p) where practicable, rotation-resistant ropes and boom-hoist ropes, to ascertain any damage or deterioration, and
- (q) where practicable, all points of rapid deterioration, such as flange points, crossover points and repetitive pickup points on drums.

**213.31(4)** An operator who conducts a visual inspection under this section shall forthwith record the results of the inspection in an operator's log kept for the crane, and shall also record any deficiencies in the crane log.

**213.31(5)** An employer shall ensure that an operator's log is prepared and maintained for each mobile crane so as to provide each operator with the results of previous visual inspections of the crane by an operator, and shall ensure that the log is kept in the cab of the mobile crane.

2001-33

**213.4(1)** An employer shall ensure that a crane log is prepared and maintained for each mobile crane to provide the owner, employer and operator with a complete machine history for the crane.

**213.4(2)** A crane log referred to in subsection (1)

- (a)* shall be designed to provide the information in a logical and chronological sequence,
- (b)* shall show in detail all inspections, tests, maintenance, repairs, revisions and modifications carried out on the crane,
- (c)* shall show the date on which work was performed on the crane, and by whom, together with the total hours of service recorded on the machine up to that time,
- (d)* shall have all entries dated and signed by the person carrying out the work on the crane,
- (e)* shall record in detail all incidents or misadventures, all damage sustained, and subsequent repairs, and
- (f)* shall include details of boom sections designed and manufactured by someone other than the crane's original equipment manufacturer.

2001-33

**213.41(1)** Where an employee is performing maintenance or repairs on a mobile crane that is raised from the ground by means of jacks or hoists, other than outriggers or stabilizers, an employer shall ensure that the mobile crane is adequately blocked.

**213.41(2)** An employer shall ensure that an employee does not work under or go under the raised parts of a mobile crane unless the parts are adequately blocked, or the crane is raised by its outriggers or stabilizers, and no employee shall work under or go under such raised parts unless the parts are adequately blocked, or the crane is raised by means of its outriggers or stabilizers.

2001-33

**213.5(1)** No person shall alter a mobile crane in such a way as to render ineffective a safety device or limit switch installed on the crane.

**213.5(2)** Notwithstanding subsection (1), a person may alter a mobile crane to render ineffective a safety device or limit switch installed on the crane if the alteration is certified in writing by the manufacturer of the device or switch, or an engineer, as affording protection equal to or greater than the protection afforded by the safety device or limit switch.

**213.5(3)** An operator shall not use, and an employer shall not permit to be used, a mobile crane if the crane has been altered so as to render ineffective a safety device or limit switch installed on the crane.

**213.5(4)** Subsection (3) does not apply where the alteration has been certified in writing by the manufacturer of the safety device or limit switch, or an engineer, as affording protection equal to or greater than the protection provided by the safety device or limit switch.

2001-33

**214(1)** An employer shall ensure that a rubber tired mobile crane is equipped with stabilizers and that the operator of the crane has sufficient training and information to be able to determine when stabilizers should be used.

**214(2)** Subsection (1) does not apply if the mobile crane is designed to be used without stabilizers.

**214(3)** When operating a rubber tired mobile crane without using stabilizers, an operator shall work in accordance with the load chart designed for operating without stabilizers.

**214(4)** When operating a rubber tired mobile crane using stabilizers, an operator shall ensure that the stabilizers are extended as required by the manufacturer and placed on pads of sufficient size to prevent movement.

2001-33

**215** Where a mobile crane is moving from one location to another under its own power, an employer shall

(a) ensure that precautions are taken to prevent the boom from swinging, and

(b) where the operator has restricted vision, have a signaller designated under section 212 guide the movement of the crane.

2001-33

#### **Industrial Lift Trucks**

**216(1)** An employer shall ensure that an industrial lift truck

(a) is used only for the purposes for which it was designed,

(b) is operated by a competent employee,

(c) is inspected daily and maintained in good operating condition,

(d) is equipped with adequate brakes,

(e) is equipped with a manually operated horn,

(f) is equipped with adequate head and tail lights when used after dark or in dimly lit areas,

(g) is equipped with an audible back-up alarm that operates automatically when the truck is in reverse gear and that is clearly audible above the background noise at the place of employment, or a flashing light that operates automatically when the truck is in reverse gear and that is clearly visible to persons who may be at risk when the truck backs up,

(h) is equipped with overhead guards that conform to ANSI standard ASME B56.1-1993, "Safety Standard for Low Lift and High Lift Trucks" to protect the operator of the truck from falling material,

(i) has the manufacturer's rated capacity posted in a conspicuous location on the truck,

(j) is not loaded beyond its capacity, and

(k) has any load on it stabilized and, when necessary, secured.

**216(2)** An employer shall ensure that an industrial lift truck is not operated

(a) where propelled by an internal combustion engine, near areas containing explosive dusts or flammable vapours or in buildings where the ventilation is not sufficient to eliminate the hazards from exhaust gases,

(b) in a one-way aisle, unless the width of the aisle equals at least the width of the vehicle or load being carried, whichever is wider, plus 600 mm, or

(c) in a two-way aisle, unless the width of the aisle equals at least twice the width of the vehicle or load, whichever is wider, plus 900 mm.

**216(3)** An employer shall install mirrors or other similar devices at blind intersections where there may be a danger of a collision between an industrial lift truck and another object or a person.

**216(4)** Where a hazard exists from rolling over, an employer shall ensure that an industrial lift truck is equipped with a rollover protective structure that meets the minimum safety requirements of CSA standard B352.0-95, "Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial, and Mining Machines – Part 1: General Requirements" or safety requirements that are certified by an engineer to provide equivalent or better protection.

**216(5)** An employer shall ensure that an industrial lift truck that has been fitted with a rollover protective structure is provided with seat belts or restraining devices that meet the requirements of subsection 221(1).

**216(6)** An operator of an industrial lift truck shall use the seat belts or restraining devices referred to in subsection (5) while the industrial lift truck is in motion.

2001-33

**216.1(1)** No person shall alter an industrial lift truck in such a way as to render ineffective a safety device installed on the truck, except where the alteration has been certified in writing by the manufacturer of the device or an engineer as affording protection equal to or greater than the protection afforded by the original device.

**216.1(2)** An operator shall not use, and an employer shall not permit to be used, an industrial lift truck if the truck has been altered so as to render ineffective a safety device installed on the truck, unless the alteration has been certified in writing by the manufacturer of the device or an engineer as affording protection equal to or greater than the protection provided by the original device.

2001-33

**216.2(1)** An operator of an industrial lift truck shall check for the effectiveness of all safety devices daily before operating the truck.

**216.2(2)** If more than one operator uses an industrial lift truck in the course of a day or if the industrial lift truck is used on more than one shift, each operator shall check for the effectiveness of all safety devices before operating the truck.

2001-33

**217(1)** An operator of an industrial lift truck shall not leave the truck unattended unless the operator

(a) stops the engine,

(b) sets the brakes,

(c) parks on a level surface, and

(d) lowers the hoisting mechanism so that the tips of the forks touch the floor.

**217(2)** An operator shall not operate an industrial lift truck with passengers on the truck unless the truck is designed to accommodate them safely.

### **Powered Mobile Equipment**

**218** Section 219 does not apply to an underground mine.

96-106

**219(1)** An employer shall ensure that powered mobile equipment has a cab, screen, shield, grill, deflector, guard or other adequate protection for the operator if the operator may be exposed to the hazard of flying or intruding objects.

**219(2)** Where a hazard exists to the operator of powered mobile equipment from falling objects, an employer shall ensure that the powered mobile equipment is equipped with a falling objects protective structure adequate for the conditions in which the equipment is being used and that meets the requirements of the appropriate SAE standard listed below or that is certified by an engineer to provide equivalent or better protection:

(a) SAE J167 DEC86, "Overhead Protection for Agricultural Tractors - Test Procedures and Performance";

(b) SAE J231 JAN81, "Minimum Performance Criteria for Falling Object Protective Structures (FOPS)";

(c) SAE J397 APR88, "Deflection Limiting Volume-ROPS/FOPS Laboratory Evaluation";

(d) SAE J1042 JUN93, "Operator Protection for General Purpose Industrial Machines";

(e) SAE J1043 APR85, "Performance Criteria for FOPS on General Purpose Industrial Machines";  
or

(f) SAE J1084 APR80, "Operator Protective Structure Performance Criteria for Certain Forestry Equipment".

2001-33

**220(1)** An employer shall ensure that powered mobile equipment manufactured on or after January 1, 1974 is equipped with a rollover protective structure that meets the minimum safety requirements of CSA standard B352-M1980, "Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial, and Mining Machines".

**220(2)** An employer shall ensure that powered mobile equipment manufactured before January 1, 1974 is equipped with a rollover protective structure that meets the requirements of subsection (1) or the following criteria:

(a) the rollover protective structure and supporting attachments are designed, fabricated and installed in such a manner to support not less than twice the weight of the equipment, based on the ultimate strength of the metal and integrated loading of supporting members with the resultant load applied at the point of impact;

(b) there is a vertical clearance of 1320 mm between the deck and the rollover protective structure at the access openings; and

(c) the rollover protective structure and supporting attachments referred to in paragraph (a) are certified as meeting the requirements of paragraph (a) by the manufacturer of the rollover protective structure, the installing agency or an engineer.

**220(3)** Notwithstanding subsections (1) and (2), the Chief Compliance Officer may give permission in writing for a deviation, under such terms and conditions as he considers advisable, for powered mobile equipment to be used without a rollover protective structure if there is no significant chance of upset and

- (a) the equipment has a frame that is not capable of supporting the stresses introduced by a rollover protective structure during upset,
- (b) the equipment has a low centre of gravity that makes upset unlikely, or
- (c) the installation of a rollover protective structure constitutes an operating hazard in the circumstances in which the equipment is operating.

**220(4)** An employer shall ensure that all modifications or repairs to a rollover protective structure meet the requirements of this section and are certified as meeting such requirements by the modification design agency, the installing agency or an engineer and that such certification is made available to an officer on request.

96-106; 2001-33

**221(1)** An employer shall ensure that powered mobile equipment that has been fitted with a rollover protective structure is provided with

- (a) seat belts for the operator and passengers that comply with or exceed whichever of the following Society of Automotive Engineers' Recommended Practices is appropriate:
  - (i) SAE J386 NOV97, "Operator Restraint Systems for Off-Road Work Machines";
  - (ii) SAE J117 JAN 1970, "Dynamic Test Procedure - Type 1 and Type 2 Seat Belt Assemblies"; or
  - (iii) SAE J800 APR 86, "Motor Vehicle Seat Belt Assembly Installations"; or
- (b) where the wearing of seat belts is impracticable, restraining devices such as shoulder belts, bars, gates, screens or other similar devices designed to prevent the operator and passengers from being thrown outside the rollover protective structure.

**221(2)** An operator of and passengers on powered mobile equipment shall use the seat belts or restraining devices referred to in subsection (1) while the equipment is in motion.

2001-33

**222** An employer shall ensure that welding on a rollover protective structure or a falling objects protective structure is done by a welder who holds at least a Class B welder's certificate of qualification under New Brunswick Regulation 84-174 under the *Boiler and Pressure Vessel Act* or by a welder who is employed by a company certified to CSA standard W47.1-92 (reaffirmed 1998), "Certification of Companies for Fusion Welding of Steel Structures".

2001-33

**223(1)** An employer shall ensure that glazing used as part of an enclosure for a cab, canopy or rollover protective structure on powered mobile equipment

- (a) meets the requirements of SAE standard J674-NOV90, "Safety Glazing Materials - Motor Vehicles", and
- (b) is immediately replaced if it presents a hazard to the operator of the equipment.

**223(2)** Notwithstanding paragraph (1)(a), rigid plastic materials meeting ANSI/SAE standard Z26.1-1996, "American National Standard for Safety Glazing Materials for Glazing Motor Vehicles and Motor Vehicle Equipment Operating on Land Highways – Safety Standard" may be used in all areas on a rollover protective structure, including the front windshield.

2001-33

**224** An employer shall ensure that powered mobile equipment

- (a) is used only for the purposes for which it is designed and equipped,
- (b) is operated by a competent employee,
- (c) is equipped with adequate brakes,
- (d) is equipped with a manually operated horn,
- (e) has a rear view mirror or other means of ensuring that the equipment can be safely backed up,
- (f) is equipped with an audible back-up alarm that operates automatically when the equipment is in reverse and that is clearly audible above the background noise,
- (g) is equipped with adequate headlights and tail lights when used after dark or in dimly lit areas,
- (h) has gears and moving parts adequately guarded,
- (i) has controls that cannot be operated from outside the cab unless the controls are designed to be operated from outside the cab,
- (j) has any load on it adequately secured, and
- (k) is provided with a three point contact to access the operator's cab.

2001-33

**225** Where a skidder or forwarder is used in a logging operation, an employer shall ensure that the skidder or forwarder is provided with a completely enclosed operator's cab that is designed to prevent objects from intruding into the cab and to prevent the operator and any passengers in the cab from being thrown outside the cab.

2001-33

**226** An employer shall designate an employee to give signals to an operator of powered mobile equipment who is backing up the equipment and who is not able to see clearly behind the equipment and the operator shall back up the equipment only on signals from the designated employee.

**227** Where work with powered mobile equipment is carried out in an area where dust may create a hazard to employees because of poor visibility, an employer and a contractor, if any, shall each take such measures with respect to the dust as are sufficient to protect employees from the risk of injury.

2001-33

**228** An operator of powered mobile equipment shall

- (a) ensure that a person does not ride on any part of the equipment not designed to carry passengers,



- (b) not set equipment in motion until all air and hydraulic pressures are fully built up to specified operating pressures,
- (c) when leaving the equipment unattended,
  - (i) park it on level ground,
  - (ii) set the brake,
  - (iii) lower the blades and bucket or safely block them,
  - (iv) disengage the master clutch,
  - (v) stop the engine, and
  - (vi) remove the key,
- (d) follow a safe re-fueling procedure,
- (e) not store containers of gasoline, diesel oil or other flammable substances in the cab,
- (f) not carry loose articles in the cab, and
- (g) keep the equipment in gear when going downhill.

**229(1)** An employer shall ensure that powered mobile equipment

- (a) is maintained in safe working condition,
- (b) has defective parts repaired or replaced before being set in motion,
- (c) has air and hydraulic lines, hoses and components maintained in safe operating condition,
- (d) has wire ropes, drums and sheaves inspected visually on a daily basis by the operator of the equipment and inspected visually and physically by a competent person on a weekly basis, and
- (e) is lubricated only when at rest or as the manufacturer directs.
- (f) Repealed: 2001-33

**229(1.1)** An employer shall ensure that when a tire for powered mobile equipment is installed and inflated on a rim, a safety cage or other restraining device is used for the tire and the rim, and that other appropriate precautionary measures are followed to protect employees from the hazard of the tire exploding.

**229(2)** An employer shall ensure that powered mobile equipment and detachments for powered mobile equipment that are raised from the ground by means of jacks or hoists are adequately blocked.

**229(3)** An employer shall ensure that an employee does not work under or go under the raised parts of any powered mobile equipment unless the parts are adequately blocked and no employee shall work under or go under such raised parts unless the parts are adequately blocked.

**229(4)** Where repair or maintenance work is carried out at the point of articulation on front end loaders or similar powered mobile equipment, an employer shall ensure that lock bars are used to prevent movement of either end of the loader or similar equipment.

**229.1(1)** No person shall alter any powered mobile equipment in such a way as to render ineffective a safety device installed on the equipment.

**229.1(2)** Notwithstanding subsection (1), a person may alter powered mobile equipment so as to render ineffective a safety device installed on the equipment if the alteration is certified in writing by the manufacturer of the safety device or an engineer as affording protection equal to or greater than the protection afforded by the safety device.

**229.1(3)** An operator shall not use, and an employer shall not permit to be used, any powered mobile equipment if the equipment has been altered so as to render ineffective a safety device installed on the equipment.

**229.1(4)** Subsection (3) does not apply where the alteration has been certified in writing by the manufacturer of the safety device or an engineer as affording protection equal to or greater than the protection provided by the safety device.

2001-33

**229.2(1)** An operator of powered mobile equipment shall check for the effectiveness of all safety devices daily before operating the equipment.

**229.2(2)** If more than one operator uses powered mobile equipment in the course of a day or if the powered mobile equipment is used on more than one shift, each operator shall check for the effectiveness of all safety devices before operating the equipment.

2001-33

**230** Where powered mobile equipment is used on a slope or bank which may give way, an employer shall ensure that adequate precautions are taken to stabilize the bank and to distribute the load of the equipment.

**230.1(1)** In this section,

"berm" means a mound or pile of material raised above the surrounding surface.

**230.1(2)** Where powered mobile equipment is used to push material into a body of water, pit, excavation or other cavity, an employer shall ensure that a berm is created between the equipment and the water, pit, excavation or other cavity to indicate to the operator the safe limit to which the powered mobile equipment may advance, and an operator of powered mobile equipment shall not advance the equipment past the berm.

**230.1(3)** Where powered mobile equipment is used to push material into a frozen body of water, an employer and an operator shall each ensure that the ice is broken before any material is pushed into the water.

2001-33

## **Vehicles**

2001-33

**230.2** In sections 230.21 to 230.5,

"vehicle" means every device in, upon or by which any person or property is or may be transported or drawn, but does not include devices moved by human power, devices used exclusively upon water or stationary rails or tracks, powered mobile equipment, hoisting apparatus or industrial lift trucks.

2001-33

**230.21(1)** An employer shall ensure that a vehicle with a capacity of one tonne or more that is operated off-highway

- (a) is used only for the purposes for which it is designed and equipped,
- (b) is operated by a competent employee,
- (c) is equipped with adequate brakes,
- (d) is equipped with a manually operated horn,
- (e) has a rear-view mirror or other means of ensuring that the equipment can be safely backed up,
- (f) is equipped with an audible back-up alarm that operates automatically when the equipment is in reverse and that is clearly audible above the background noise,
- (g) is equipped with adequate headlights and tail lights when used after dark or in dimly lit areas,
- (h) has gears and moving parts adequately guarded,
- (i) has controls that cannot be operated from outside the cab unless the controls are designed to be operated from outside the cab,
- (j) has any load on it adequately secured, and
- (k) is provided with a three point contact to access the operator's cab.

**230.21(2)** An employer shall ensure that a vehicle with a capacity of one tonne or more that is operated off-highway

- (a) is maintained in safe working condition,
- (b) has defective parts repaired or replaced before being set in motion,
- (c) has air and hydraulic lines, hoses and components maintained in safe operating condition, and
- (d) is lubricated only when at rest or as the manufacturer directs.

2001-33

**230.3(1)** An employer shall ensure that when a tire for a vehicle is installed and inflated on a rim, a safety cage or other restraining device is used for the tire and the rim, and that other appropriate precautionary measures are followed to protect employees from the hazard of the tire exploding.

**230.3(2)** An employer shall ensure that a vehicle that is raised from the ground by means of jacks or hoists is adequately blocked.

**230.3(3)** An employer shall ensure that an employee does not work under or go under the raised parts of any vehicle unless the parts are adequately blocked, and no employee shall work under or go under such raised parts unless the parts are adequately blocked.

2001-33

**230.31(1)** An employer shall designate an employee to give signals to an operator of a vehicle who is backing up the vehicle and who is not able to see clearly behind the vehicle, and the operator shall back up the vehicle only on signals from the designated employee.

**230.31(2)** Where a vehicle is operated on a slope or bank that may give way, an employer shall ensure that adequate precautions are taken to stabilize the bank and to distribute the load of the vehicle.

**230.31(3)** Where a vehicle is operated in an area where dust may create a hazard to employees because of poor visibility, an employer and a contractor, if any, shall each take such measures with respect to the dust as are sufficient to protect employees from the risk of injury.

2001-33

**230.4(1)** An operator of a vehicle shall

(a) ensure that a person does not ride on any part of the vehicle not designed to carry passengers, and

(b) not store containers of gasoline, diesel oil or other flammable substances in the cab.

**230.4(2)** An operator of a vehicle shall, when leaving the vehicle unattended, park it on level ground and set the brake.

2001-33

**230.41(1)** No person shall alter a vehicle in such a way as to render ineffective a safety device installed on the vehicle.

**230.41(2)** Notwithstanding subsection (1), a person may alter a vehicle so as to render ineffective a safety device installed on the vehicle if the alteration is certified in writing by the manufacturer of the safety device or an engineer as affording protection equal to or greater than the protection afforded by the safety device.

**230.41(3)** An operator shall not use, and an employer shall not permit to be used, a vehicle if the vehicle has been altered so as to render ineffective a safety device installed on the vehicle.

**230.41(4)** Subsection (3) does not apply where the alteration has been certified in writing by the manufacturer of the safety device or an engineer as affording protection equal to or greater than the protection provided by the safety device.

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**230.5(1)** An operator of a vehicle shall check daily for the effectiveness of all safety devices before operating the vehicle.

**230.5(2)** If more than one operator uses a vehicle in the course of a day or if the vehicle is used on more than one shift, each operator shall check for the effectiveness of all safety devices before operating the vehicle.

2001-33

### **Personnel Carrying Equipment**

**231(1)** In this section

"personnel carrying device" means a cage, basket or similar structure suspended from a hoisting apparatus and designed to transport persons.

**231(2)** An employer and an operator of a hoisting apparatus shall each ensure that an employee is not lifted or moved by the hoisting apparatus unless a personnel carrying device is attached to the hoisting apparatus.

**231(3)** An employer shall ensure that the personnel carrying device referred to in subsection (2) is attached to the hook of the hoisting apparatus and has an auxiliary fastening device attached directly to the hoist line of a single part line or to the sheave block of a multi-part line if the sheave block has a safe place to attach the auxiliary fastening device.

**231(4)** An employer shall ensure that the hoisting apparatus, the personnel carrying device, the primary connection and the auxiliary fastening device are certified in writing by an engineer as being capable of safely lifting or moving any load likely to be imposed on them.

**231(5)** An employee occupying a personnel carrying device referred to in subsection (2) shall use an individual fall-arresting system that is securely anchored to the personnel carrying device.

2001-33

**232(1)** An aerial device shall

(a) conform with CSA standard CAN/CSA-C225-M88, "Vehicle-Mounted Aerial Devices", or

(b) be certified in writing by an engineer as being safe to elevate personnel to a work site above ground level.

**232(2)** Where an employee is required to work from the bucket of an aerial device that is more than 3 m above a safe working level, the employee shall use an individual fall-arresting system that is securely anchored to the upper boom of the aerial device.

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#### **General**

**233(1)** An employer shall ensure that an employee who operates a hoisting apparatus, industrial lift truck, powered mobile equipment or aerial device complies with the appropriate provisions of Part XIX.

**233(2)** An employee who operates a hoisting apparatus, industrial lift truck, powered mobile equipment or aerial device shall comply with the appropriate provisions of Part XIX.

**234(1)** An employer shall ensure that an employee who operates a hoisting apparatus, powered mobile equipment or aerial device equipped with stabilizers complies with the manufacturer's specifications regarding the use of the stabilizers.

**234(2)** An employee who operates a hoisting apparatus, powered mobile equipment or aerial device equipped with stabilizers shall comply with the manufacturer's specifications regarding the use of the stabilizers.

#### **PART XVI**

##### **MECHANICAL SAFETY**

**235(1)** An employer shall ensure that a machine is erected, installed, assembled, started, operated, used, handled, stored, stopped, serviced, tested, cleaned, adjusted, maintained, repaired and dismantled in accordance with the manufacturer's specifications.

**235(2)** An employer shall ensure that the manufacturer's rated capacity or other limitations on the operation of a machine or any part of it, as set out in the manufacturer's specifications or in any relevant specifications certified by an engineer, are not exceeded.

**235(3)** An operator of a machine shall not exceed the manufacturer's rated capacity or other limitations referred to in subsection (2).

**236** An employer shall ensure that a machine is regularly inspected for defects and that a defective machine that may cause injury to an employee is removed from service until repaired.

#### **Starting and Stopping Machines**

**237(1)** An employer shall ensure that the operational controls on a machine are

- (a) located and protected in such a manner as to prevent unintentional activation, and
- (b) suitably identified so as to indicate the nature of each control mechanism.

**237(2)** Where a pedal is used to activate a control device on a machine, an employer shall ensure that the pedal is guarded so that it cannot be struck accidentally and activate the machinery.

**237(3)** An employer shall ensure that each pair of active and idler pulleys on a machine is equipped with a permanent belt shifter that has a mechanical means of preventing the belt from creeping from the idler pulley to the active pulley.

**237(4)** Where there is not a clear view of a machine or parts of it from the control panel or operator's station and moving parts of the machine may endanger an employee when the machine is started, an employer shall ensure that

- (a) an alarm system is installed, and
- (b) the alarm system gives an effective warning before start-up of the machine so that an employee is made aware of the imminent start-up.

**237(5)** An employer shall ensure that an operator of a machine has unimpeded access in the operator's immediate work area to the means of stopping the machine.

**237(6)** An employer shall ensure that a machine not driven by an individual motor or prime mover is equipped with a clutch, idler pulley or other means of quickly disengaging the power source.

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**238** An operator of a machine shall ensure that the start-up, stopping or operation of the machine does not endanger any person.

#### **Lock out**

**239(1)** An employer shall ensure that in addition to the normal control start and stop mechanism, a machine has a means of isolating the energy source to the machine that is

- (a) lockable,
- (b) in a location familiar to all employees, and
- (c) properly identified.

**239(2)** An employer shall provide a safety lock and key to an employee who may have to lock out a machine.

**239(3)** An employer shall establish a written lock out procedure for a machine and ensure that an employee who may have to lock out a machine has been adequately trained to lock out the machine.

**239(4)** Subject to section 240, where a machine is to be cleaned, maintained, adjusted or repaired, an employer shall ensure that no employee works on the machine until

- (a) a competent person puts the machine in a zero energy state,
- (b) each employee who will be working on the machine
  - (i) verifies that all potential energy sources have been made inoperative,
  - (ii) locks out the machine using the safety lock and key provided by the employer, and
  - (iii) puts on the safety lock a tag that does not conduct electricity and that contains
    - (A) words directing persons not to start or operate the machine,
    - (B) the employee's printed name and signature, and
    - (C) the date and time when the tag was put on the machine.

**239(5)** No employee shall clean, maintain, adjust or repair a machine until the employee verifies that paragraphs 4(a) and (b) have been complied with and verifies by testing that the machine is inoperative.

2001-33

**239(6)** No person shall remove a lock out device or tag on a machine except

- (a) the person who installed it, or
- (b) in an emergency or where attempts made to contact the person referred to in paragraph (a) indicate the person is not available, a competent employee designated by the employer.

**240** Where the lock out procedure referred to in section 239 is inappropriate for the cleaning, maintenance, adjustments or repairs to be performed or is inadequate for the protection of an employee, an employer shall

- (a) establish a code of practice in consultation with the joint health and safety committee or health and safety representative, if any, specifying personnel responsibilities, personnel training and details of procedure for the neutralization, clearance, release and start up of the machine, and
- (b) comply with and enforce the code of practice.

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#### **Contact with Machines**

**241(1)** An employer shall ensure that sufficient space is provided around a machine in order to ensure the safety of employees while the machine is being operated or while cleaning, maintenance, adjustments or repairs to the machine are being carried out.

**241(2)** Where an employee or the employee's clothing may come into contact with moving parts of a machine or a moving machine, the employee shall

- (a) wear close fitting clothing,
- (b) confine or cut head and facial hair, and
- (c) not wear jewellery, rings, dangling neckwear or similar items.

#### **Safeguards**

**242(1)** Where an employee may come into contact with moving drive or idler belts, rollers, gears, driveshafts, keyways, pulleys, sprockets, chains, ropes, spindles, drums, counterweights, flywheels, couplings, pinchpoints, cutting edges or other moving parts on a machine that may be hazardous to the employee, an employer shall provide adequate safeguards to prevent such contact.

**242(2)** Subsection (1) does not apply to a machine that is equipped with a device that stops the machine automatically before an employee comes into contact with the parts mentioned in subsection (1).

**242(3)** Where there is a possibility of a failure of a machine that may result in an injury to an employee from a flying object, an employer shall install a safeguard strong enough to contain or deflect any flying object.

**242(4)** No employer or employee shall alter the design of a machine where it has been designed with a safeguard that interlocks with the machinery control so as to prevent the operation of the machine unless the safeguard is in its proper place.

**242(5)** Where an employer has determined that an adequate safeguard for a machine cannot be provided, the employer shall ensure that a physical modification of the machine is carried out or a change in work procedure is put into place to protect employees from being exposed to the hazards associated with the lack of an adequate safeguard.

**243(1)** No person shall remove or render ineffective a safeguard for a machine unless the removal or rendering ineffective is necessary to enable the cleaning, maintenance, adjustment or repair of the machine.

**243(2)** Where a person removes or renders ineffective a safeguard for a machine, the person shall ensure that the safeguard is replaced and is functioning properly before leaving the machine or that the machine is in a zero energy state.

**243(3)** Where a safeguard for a machine is to be removed or rendered ineffective and the machine cannot be directly controlled by the person who removes or renders ineffective the safeguard, the person shall put the machine in a zero energy state and lock out the machine in accordance with section 239 or follow the code of practice in section 240 before removing or rendering ineffective the safeguard.

2001-33

#### **Abrasive Wheels and Grinders**

**244(1)** An employer shall ensure that the maximum number of revolutions per minute

(a) of an abrasive wheel, as recommended for safe use in the manufacturer's specifications, is identified on the wheel, and

(b) of a grinder output shaft is identified on the grinder.

**244(2)** An employer shall ensure that an abrasive wheel is

(a) checked for flaws before installation,

(b) fitted with a protective hood of sufficient strength to contain fragments of ruptured wheels, and

(c) mounted in accordance with the manufacturer's specifications.

**244(3)** An employer shall ensure that a tool rest is mounted on a bench grinder as close as is safely possible to the abrasive wheel.

**244(4)** Before applying any work to an abrasive wheel, an employee shall run the wheel at full operating speed in accordance with the manufacturer's specifications.



**244(5)** An employee shall not

- (a) operate an abrasive wheel at a speed in excess of the speed set out in the manufacturer's specifications,
- (b) do grinding on the side of an abrasive wheel unless the wheel has been designed for that purpose, or
- (c) adjust a tool rest while the abrasive wheel is in motion.

### **Cutting or Shaping Machines**

**245(1)** In this section

"push block" means a block of wood with a handle similar to that of a hand plane and with a shoulder at the rear, that is used to feed material into a machine and is of sufficient length to protect an employee from coming into contact with the machine;

"push stick" means a narrow strip of wood or other soft material with a notch cut into one end that is used to feed material into a machine and is of sufficient length to protect an employee from coming into contact with the machine.

**245(2)** Where there may be a danger of injury to an employee's hand from a cutting or shaping machine, an employer shall provide and the employee shall use a push block, push stick or other adequate protective device.

### **Saws**

**246(1)** An employer shall ensure that stands for lead sawyers in sawmills are protected by shields that are

- (a) at least 1.2 m in height, and
- (b) constructed of iron or steel at least 6 mm thick, wooden planks not less than 50 mm thick or other material of equivalent strength.

**246(2)** An employer shall ensure that wheels on wood-working band saws and the return portion of the blades between the upper and lower wheels are enclosed with guards of sheet metal at least 1 mm thick or other material of equivalent strength.

**246(3)** An employer shall ensure that wheels on sawmill band saws and the return portion of the blades between the upper and lower wheels are enclosed with guards of metal plate at least 3 mm thick or other material of equivalent strength.

**246(4)** An employer shall ensure that a circular saw is provided with a hood guard that covers as much as possible of the exposed part of the saw at least to the depth of the teeth.

### **Tumbler Drums**

**247** An employer shall ensure that the access doors in the guards or enclosures to tumbler drums are, if there is a potential hazard to an employee, fitted with interlocks that will

- (a) prevent the access doors from opening while the drums are rotating, or
- (b) disconnect the power from the driving mechanism causing the drums to stop if the doors are opened.

### **Agitators**

**248** Where the top of an open agitator, beater or paddle tank is less than 1 m above a floor, walkway or work area, an employer shall ensure that guardrails are installed on all exposed sides.

### **Gears and Sprockets**

**249** An employer shall ensure that all gears and chain-drive sprockets

- (a) are completely enclosed, or
- (b) where complete enclosure is not practicable,
  - (i) have band-type guards with flanges extending inward beyond the root of the teeth, and
  - (ii) are enclosed on exposed sides if there is a hazard from exposed spokes.

### **Drive Shafts and Pulleys**

**250(1)** An employer shall ensure that exposed parts of permanently installed horizontal shafting within 2.1 m of a floor, walkway or work area are guarded with

- (a) casings completely enclosing the shafting,
- (b) casings in the form of a trough enclosing either the top and both sides or the bottom and both sides of the shafting as the location requires, or
- (c) railings that are placed not less than 300 mm nor more than 500 mm from any moving part.

**250(2)** An employer shall ensure that exposed parts of permanently installed vertical shafting within 2.1 m of a floor, walkway or work area are enclosed with stationary casings.

**250(3)** An employer shall ensure that the ends of shafts which project more than half the diameter of the shaft are guarded by non-rotating caps or safety sleeves.

**251(1)** An employer shall ensure that an exposed pulley, any part of which is located within 2.1 m of a floor, walkway or work area, is guarded with

- (a) a complete enclosure when the belt or rope is completely exposed, or
- (b) a partial enclosure extending from the bottom to at least the top of the pulley on all unprotected sides when the belt or rope is partially exposed.

**251(2)** An employer shall ensure that a horizontal belt of a pulley or drive shaft that runs over a floor, walkway or work area is guarded the full length of the belt so as to prevent contact with an employee or an object being carried or moved by an employee.

**251(3)** Where the lower run of a horizontal belt of a pulley or drive shaft is 2.1 m or less above a floor, walkway or work area, an employer shall ensure that the guard extends to at least 380 mm above the top run of the belt or to a height of 2.1 m, whichever is the lesser.

**252(1)** An employer shall ensure that an overhead belt guard for a pulley or drive shaft

- (a) is at least  $1\frac{1}{4}$  times as wide as the belt that it protects,
- (b) does not extend more than 150 mm on each side of the belt, and
- (c) is sufficiently strong to contain the belt in the event of breakage.

**252(2)** An employer shall ensure that vertical or inclined belt, rope and link drives for a pulley or drive shaft are enclosed to the upper pulley, sleeve or sprocket guard to a height of at least 2.1 m above a floor, walkway or work area or are guarded with guardrails.

#### **Hoses and Pipes**

**253(1)** An employer shall ensure that a hose or pipe containing a hazardous substance is

- (a) shielded to prevent contact with an employee,
- (b) protected from damage from falling objects and from chafing,
- (c) located so as not to be struck by any material or equipment,
- (d) adequately secured, and
- (e) marked to indicate the direction of the flow of the product or material.

**253(2)** Where a pressure hose is hung in a bight, an employer shall ensure that the weight of the bight is relieved by ropes that are anchored so as to support the weight.

2001-33

**254(1)** Where compressed air is used to clean any surface, an employer shall ensure that

- (a) a blowpipe is installed on the end of the hose,
- (b) a control valve is part of the blowpipe, and
- (c) appropriate protective equipment is worn by an employee using the compressed air.

**254(2)** Where compressed air is used for blowing dust and other substances from clothing worn by an employee, an employer shall ensure that appropriate protective equipment for eyes is used by an employee and

- (a) the compressed air supply is limited to 69 kPa, or
- (b) safety nozzles are used that have the same pressure limiting effect.

#### **Conveyors**

**255(1)** An employer shall ensure that a conveyor is constructed and installed so that

- (a) sufficient clearance is provided between the material transported and any fixed or moving object,
- (b) shearing points between moving and stationary parts are avoided, and
- (c) the conveyor is not able to feed onto a stopped conveyor.

**255(2)** An employer shall ensure that a power driven conveyor to which an employee has access is provided with emergency stop devices at

- (a) loading and unloading stations,
- (b) drive and take up sections, and

(c) other convenient places along the run of the conveyor.

**256(1)** An employer shall ensure that a conveyor installed underground or in any other place where a belt fire of the conveyor may endanger the life of an employee is

(a) made of fire resistive material, or

(b) protected by an adequate automatic fire extinguishing system.

**256(2)** Where it is necessary to maintain a fire separation between parts of a building, an employer shall ensure that a spiral chute conveyor is

(a) enclosed in a shaft made of fire resistive material with doors at each end of the shaft, or

(b) provided with automatic fire doors or draft checks when the chute of the conveyor passes through the parts of the building.

**257** An employer shall ensure that a conveyor that carries a load up an incline is equipped with an anti-rollback device.

**258(1)** Where employee access to an elevated conveyor is necessary, an employer shall ensure that the elevated conveyor has a walkway along its entire length that is not less than 500 mm wide and is equipped with guardrails.

**258(2)** Where an employee is required to cross over a conveyor, an employer shall ensure that adequate crossing facilities are provided.

**259(1)** Where there is danger of injury to an employee from material falling from a conveyor, an employer shall ensure that sheet metal or screen guards are installed under or along side the conveyor if it is not entirely enclosed so as to prevent the material from falling.

**259(2)** Where there may be danger of injury to an employee who is in proximity to a belt conveyor, an employer shall ensure that the conveyor is provided with adequate safeguards extending 1 m from the pulleys and along the sides of the conveyor.

**259(3)** An employer shall ensure that an inclined bucket conveyor is enclosed with a solid safeguard that has one or more glass windows and that is not less than 2.1 m in height extending to the full height of the conveyor.

**259(4)** An employer shall ensure that a screw conveyor is placed in metal troughs fitted with secured covers of not less than 3 mm thick metal plates in removable sections or of other material that provides equivalent protection.

**259(5)** An employer shall ensure that when a screw conveyor is fed from the floor level, adequate safeguards are provided around the opening.

**260(1)** An employer shall ensure that an enclosed or pneumatic conveyor used for carrying combustible or flammable material of an explosive nature is provided with an adequate explosion prevention system or with safety relief vents leading as directly as possible to the outside air and not connecting with any chimney pipe, vent or flue used for any other purpose.

**260(2)** Where non-escape of materials being carried on an enclosed conveyor is essential, an employer shall ensure that safety relief vent outlets on the conveyor are provided with counter-balanced relief valves.

**260(3)** An employer shall ensure that a fan for a pneumatic conveyor is

- (a) made of fire resistive material,
- (b) secured to a substantial support or foundation,
- (c) located, arranged and guarded so as to afford ready and safe access for maintenance, and
- (d) provided with remote controls in addition to normal operating controls.

**260(4)** Where flammable materials are passed through the fan of a pneumatic conveyor, an employer shall ensure that the blades and spiders of the fan are made of non-ferrous material and the casing of the fan is lined with non-ferrous material.

**260(5)** An employer shall ensure that intake openings of fans for a pneumatic conveyor are protected with metal screens or gratings.

**260(6)** Where material is fed by hand into a pneumatic conveyor 300 mm in width or larger, an employer shall ensure that precautions are taken to prevent an employee from being drawn into the opening.

**261(1)** An employee shall not

- (a) stand on the supporting frame of a conveyor while loading or unloading the conveyor or when clearing blockages on the conveyor unless the conveyor is stopped and locked out, or
- (b) ride on a conveyor.

**261(2)** An employee shall remove heavy or bulky articles by hand from a moving conveyor at designated stations only.

## **PART XVII CONFINED SPACE**

**262** In this Part

"confined space" means an enclosed or partially enclosed space not designed or intended for continuous human occupancy with restricted access or egress and which is or may become hazardous to a person entering it because of its design, construction, location, atmosphere or the materials or substances in it or other conditions, but does not include a development heading in an underground mine;

"physical agent" means an energy or influence, such as noise, heat, cold or radiation that may affect the body or a part of the body or a function of the body.

**262.1** This Part does not apply to a firefighter engaged in structural fire-fighting or rescue.

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**263(1)** Where an employee is about to enter into a confined space, an employer shall appoint a competent person to verify by tests that

- (a) the concentration of airborne chemical agents or airborne dust in the confined space is not hazardous to the health or safety of the employee,
- (b) the concentration of an airborne chemical agent or mixture of chemical agents or airborne dust in the confined space does not exceed 50% of its lower explosive limit,
- (c) the level of physical agents in the confined space is not hazardous to the health or safety of the employee,

(d) the percentage of oxygen in the atmosphere in the confined space is not less than 19.5% by volume and not more than 23% by volume,

(e) the concentration, level or percentage referred to in paragraphs (a) to (d) is able to be maintained during the period of proposed occupancy of the confined space by the employee,

(f) any liquid in which the employee may drown or any free flowing solid in which the employee may become entrapped has been removed from the confined space,

(g) the entry of any liquid, free flowing solid or any hazardous substance into the confined space in a quantity that could endanger the health or safety of the employee has been prevented by a secure means of disconnection or the fitting of blank flanges,

(h) all electrical equipment and machines that present a hazard to an employee entering into, exiting from or occupying the confined space have been locked out, with the machines being put in a zero energy state and locked out in accordance with sections 239 and 240, and

(i) the opening for entry into and exit from the confined space is sufficient to allow safe passage of an employee who is using protective equipment or emergency equipment.

**263(2)** The competent person referred to in subsection (1) shall, when performing the tests required under paragraphs (1)(a) to (d), use appropriate and properly calibrated instruments that have been functionally tested.

**263(3)** The competent person referred to in subsection (1) shall in a written report

(a) set out

(i) the results of the tests made under subsection (1), and

(ii) an evaluation of the hazards of the confined space,

(b) set out the procedures to be followed by an employee entering into, exiting from or occupying the confined space,

(c) identify the protective equipment that is to be used by every employee entering the confined space,

(d) set out the emergency procedures to be followed in the event of an accident or other emergency in or near the confined space, including immediate evacuation of the confined space when an alarm is activated or there is any significant change in the concentration, level or percentage referred to in subsection (1), and

(e) identify the protective equipment and emergency equipment to be used by an employee who undertakes rescue operations in the event of an accident or other emergency.

**263(4)** An employer shall provide to each employee entering the confined space the protective equipment referred to in paragraph (3)(c) and to each employee who may undertake rescue operations the protective equipment and emergency equipment referred to in paragraph (3)(e).

**263(5)** An employer shall ensure that the written report referred to in subsection (3) and any procedures set out in the report are explained to an employee who is about to enter into the confined space or who may undertake a rescue operation in the confined space and the employee shall read the report and acknowledge that the report and the procedures were explained to the employee by signing a dated copy of the report.

**263(6)** An employer shall ensure that an employee who is about to enter into the confined space is instructed and trained in the procedures referred to in subsection (3) and in the use of the protective equipment referred to in paragraph (3)(c) and that an employee who may undertake rescue operations is instructed and trained in the procedures referred to in subsection (3) and in the use of the protective equipment and emergency equipment referred to in paragraph (3)(e).

**263(7)** Every employee who enters into, exits from or occupies the confined space shall follow the procedures referred to in subsection (3) and use the protective equipment and emergency equipment referred to in subsection (3) as required.

**264(1)** Where the tests referred to in subsection 263(1) indicate that paragraphs 263(1)(a) to (d) cannot be complied with, an employer shall, where practicable, purge the confined space to eliminate the hazards referred to in paragraphs 263(1)(a) to (d) and have the competent person re-conduct the tests required under subsection 263(1).

**264(2)** An employer is not required to purge a confined space more than once.

**265** Where the competent person referred to in subsection 263(1) is unable to ensure that the concentration, level or percentage referred to in paragraphs 263(1)(a) to (d) is able to be maintained or where there is a possibility that a hazard referred to in paragraphs 263(1)(a) to (d) may occur while an employee is in the confined space, the competent person shall ensure that the confined space is continuously monitored for the hazard while the employee is in the confined space.

**266(1)** An employer shall ensure that

- (a) all protective equipment and emergency equipment identified under subsection 263(3)
  - (i) have been inspected by a competent person,
  - (ii) are in good working order, and
  - (iii) are at the entrance to the confined space before an employee enters the confined space;
- (b) a competent employee trained in the procedures referred to in subsection 263(3) is
  - (i) in attendance outside the confined space,
  - (ii) in constant communication with the employee inside the confined space, and
  - (iii) provided with a suitable alarm for summoning assistance;
- (c) the competent employee referred to in paragraph (b)
  - (i) holds a valid standard-level first aid certificate issued by the Canadian Red Cross Society or St. John Ambulance, and
  - (ii) is trained in artificial respiration and cardiopulmonary resuscitation;
- (d) where required under subsection 263(3), every employee entering into, exiting from and occupying the confined space wears a full body harness attached to a life line that is attached to a secure anchor outside the confined space and is controlled by the competent employee referred to in paragraph (b);
- (e) where there is more than one employee in the confined space, steps are taken to ensure that any life lines attached to body harnesses worn by the employees do not become entangled; and

(f) an employee who is trained in the emergency procedures referred to in subsection 263(3) and who is fully informed of the hazards in the confined space is in the immediate vicinity of the confined space to assist in the event of an accident or other emergency.

**266(2)** An employer shall ensure that the full body harness referred to in paragraph (1)(d) meets the requirements for Group E harnesses in CSA standard CAN/CSA-Z259.10-M90, "Full Body Harness".

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**267(1)** An employer shall not permit an employee to enter or remain in a confined space where the concentration of an airborne chemical agent or mixture of chemical agents or airborne dust in the confined space exceeds 50% of the lower explosive limit of the chemical agent or mixture of chemical agents or dust.

**267(2)** Where the concentration of an airborne chemical agent or mixture of chemical agents or airborne dust in a confined space does not exceed 50% of its lower explosive limit, an employer shall ensure that

(a) explosion proof lighting is used, and

(b) the only work performed by the employee in the confined space is that of cleaning or inspecting and is of such a nature that it does not create any source of ignition.

**267(3)** Where the concentration of an airborne chemical agent or mixture of chemical agents or airborne dust in a confined space does not exceed 10% of its lower explosive limit, an employer shall ensure that

(a) explosion proof lighting is used, and

(b) the only work performed in the confined space is cold work using non-sparking equipment.

**268** Where the concentration of airborne chemical agents or mixture of chemical agents or airborne dust in a confined space is hazardous to the health or safety of an employee or where the percentage of oxygen in the confined space is less than 19.5% by volume, an employer shall ensure that an employee who enters the confined space uses appropriate respiratory protective equipment capable of providing at least five minutes reserve of unaided life support beyond the time the employee is expected to be in the confined space.

**269** Where the percentage of oxygen in a confined space is more than 23% by volume and an employee is to enter or work in the confined space, an employer shall ensure that the confined space does not contain any substance specified as flammable and combustible material or as dangerously reactive material in the *Controlled Products Regulations* under the *Hazardous Products Act* (Canada).

**270** An employer shall ensure that electrical equipment taken into a wet or solidly grounded confined space is

(a) battery operated,

(b) double insulated,

(c) bonded to ground, extra low voltage and not exceeding 30 volts and 100 volt-amperes, or

(d) bonded to ground and equipped with a ground fault circuit interrupter of the Class A type, which is tested before each use.



**271(1)** An employer shall ensure that the written report of a competent person required under subsection 263(3) is kept at the place of business of the employer nearest to the place of employment at which the confined space is located for a period of two years from the date on which the competent employee signed the report.

**271(2)** An employer shall make the written report referred to in subsection (1) available to an officer on request.

**272** An employer shall ensure that adequate warning signs and barricades are installed to protect an employee in a confined space if a hazard from any form of traffic exists.

## **PART XVIII**

### **WELDING, CUTTING, BURNING AND SOLDERING**

**273** An employer shall ensure that an employee is protected from the effects of harmful fumes and gases or particles emitted from welding, cutting, burning or soldering operations by

(a) providing a local exhaust system close to the source of the fumes, gases or particles in an indoor welding, cutting, burning or soldering area, and

(b) monitoring the work areas in proximity to the welding, cutting, burning or soldering area to ensure that the level of concentration of air contaminants does not exceed the levels or values referred to in section 24.

**274(1)** An employer and an employee shall each comply with the requirements of CSA standard W117.2-94, "Safety in Welding, Cutting and Allied Processes".

**274(2)** This section does not apply where a firefighter is engaged in a rescue.  
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**274.1** Where the safety of any person depends on the strength of a weld, an employer shall ensure that the weld is done by a welder who

(a) holds at least a Class B welder's certificate of qualification issued in accordance with New Brunswick Regulation 84-174 under the *Boiler and Pressure Vessel Act*, or

(b) is employed by a company certified to CSA standard W47.1-92, "Certification of Companies for Fusion Welding of Steel Structures".

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**275(1)** No employee shall commence a welding, cutting, burning or soldering operation unless the employee has thoroughly inspected the entire area surrounding the area around the operation to ensure that all combustible, flammable or explosive material, dust, gas or vapour has been removed from the area, if possible, or that adequate precautions have been taken to prevent fire or explosion.

**275(2)** An employer shall not permit any welding, cutting, burning or soldering operation until the precautions required by subsection (1) have been carried out.

**275(3)** An employer and an employee shall each ensure that suitable fire extinguishing equipment in good working order is readily available where any welding, cutting, burning or soldering operation or any other allied process using heat application is performed.

### **Clothing Protection**

**276** An employer shall ensure that an employee engaged in a welding, cutting, burning or soldering operation wears, and an employee engaged in such an operation shall wear, appropriate protective equipment except that

(a) the protective gloves required by paragraph 42(a) shall be leather gauntlet type gloves with arm protection, and

(b) the adequate body covering required by paragraph 42(c) shall be flame retardant work clothing and an apron of leather or of other material offering equivalent protection.

**277(1)** An employer shall ensure that an employee working in the area and not engaged in a welding, cutting, burning or soldering operation is protected from harmful radiation by providing adequate screening around the operation or by preventing the employee's entry to the area where the operation is being conducted.

**277(2)** This section does not apply where a firefighter is engaged in a rescue.

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### **Welding on Containers**

**278(1)** Where a container or pipe, or any pipe, valve or fitting connected to the container or pipe, holds or may have held an explosive or flammable substance, an employer shall ensure that the container or pipe and the pipe, valve or fitting connected to the container or pipe are completely drained, cleaned and ventilated in accordance with subsection (2) before any process involving the application of heat is undertaken.

**278(2)** To drain, clean and ventilate as required by subsection (1), an employer shall ensure that

(a) inlet pipes are disconnected and blocked off or moved out of alignment or the inlet valves are locked in the closed position;

(b) where residual liquid remains, it is removed by an employee without going inside the container or pipe;

(c) where steam is available, all openings except the vent pipe and steam inlet are closed and the steam is blown into the container or pipe and any pipe, valve or fitting connected to the container or pipe for a period of time suitable for the conditions and the nature of the explosive or flammable substance, with the lids and manhole plates opened during the last one-fifth time of the steaming period;

(d) where steam is not available, the container or pipe and any pipe, valve or fitting connected to the container or pipe is kept filled with running water for a period of at least twenty-four hours;

(e) after cleaning, the container or pipe and any pipe, valve or fitting connected to the container or pipe is thoroughly ventilated with forced or induced draft air for a minimum period of two hours;

(f) after ventilation, a competent person examines the interior of the container or pipe and any pipe, valve or fitting connected to the container or pipe to see that it is free from residue and tests air samples to ascertain that all explosive or flammable vapours have been removed;

(g) a record is made of the procedures and the tests required by paragraph (f) and is dated and signed by the person taking the tests;

(h) the person who takes the tests required by paragraph (f) certifies that work involving the application of heat can be safely undertaken on the container or pipe and any pipe, valve or fitting connected to the container or pipe; and

(i) where the tests required by paragraph (f) indicate the presence of explosive or flammable substances, the steaming or flooding, ventilating and testing operations are repeated.

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**279(1)** An employer shall ensure that a welding, cutting, burning or soldering operation is not undertaken

(a) on a closed container,

(b) on a container or pipe, or any pipe, valve or fitting connected to the container or pipe, containing any amount of an explosive or flammable substance, or

(c) on a container or pipe filled with exhaust from an internal combustion engine.

**279(2)** An employer shall ensure that equipment and materials to be welded, cut, burned or soldered are free of toxic substances.

### **General**

**280** An employer shall ensure that

(a) tables, jigs or work benches used for support during welding, cutting, burning or soldering operations are made of fire resistive materials, and

(b) all surfaces in welding, cutting, burning or soldering areas are made of non-reflective materials.

**281** Where in a welding, cutting, burning or soldering operation a compressed gas hose or welding cable is placed over a sharp edge or may be struck by falling objects, an employer shall ensure that suitable protection for the hose or cable is provided.

**282(1)** An employer and employee shall each ensure that welding and cutting torches and their fittings and regulators are inspected before use to ensure they are in a safe working condition.

**282(2)** Where inspection reveals a defect in the equipment mentioned in subsection (1), an employer shall ensure that the equipment is repaired by a competent person and that replacement parts or fittings meet the manufacturer's specifications.

**283** An employer and employee shall each ensure that the supply of gas is cut off to any part of the welding, cutting, burning or soldering operation when a leak of the supply of gas being used develops and that work is not resumed until the leak is repaired.

**284(1)** An employee shall ensure that an electric welding machine is moved only by the means provided for that purpose.

**284(2)** An employee shall ensure that an electric welding machine is not pulled by its electric cables.

**284(3)** An employer shall ensure that an electric welding machine is located in a dry area in accordance with CSA standard C22.1-98, "Canadian Electrical Code, Part I".

**284(4)** An employer shall ensure that appropriate fittings are used to fasten the electric supply cable securely so that the inner wires of an electric welding machine are not exposed to damage and the cable cannot be separated from the fittings.

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**285** An employee shall ensure that a welding or cutting torch

- (a) is not left unattended until the gases have been completely shut off, and
- (b) is not hung from a regulator or other equipment so as to come into contact with a cylinder.

**PART XIX**  
**ELECTRICAL SAFETY**

**286** In this Part

"electrical equipment" means any wiring, apparatus, instrument, fitting, fixture, machinery or device that transforms, transmits, distributes, supplies or utilizes electricity, but does not include energized electrical utility lines or utility line equipment or household appliances;

"qualified person" means

- (a) when applied to work on electrical equipment, a person who meets the requirements of section 11 or 24 of New Brunswick Regulation 84-165 under the *Electrical Installation and Inspection Act*;
- (b) when applied to work on an energized electrical utility line or utility line equipment,
  - (i) a person who is the holder of a certificate of qualification issued under the *Apprenticeship and Occupational Certification Act* for the operating lineman trade, construction lineman trade or distribution construction lineman trade, or
  - (ii) a person who is registered as an apprentice under the *Apprenticeship and Occupational Certification Act* for an occupation described in subparagraph (i) and who is working under the supervision of a person described in subparagraph (i),
- (c) when applied to work in an arboricultural operation described in section 369 that occurs closer to an energized electrical utility line or utility line equipment than the distances set out in subsection 289(1), an employee who meets the requirements of section 369, and
- (d) when applied to any other type of work that occurs closer to an energized electrical utility line or utility line equipment than a distance set out in subsection 289(1), an employee who is trained to use and follows a code of practice established by the employer.

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**Qualifications**

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**287(1)** An employer shall ensure that an employee does not work on an energized electrical equipment unless the employee is a qualified person described in paragraph (a) of the definition "qualified person" in section 286.

**287(2)** An employer shall ensure that an employee does not work on an energized electrical utility line or utility line equipment unless the employee is a qualified person described in paragraph (b) of the definition "qualified person" in section 286.

**287(3)** Subject to paragraph 289(2)(b), an employer shall ensure that an employee does not work closer to an energized electrical utility line or utility line equipment than the applicable distance set out in subsection 289(1) unless the employee is a qualified person.

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**Electrical Equipment**

2001-33

**287.1(1)** An employer shall ensure that the entrance to a room containing energized electrical equipment with exposed parts is marked with conspicuous warning signs stating that entry by unauthorized persons is prohibited.

**287.1(2)** An employer shall ensure that no person other than a qualified person enters or is permitted to enter a room or other enclosure containing exposed parts of energized electrical equipment with potential of greater than 30 volts.

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**287.2** An employer shall ensure that electrical equipment and insulating material for electrical equipment is suitable for its use and that it is installed, maintained, modified and operated in accordance with the manufacturer's specifications.

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**287.3(1)** An employer shall ensure that the power supply to electrical equipment is de-energized, locked out of service and tagged before any work is done on the equipment and while the work is done on the equipment.

**287.3(2)** Electrical equipment is not required to be locked out if

(a) the equipment is adequately grounded with a visible grounding wire, or

(b) the voltage is less than 300 volts to ground, there is no locking device for circuit breakers and there is a procedure in place to ensure the circuit is not inadvertently energized.

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**287.4(1)** Where it is not practicable to de-energize electrical equipment before working on or near energized exposed parts of the equipment, an employee shall use rubber gloves, mats, shields and other protective equipment to ensure protection from electrical shocks and burns while performing the work.

**287.4(2)** Subsection (1) does not apply to testing and troubleshooting of electrical equipment.

**287.4(3)** An employer and an employee shall each ensure that only appropriately rated testing equipment is used when testing and troubleshooting electrical equipment.

2001-33

**287.5** An employer shall ensure that main service switches and temporary panel boards of electrical equipment

(a) are securely mounted on sufficient supports on an upright position,

(b) are kept clear of any obstructions for one metre in front and two metres headroom,

(c) are within easy reach of and readily accessible to authorized persons,

(d) are adequately protected from weather and the accumulation of water,

(e) have a suitable cover over uninsulated energized parts, and

(f) have a label or other indicator that identifies what equipment is energized by each line.

2001-33

**287.6** An employer shall ensure that electrical equipment that is not used for the purpose for which it was designed

(a) is de-energized, or

(b) if left in place, is locked out or effectively grounded, and tagged.

2001-33

### **Protective Equipment**

2001-33

**288** An employer shall ensure that an employee does not work on an energized electrical utility line or utility line equipment or closer to an energized electrical utility line or utility line equipment than the applicable distance set out in subsection 289(1) unless the employee uses rubber gloves, shields, insulated objects or other necessary protective equipment.

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### **Utility Lines and Utility Line Equipment**

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**289(1)** An employer shall ensure that an employee who is not a qualified person does not carry out any work, and no such employee shall carry out any work, that is liable to bring any person or object closer to an energized electrical utility line or utility line equipment than the distances specified in the following table:

#### **Phase to Phase Voltage of**

#### **Energized Electrical**

#### **Utility Line or**

#### **Utility Line Equipment**

#### **Distance**

Up to 750 v	900 mm
750 v - 100,000 v	3.6 m
100,001 v - 250,000 v	5.2 m
250,001 v - 345,000 v	6.1 m

**289(2)** Where an employee who is not a qualified person is about to commence work that is liable to bring any person or object closer to an energized electrical utility line or utility line equipment than a distance specified in subsection (1), an employer shall contact the authority owning or operating the energized electrical utility line or utility line equipment and shall ensure that the utility line or utility line equipment

(a) is de-energized, or

(b) is adequately insulated or guarded

before permitting the employee to commence the work.

**290** An employer shall ensure that electrical utility and communication lines and equipment are installed in conformance with CSA standard CAN/CSA-C22.3 No. 1-M87, "Overhead Systems" and CSA standard C22.3 No. 7-94, "Underground Systems" in order to ensure the safety of employees.

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**291** An employer shall ensure that all electrical switching devices

- (a) are accessible to employees, and
- (b) have a minimum of 450 mm clear of any obstruction around and in front of the device.

**292(1)** Before permitting an employee to commence work on any component of an electrical distribution or transmission system, an employer shall establish a code of practice to be followed by the employee which shall include the following:

- (a) the components to be handled in a de-energized state;
- (b) method of de-energizing parts of the electrical distribution system;
- (c) lock out procedure;
- (d) method of de-energizing parts of the electrical distribution or transmission system when the lock out procedure referred to in paragraph (c) cannot be implemented;
- (e) method of recording notifications to employees of safe conditions for work;
- (f) method of determining that all employees are clear of work areas and have been instructed to remain clear before the electrical distribution or transmission system, or any part of it, is re-energized; and
- (g) method of re-energizing the electrical distribution or transmission system.

**292(2)** An employer shall ensure that the code of practice referred to in subsection (1) is complied with and an employee shall comply with the code of practice.

**292(3)** An employer shall make a copy of the code of practice available to an officer upon request.

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**293** An employer shall ensure that a de-energized electrical distribution or transmission system or any part of it is not re-energized until the employer

- (a) determines that all employees are clear of the work areas and have been instructed to remain clear, and
- (b) has authorized the re-energizing of the electrical distribution or transmission system or the part in question.

**294(1)** Where an employee is to set or remove poles, light standards or any similar object between energized electrical distribution conductors exceeding 750 volts, an employer shall ensure that the conductors are

- (a) covered with adequate protective devices, or
- (b) protected by an adequate guard installed on the pole before being lifted.

**294(2)** An employer shall ensure that an employee required to perform the work described in subsection (1)

- (a) wears appropriately rated rubber gloves,

- (b) uses cant hooks or other appropriate controlling devices, and
- (c) does not get on or off the lifting machine or device until the pole is secured in position.

**294(3)** An employer shall ensure that a machine or device used for lifting, setting or removing poles, light standards or any similar object between or within 3 m of an energized electrical utility line or utility equipment

- (a) is grounded, and
- (b) if applicable, has its outriggers extended.

**294(4)** An employer shall ensure that at least one qualified person is present at all times during the operations described in this section and that the employee described in subsection (1) works under the direct supervision of the qualified person.

**295** An employer shall ensure that a wooden utility pole, post or similar structure, except where visual inspection shows there is no doubt regarding sufficient strength, is butt tested to determine its strength and, where necessary, is adequately guyed or supported before an employee climbs or changes the forces on the pole, post or structure.

**296** An employer shall ensure that no employee in a manhole or tunnel works on an energized electrical conductor or with electrical equipment having a potential in excess of 750 volts.

**297** Where an employee may come closer to an energized electrical utility line or utility line equipment than a distance specified in subsection 289(1), an employer shall ensure that the employee does not use, and an employee shall not use a metal ladder or wire reinforced ladder.

**298** Where an employee works on an overhead electrical system where another employee may pass below, an employer shall ensure that a safety procedure is adopted and followed to protect the health and safety of the employee below.

## **PART XX**

### **UNDERWATER DIVING OPERATIONS**

**299** This Part applies to an underwater diving operation.

**300** In this Part

"atmospheric diving system" means a diving system in which the external pressure on the body of the diver using the system is normal atmospheric pressure;

"bail-out system" means an independent breathing-gas supply or breathing mixture carried by a diver that is of sufficient quantity to return the diver to the surface, a diving bell or an emergency breathing-gas supply or breathing mixture in the event of a malfunction of the primary breathing-gas supply or breathing mixture;

"bottom time" means the total elapsed time measured in minutes from the time a descending diver leaves the surface to the time the diver begins final ascent, rounded to the next whole minute;

"compressed air environment" means an environment in which respirable gases are breathed at a pressure above normal atmospheric pressure;

"decompression schedule" means the procedure detailed in an appropriate decompression table to be followed by a diver during ascent from depth in order to minimize the risk of decompression sickness;



"decompression sickness" means an illness caused by the formation of gas bubbles in the blood or body tissues as a result of pressure reduction;

"deep diving" means any mode of diving to a depth greater than 55 m;

"diver" means a person who performs work under water for compensation;

"diving bell" means a surface-tethered structure that can accommodate one or more divers under water;

"diving plant and equipment" means all plant and equipment used in an underwater diving operation that form part of the life-support system of a diver;

"diving supervisor" means a person designated by an employer under section 307;

"dressed-in" means that a diver is fully equipped to dive and is ready to enter the water, with all life-support and communications equipment tested and at hand, but not necessarily with the helmet, face plate or face mask in place;

"hyperbaric chamber" means a pressure vessel with a design pressure of 690 kPa that complies with the requirements of the *Boiler and Pressure Vessel Act* and that is designed for the purpose of subjecting humans to greater than atmospheric pressure, and includes associated equipment;

"lock-out submersible" means a self-propelled submersible compression chamber from which a diving operation can be carried out and that has a separate one-atmosphere chamber from which the submersible compression chamber is piloted;

"mixed gas" means a respirable breathing mixture, other than the normal proportions of respirable air, that provides sufficient oxygen to support life and does not cause detrimental physiological effects such as excessive breathing resistance or impairment of neurological function;

"no decompression limit" means, with respect to a decompression schedule in use for the depth and duration of a dive, that no decompression stop is required during the ascent from depth of a diver;

"open diving bell" means a diving bell designed so as not to be operated with a differential pressure across the hull;

"saturation diving" means a technique of diving in which the decompression schedule used allows a bottom time of unlimited duration;

"SCUBA" means self-contained underwater breathing apparatus with open-circuit compressed air;

"stage" means a cage, basket or platform in which a diver may be lowered to or raised from a work site;

"stand-by diver" means a diver who is dressed-in and who is trained and equipped to operate at the depths and the circumstances in which a submerged diver is operating for the purpose of rendering assistance to the submerged diver in the event of an emergency;

"submersible compression chamber" means a hyperbaric chamber designed for transporting a diver at atmospheric pressure or at an elevated pressure from the surface to an underwater work site and from the underwater work site to the surface;

"surface-supply diving" means a diving technique in which a diver is supplied from the dive location with a breathing mixture by way of an umbilical;

"tender" means a person who tends a diver;

"therapeutic recompression" means treatment of a diver in a compressed air environment in accordance with CSA approved practice or medical direction to treat decompression symptoms and decompression sickness;

"umbilical" means a composite cable or separate cables that extend from the surface to a diver or to the pressure vessel of occupancy of the diver and that provide a breathing mixture, power, heat or communication as may be required;

"underwater diving operation" means work performed underwater for commercial, industrial, construction or environmental purposes and includes the underwater inspection, alteration, repair or maintenance of equipment, machinery, structures or ships and the salvage of sunken property of a commercial or industrial nature.

### **Medical Requirements**

**301(1)** An employer shall ensure that each diver has a current medical certification from a medical practitioner, before commencing an underwater diving operation.

**301(2)** A diver shall, before commencing an underwater diving operation, supply a copy of the diver's current medical certification to the employer.

**301(3)** A diver shall ensure that the diver's medical certification

(a) is established before entering into employment as a diver,

(b) is renewed every two years,

(c) is renewed more frequently than required under paragraph (b) if clinically indicated, and

(d) is re-evaluated by a medical practitioner if the diver is subjected to an event or has a physical condition that may affect the diver's medical status.

**301(4)** An employer shall ensure that a copy of each diver's current medical certification is kept at the dive site.

**301(5)** A diver shall undergo such medical examinations as an employer or diving supervisor may require for the purpose of ensuring the diver is physically fit to dive.

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**302(1)** A diving supervisor shall ensure that a diver does not dive when, in the opinion of the diving supervisor, the diver is not capable of functioning safely and effectively under water.

**302(2)** A diver shall notify the diving supervisor if the diver has reason to believe that the diver is unfit to dive.

**303(1)** A diver shall wear a registered medical alert tag or bracelet to indicate the possibility of decompression sickness or other pressure-related illness for at least twenty-four hours after each dive requiring a decompression stop or where the decompression schedule in use for the depth and duration of a dive has not been followed.

**303(2)** A medical alert tag or bracelet referred to in subsection (1) shall be registered with an agency that has facilities for twenty-four hour reference and shall bear the name and telephone number of the agency.

### **Diver Training**

**304(1)** An employer shall obtain from a diver and retain during the diver's employment, documentary evidence that the diver has successfully completed an appropriate diver training course or has appropriate training and experience with respect to the dive being contemplated.

**304(2)** An employer shall ensure that a diver is certified by the Canadian Red Cross Society or St. John Ambulance in standard first aid and by one of those agencies, the New Brunswick Heart and Stroke Foundation or the YMCA-YWCA in cardiopulmonary resuscitation.

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#### **Diver's Log Book**

**305(1)** A diver shall maintain, and keep for five years after completion, a log book that records all dives carried out, all therapeutic recompressions and other exposures to a compressed air environment and all medical examinations.

**305(2)** A diver shall record the following information for each dive carried out:

- (a) name of employer;
- (b) name of diving supervisor;
- (c) type of diving apparatus used;
- (d) breathing mixture or breathing gas used;
- (e) time left surface;
- (f) bottom time;
- (g) maximum depth attained;
- (h) time left bottom;
- (i) time reached surface;
- (j) surface interval, if a repeat dive was undertaken;
- (k) decompression table used;
- (l) date;
- (m) name of the tender; and
- (n) remarks, if any.

**305(3)** For dives originating from a diving bell or other submerged base, a diver shall record the time of leaving the bell or base, the greatest depth attained, the time of return to the bell or base and the depth of the bell or base in addition to the information required under subsection (2).

**305(4)** A diver shall ensure that in the log book referred to in subsection (1)

- (a) the entry required for each dive is signed by the diving supervisor,
- (b) an entry for therapeutic recompression or other exposure to a compressed air environment is signed by the attending medical practitioner or diving supervisor, and

(c) the entry for a medical examination is supported by a certificate signed by the medical practitioner who performed the examination.

**305(5)** A diver shall keep in the log book either

(a) a certificate confirming the diver's successful completion of an appropriate diver training course, or

(b) a record of the diver's previous relevant training and experience.

#### **Diving Supervisor's Daily Record**

**306(1)** A diving supervisor shall keep a daily record of each dive separate from the diver's log book.

**306(2)** A diving supervisor shall record the information required under subsections 305(2) and (3) in the daily record and shall keep a copy of a diver's current medical certification.

**306(3)** A diving supervisor shall file the daily record with the employer who shall retain the daily record for five years and make it available to an officer on request.

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#### **Planning a Dive**

**307** Unless otherwise provided, an employer shall designate a competent person who meets the qualifications under section 304 and who has a minimum of five years diving experience to supervise an underwater diving operation.

**308** A diving supervisor's duties shall include

(a) planning the dive or dives in detail,

(b) briefing the crew,

(c) ensuring that all necessary equipment is provided and is in good operating condition,

(d) supervising the entire diving operation, and

(e) instructing the crew in emergency procedures.

**309** A diving supervisor shall ensure that a diver

(a) is competent in the use of the diving apparatus to be used, and

(b) understands the signals and procedures to be used.

**310** An employer shall ensure that a plan of an underwater diving operation is discussed and accepted by the diving supervisor, the divers and the employer.

#### **Preparation for a Dive**

**311** Before commencing an underwater diving operation, a diving supervisor shall ensure that all diving plant and equipment is in good operating condition.

**312(1)** Immediately before each dive, a diver shall check for all the required equipment and ensure that the equipment is properly fastened in place and is functioning properly.

**312(2)** Before descent, a diver shall repeat in the water the check required by subsection (1).

**313(1)** An employer and a diving supervisor shall each ensure that when an underwater diving operation is in progress, warning devices such as buoys, diver's flags, lights, lamps or flares are displayed to define the limits to be kept clear of by any equipment other than that connected with the operation.

**313(2)** A diving supervisor shall take precautions to prevent a hazard to a diver from a barge, scow or vessel in or near the diving area.

#### **Diving Hazards**

**314(1)** Immediately before each dive, a diving supervisor shall review the nature of the hazards in the diving area and ensure that each diver fully understands the hazards involved.

**314(2)** A diving supervisor shall declare underwater approaches to an intake or an exhaust a hazardous area for an underwater diving operation.

**314(3)** A diving supervisor shall ensure that a diver

(a) in a hazardous area wears at all times a life line tended from a position outside the hazardous area,

(b) required to approach an underwater intake, exhaust, pipe, tunnel or duct is able to differentiate it from any other similar object in the area, and

(c) does not approach an intake or exhaust until the flow through it is, in the case of an intake, arrested and locked out, or, in the case of an exhaust, slowed down, to the extent it is safe for a diver to work near the intake or exhaust and provisions are made so that the flow will not be re-established until the diver leaves the water or is declared by the diving supervisor to be clear of the hazardous area.

**314(4)** Before a diver approaches an area that may be hazardous because of the operation of a mechanism, a diving supervisor shall ensure that the mechanism is

(a) secured against inadvertent movement before the diver enters the water, and

(b) rendered inoperative and prevented from being activated by isolating the energy source from the mechanism in a manner suitable to the diver and the diving supervisor.

**314(5)** Where exceptional hazards exist or are predicted, an employer and a diving supervisor shall ensure that a second diving crew with independent diving plant and equipment capable of effecting rescue is on the site of the underwater diving operation.

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#### **Use of Explosives**

**315(1)** Where an explosive is used in an underwater diving operation, the provisions of Part XII apply.

**315(2)** A blaster shall control the initiation of all underwater charges.

**315(3)** Before an underwater charge is fired, a diving supervisor shall ensure that

(a) the area is cleared,

(b) all divers are out of the water and at a safe distance from the blast, and

(c) the diving boat is moved to a safe distance from the blast area as determined by the blaster supervising the blasting operation.

**315(4)** Before firing a charge, a blaster shall check with the diving supervisor and obtain the diving supervisor's approval for firing the charge.

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### **Contingency Planning**

**316(1)** This section does not apply to an underwater diving operation using SCUBA.

**316(2)** Before an underwater diving operation begins, an employer shall arrange for a medical practitioner familiar with the medical problems associated with diving to be readily available during the period of the dive and for a twenty-four hour period afterward.

**316(3)** An employer shall arrange for the use of a back-up hyperbaric chamber suitable for the depth of the underwater diving operation being carried out.

**317** An employer and a diving supervisor shall ensure that a stand-by diver is present at all times while an underwater diving operation is in progress.

### **Breathing Mixtures**

**318(1)** This section does not apply to a diver using SCUBA.

**318(2)** A diving supervisor shall ensure that a diver engaged in an underwater diving operation has

(a) a sufficient amount of an appropriate breathing mixture, including a reserve supply two and one-half times greater than that required for the operation,

(b) suitable diving plant and equipment for supplying the breathing mixture to the diver at a proper temperature, pressure and flow rate,

(c) an additional reserve supply of the appropriate breathing mixture sufficient for seventy-two hours duration with necessary diving plant and equipment when a submersible compression chamber is being used, and

(d) an appropriate breathing mixture in the bail-out system carried by the diver.

**318(3)** An employer shall provide and a diving supervisor shall ensure that there is an appropriate breathing mixture in a quantity sufficient for the time needed by a stand-by diver to reach the submerged diver in the event of an emergency and for them to

(a) return to the surface and carry out the appropriate decompression procedures during the return, or

(b) return to a submersible compression chamber and then to surface in the chamber and start the appropriate decompression procedures at the surface.

**318(4)** A diving supervisor shall ensure that a breathing mixture meets the air composition and air purity standards prescribed in clause 3.8 of CSA standard CAN/CSA Z275.2-92, "Occupational Safety Code for Diving Operations".

**318(5)** A diving supervisor shall ensure that

(a) breathing air supplied to a diver meets the requirements of CSA standard CAN3-Z180.1-M85, "Compressed Breathing Air and Systems", and

(b) breathing gas or air is discharged through adequate filters into a tank or receiver of suitable volume.

**318(6)** A diving supervisor shall ensure that when a mixed gas is used, the decompression schedule followed is appropriate for the mixed gas used.

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**319** A diving supervisor and an employer shall ensure that no diver breathes, and no diver shall breathe, pure oxygen while submerged at depths greater than 7.5 m except when following a decompression schedule or for therapeutic purposes.

#### **Decompression**

**320(1)** A diving supervisor shall ensure that underwater diving operations, repetitive dives and treatment of divers are carried out in strict accordance with appropriate decompression schedules and decompression tables.

**320(2)** A diving supervisor shall ensure that a double-lock Class A hyperbaric chamber in operable condition is on site for the exclusive use of divers engaged in an underwater diving operation before the operation begins whenever

- (a) a planned dive exceeds the no decompression limit, or
- (b) the depth of 40 m is exceeded.

**320(3)** A diving supervisor shall ensure that the hyperbaric chamber required by subsection (2) conforms to and is operated in accordance with CSA standard Z275.1-93, "Hyperbaric Facilities".

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**321(1)** When a diver shows any indication of pressure-related illness, a diving supervisor shall ensure that treatment is initiated and the medical practitioner referred to in subsection 316(2) is alerted immediately.

**321(2)** A diving supervisor shall ensure that a diver who has suffered a pressure-related illness does not dive unless approval for further diving is given by a medical practitioner.

**321(3)** A diving supervisor shall ensure that on completion of decompression, a diver remains under observation and in the general area of the hyperbaric chamber for such period of time as the diving supervisor believes is necessary for the diver's welfare.

#### **Diving Equipment**

**322(1)** An employer and a diving supervisor shall ensure that all diving plant and equipment, including breathing apparatus, compressors, compressed gas cylinders, gas control valves, pressure gauges, reserve gas-supply devices, piping, helmets, winches, cables, diving bells, stages and all accessories necessary for the safe conduct of the underwater diving operation, is

- (a) of design meeting the standards of CSA or standards equivalent to those of CSA for the item in question, of sound construction, of adequate strength, free from patent defect and maintained in a condition that will ensure its continuing operating integrity for the purpose and depths for which it was originally designed or subsequently used,
- (b) protected against malfunction at low temperatures that may be caused by ambient air or water or the expansion of gas, and
- (c) used in an unmodified form unless the modification is specifically certified or approved by the manufacturer.

**322(2)** A supplier of diving plant and equipment used in an underwater diving operation shall ensure that

- (a) the diving plant and equipment is examined, tested, overhauled and repaired in accordance with the manufacturer's recommended procedures,
- (b) gauges and metering equipment on diving equipment are checked every six months or whenever a discrepancy is observed, whichever occurs first, and
- (c) defective diving equipment is removed from service until repaired.

**322(3)** An employer and a diving supervisor shall each ensure that defective diving plant and equipment is removed from service until repaired.

**323(1)** A diving supervisor shall ensure that a compressor used to supply compressed air to a diver

- (a) is capable of maintaining a supply of air equal to at least double the volume of air required and at a pressure 25% greater than the maximum pressure in the air tank or receiver,
- (b) operates automatically without undue fluctuation of pressure in the air tank or receiver, and
- (c) has tanks, fixtures and fittings meeting the appropriate requirements of CSA standard B51-97, "Boiler, Pressure Vessel, and Pressure Piping Code".

**323(2)** An employer and a diving supervisor shall each ensure that a compressor referred to in subsection (1) is operated by a competent person.

**323(3)** The competent person referred to in subsection (2) shall ensure that the equipment needed to supply air to the diver is in good working order.

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**324** A diving supervisor shall ensure that there is a second source of power for the diving plant and equipment, in the event of failure of the primary source, capable of

- (a) being rapidly brought on line,
- (b) operating the handling system for the submersible compression chamber,
- (c) heating the diving plant and equipment, including heating for any diver in the water,
- (d) sustaining life-support systems for a submersible compression chamber and any diver in the water,
- (e) illuminating the work site of a diver and the interior of a submersible compression chamber and dive station, and
- (f) operating communication and monitoring systems.

**325** Where oxygen is used in diving plant and equipment, a diving supervisor shall ensure that

- (a) the use of hoses in place of piping to carry or hold oxygen is kept to a minimum,
- (b) hoses and fittings are constructed of material compatible with oxygen at the operating pressure and temperature,



(c) high flow velocities of oxygen through a hose are such that the differential pressure along a hose does not exceed 700 kPa,

(d) quick-opening valves are not used except for emergency shut-off at the point of penetration of a hyperbaric chamber hull, and

(e) portable compressed gas containers containing oxygen are stored, handled and used in accordance with sections 74 to 79.

**326** A diving supervisor shall ensure that a life line used by a diver is

(a) secured at the surface to a safe point of anchorage,

(b) tended at all times by a tender,

(c) secured in a manner that will prevent loss of contact with the diver,

(d) attached to the diver's safety harness, and

(e) of sufficient length without knots or splices.

**327** A diving supervisor shall ensure that a diver wears a diving safety harness complete with lifting ring at all times when diving.

#### **Communication with Diver**

**328(1)** An employer shall provide, and a diving supervisor shall ensure use of, a means of effective two-way communication between a diver and any person in control of the diving plant and equipment.

**328(2)** Where two-way voice communication is required, an employer shall provide

(a) a standard of sound reproduction that enables the diver's breathing to be heard clearly,

(b) a suitable means of voice-unscrambling when the breathing mixture used significantly distorts sound transmission, and

(c) a recording system for voice communication for depths exceeding 55 m.

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**329** A diving supervisor shall ensure that a diver using surface-maintained diving equipment knows and understands the following international hand signals:

(a) from the diver:

(i) 1 pull means "I am all right";

(ii) 2 pulls mean "Lower or give me slack";

(iii) 3 pulls mean "I am coming up" or "Take up slack";

(iv) 4 pulls mean "Haul me up";

(v) 5 pulls mean "Send me a rope";

(vi) 2-1 pulls mean "I understand" or "Answer the intercom"; and

- (vii) 3-2 pulls mean "More air";
- (b) from the tender:
  - (i) 1 pull means "Are you all right?" except when the diver is being either raised or lowered when 1 pull means "Stop";
  - (ii) 2 pulls mean "You have come too far. Go back down until I stop you";
  - (iii) 3 pulls mean "Stand by to come up";
  - (iv) 4 pulls mean "Come up, emergency recall"; and
  - (v) 2-1 pulls mean "I understand" or "Answer the intercom"; and
- (c) emergency signals from the diver:
  - (i) 2 pulls repeated several times indicates that the diver is fouled and a stand-by diver is to be sent down immediately;
  - (ii) 3 pulls repeated several times indicates that the diver is fouled but is able to clear himself if left alone; and
  - (iii) 4 pulls repeated several times indicates a serious emergency and the tender is to haul the diver up to the surface.

#### **Equipment for a Diving Base on the Surface**

**330** A diving supervisor shall ensure that when diving is in progress a diving base on the surface is equipped with

- (a) if SCUBA is being used, one complete spare set of self-contained underwater breathing apparatus with fully charged cylinders to be used for emergency purposes only,
- (b) a shot-line of 19 mm manila or material of equivalent strength, of sufficient length to reach the bottom at the maximum depth of the work site,
- (c) a first-aid kit that meets the requirements of section 12,
- (d) a stretcher and blankets,
- (e) one complete set of decompression tables appropriate for the dive,
- (f) a sufficient quantity of hot beverage for the divers, and
- (g) such other material or equipment as may be specified by an officer.

#### **Transportation through Air-Water Interface**

**331(1)** A diving supervisor shall ensure that diving activities are not carried out from a diving station located more than 5 m above water unless the divers are transported through the air-water interface by a suitable submersible compression chamber, stage or open diving bell.

**331(2)** A diving supervisor shall ensure that a hoisting device used to raise or lower a diver into the water is not used for any other purpose until after the diver is in position.

**331(3)** A diving supervisor shall ensure that a hoisting device used to raise or lower a submersible compression chamber, stage or open diving bell is

- (a) so constructed that a brake is automatically applied when the control lever, handle or switch is not held in the operating position, and
- (b) not fitted with a pawl-and-ratchet gear on which the pawl has to be disengaged before commencing raising or lowering operations.

**331(4)** A diving supervisor shall ensure that a stage required under subsection (1)

- (a) is provided to transport a diver to an underwater worksite where the depths are shallower than 55 m,
- (b) is large enough to carry at least two divers with their diving equipment and associated equipment in uncramped conditions,
- (c) is secure against tipping and spinning,
- (d) does not contain any equipment that might interfere with a diver's foothold or handhold, and
- (e) is so constructed or equipped that the divers are secure against falling out of the stage.

#### **Open Diving Bells**

**332** An employer and a diving supervisor shall each ensure that an open diving bell

- (a) is of sufficient size to accommodate all submerged divers,
- (b) provides adequate emergency breathing mixture for the safe decompression of divers in an emergency,
- (c) contains adequate equipment, protected against inadvertent operation, for supplying the appropriate breathing mixture to persons occupying or working from the chamber,
- (d) is equipped with a voice communication system whereby conversation may be maintained with persons at the diving station, with surface supervisory personnel and with divers outside the chamber,
- (e) contains equipment for lighting,
- (f) contains first-aid equipment that meets the requirements of section 12 and lifting equipment sufficient to enable an unconscious or injured diver to be hoisted into the chamber by a person located in the chamber,
- (g) contains a stretcher and blankets,
- (h) is used in association with lifting gear that enables the chamber to be lowered to the depth at which the diving operations are to be carried out without excessive lateral, vertical or rotational movement taking place,
- (i) is provided with a means whereby in the event of a failure of the main lifting gear, the chamber can be returned to the surface, and
- (j) limits the diver's umbilical to 30 m.

#### **Submersible Compression Chambers**

**333(1)** Where a submersible compression chamber is used, an employer shall ensure that the submersible compression chamber conforms to the requirements of CSA standard Z275.1-93, "Hyperbaric Facilities".

**333(2)** An employer shall ensure that a submersible compression chamber

(a) is equipped to permit the transfer of personnel under pressure into or from the surface hyperbaric chamber,

(b) is of a design that

(i) enables divers to enter and exit without difficulty, and

(ii) allows at least two divers who are equipped and dressed for the diving operation to be seated within,

(c) is equipped with doors and hatches that act as pressure seals and may be opened from either side, and

(d) is equipped with such valves, gauges and other fittings as necessary to control the internal pressure and to indicate clearly the internal and external pressures inside the chamber and at the diving station.

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**334** A diving supervisor shall ensure that no underwater diving operation is conducted from a lock-out submersible unless

(a) the submersible is negatively buoyant on the bottom or positively secured to the underwater work site,

(b) there is a stand-by diver monitoring the operation from the lock-out submersible, and

(c) the diver's umbilical is limited to 30 m.

**335** An employer shall ensure that no underwater diving operation is conducted from a lock-out submersible unless the diving supervisor is on board the submersible and present in the one-atmosphere chamber during all external diving operations.

#### **Atmospheric Diving Systems**

**336(1)** Where an atmospheric diving system is used, a diving supervisor shall locate the nearest back-up atmospheric diving system unit or other unit with sufficient depth capabilities to effect a rescue and shall arrange for its use in the event of an emergency.

**336(2)** A diving supervisor shall ensure that an atmospheric diving system is not used unless the on-board reserve life-support system will sustain life for the period of time that would enable the back-up unit required by subsection (1) to reach the site of the underwater diving operation and conduct rescue operations.

**336(3)** Where an atmospheric diving system is used, an employer and a diving supervisor shall each ensure that a contingency plan is prepared for dealing with

(a) deteriorating weather and ice conditions during a dive,

(b) the inability of surface craft to maintain station,

- (c) the failure of any major component of diving plant and equipment, and
- (d) any other circumstances that may reasonably be anticipated.

#### **Scuba Diving**

**337(1)** An employer shall not employ a diver using SCUBA

- (a) on an underwater construction project,
- (b) where diving in a confined space,
- (c) where underwater power tools are used,
- (d) where water currents, visibility, weather conditions or underwater conditions present hazards to a diver that could be alleviated if the diver were using surface-supplied air,
- (e) where the diving environment is contaminated,
- (f) where there is danger of entrapment, or
- (g) where the depth of the dive may exceed 30 m.

**337(2)** An employer shall ensure that at least three persons are present on each dive site where a diver is using SCUBA, one of whom is the diver, one a stand-by diver and one a competent person.

**337(3)** A diving supervisor is not required to be present at a dive site referred to in subsection (2).

**338(1)** An employer shall ensure that a diver using SCUBA uses the following equipment appropriate to the conditions:

- (a) an open-circuit demand apparatus with quick-release harness, a reserve device or a bail-out system;
- (b) a face mask;
- (c) swimming fins for the feet;
- (d) a snorkel or breathing tube for surface swimming;
- (e) a suitable knife;
- (f) a weight belt with a quick-release closure;
- (g) a submersible pressure gauge;
- (h) an exposure suit or protective clothing appropriate for the conditions of work and the temperature of the water;
- (i) a manually inflatable buoyancy device;
- (j) an underwater watch with elapsed-time indicator; and
- (k) a device for summoning aid from the surface while submerged.

**338(2)** An employer shall ensure that a diver using SCUBA uses

- (a) a life line that meets the requirements of section 326, and
- (b) a means of effective two-way communication so that the diver is able to summon immediate assistance from the surface and the surface crew can effectively recall a submerged diver at any time.

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**339** An employer shall ensure that each SCUBA cylinder is

- (a) hydrostatically tested and stamped at least every five years by an appropriate agency in accordance with CSA standard CAN/CSA Z275.2-92, "Occupational Safety Code for Diving Operations",
- (b) visually inspected internally and externally at least once every year and labelled with a decal affixed securely to the cylinder stating the month and year of inspection by an appropriate agency in accordance with CSA standard CAN/CSA Z275.2-92, "Occupational Safety Code for Diving Operations",
- (c) not filled unless paragraphs (a) and (b) have been complied with,
- (d) when showing visual signs of damage, not filled until it has been tested and inspected in accordance with paragraphs (a) and (b) immediately before being filled,
- (e) not filled unless it is securely blocked, lashed and preferably immersed in a protective tank of water,
- (f) only filled with air meeting the minimum requirements of the CSA standard CAN3-Z180.1-M85, "Compressed Breathing Air and Systems",
- (g) not subjected to temperatures in excess of 55°C,
- (h) equipped with a safety reserve valve or equivalent in the regulator,
- (i) transported in an upright position whenever possible,
- (j) transported with the valves pointing toward the rear of the vehicle, if it cannot be transported upright, and
- (k) securely tied or blocked during transit with the valves protected to prevent shear off.

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**340** Where SCUBA diving operations are carried on during the hours of darkness, an employer shall provide indicator devices such as rescue beacons or strobes for the diver's use.

#### **Surface-Supply Diving**

**341(1)** This section applies to a surface-supply diving operation.

**341(2)** Where the planned depth of a dive does not exceed 30 m, an employer shall ensure that a minimum crew of three is present for each surface-supply diving operation consisting of

- (a) a diver,
- (b) a stand-by diver, and
- (c) a tender.

- 341(3)** A diving supervisor is not required for a dive referred to in subsection (2).
- 341(4)** Where the planned depth of a dive exceeds 30 m, an employer shall ensure that a minimum crew of four is present for each surface-supply diving operation consisting of
- (a) a diver,
  - (b) a stand-by diver,
  - (c) a tender, and
  - (d) a diving supervisor who does not enter the water.
- 341(5)** An employer shall ensure that a stationary air-line used in a surface-supply diving operation
- (a) is properly safeguarded against injury or interference,
  - (b) has a valve fitted in each diver's air-line that is
    - (i) readily accessible,
    - (ii) guarded against interference,
    - (iii) clearly marked to identify the diver whose air supply it controls, and
    - (iv) under the care of a competent person,
  - (c) is fitted with a pressure gauge downstream of the supply valve installed so that the dial figures are in clear and unobstructed view of the tender or diving supervisor, and
  - (d) is of sufficient length to provide for emergency difficulties of the diver.
- 341(6)** Where surface-supplied equipment is designed to be used with a bail-out system, an employer shall ensure that a diver wears the bail-out system.
- 341(7)** An employer shall ensure that non-return valves are fitted to all diving helmets and surface-supplied masks and the non-return valves are checked before the commencement of diving operations in accordance with the supplier's recommendations.
- 341(8)** An employer shall ensure that a diver's umbilical is taped to a life line at 1 m intervals in such a manner that strain due to tension on the life line does not create tension on the umbilical.
- 341(9)** An employer shall ensure that a surface-supplied diver has effective two-way voice communication with the surface.
- 341(10)** An employer shall ensure that when a diver is in the water, a vessel or platform is anchored at or near the diving operation or that there is a diving platform, skip, pier or facility that is seaworthy and of sufficient size to accommodate safely the diving crew and equipment.

### **Deep Diving**

- 342(1)** This section applies to a deep diving operation.
- 342(2)** An employer shall ensure that a minimum crew of five is present for each diving operation consisting of
- (a) a diving supervisor,

(b) two divers, one of whom is a stand-by diver, and,

(c) two tenders.

**342(3)** An employer shall ensure that there are a sufficient number of competent persons to operate

(a) the diving plant and equipment and other facilities while a diver is under, entering or leaving the water, and

(b) any hyperbaric chamber required and its associated equipment.

**342(4)** When more than one deep diving operation in a twenty-four hour period is planned, an employer shall ensure that there are a sufficient number of divers and stand-by divers to ensure that a diver or stand-by diver about to commence a dive has not been exposed to abnormal external pressure on the body for the twelve hour period before the dive.

**342(5)** An employer shall ensure that at least two divers are used when diving from a closed bell, one of whom shall be the stand-by diver and who shall tend the diver from the bell.

**342(6)** An employer shall ensure that a Class A (double-lock) hyperbaric chamber in operable condition is on site for all deep diving operations.

**342(7)** An employer shall ensure that an open diving bell, submersible compression chamber or lock-out submersible is provided and used for the transport of the diver to the underwater work site whenever pressure dives exceed the following limits:

<b>Bottom Time</b>	<b>Depth</b>
60 minutes	55-68 m
40 minutes	69-75 m
30 minutes	76-90 m

**342(8)** A diving supervisor shall ensure that a submersible compression chamber or lock-out submersible capable of mating to a Class A (double-lock type) hyperbaric chamber for the transfer of personnel under pressure is used where the bottom time and depth exceeds the limits given in subsection (7) or the depth is in excess of 90 m.

**342(9)** An employer and a diving supervisor shall each ensure that diving activities are not carried out at water depths greater than 55 m unless

(a) a diver is transported through the air-water interface by a suitable submersible compression chamber, open diving bell or stage,

(b) the stand-by diver referred to in subsection (2) is located at the surface or in the stage,

(c) all divers and stand-by divers are in voice communication with each other and with the attendants at the diving station, and

(d) the attendants at the diving station have a means of monitoring the depth of the diver and the pressures of the breathing medium being supplied to each diver and stand-by diver.

**342(10)** Where bounce or non-saturation diving techniques are used, an employer and a diving supervisor shall each ensure that no diver remains submerged for a total period of time in excess of three hours in a twenty-four hour period and that there is a rest period of at least twelve continuous hours after this limit is reached.



**342(11)** Where saturation diving techniques are used, an employer and a diving supervisor shall each ensure that

(a) where the dive is to a depth of 150 m or less, no diver exceeds four hours in the water and four hours as attendant in the submersible compression chamber,

(b) where the dive is deeper than 150 m, no diver exceeds three hours in the water and three hours as attendant in the submersible compression chamber, and

(c) in any twenty-four hour period, there is a rest period of at least twelve continuous hours after the time limit specified in subsection (a) or (b) is reached.

**342(12)** A diving supervisor shall ensure that no diver commences another dive within fourteen days after completion of decompression after a saturation dive unless with the approval of a medical practitioner.

**342(13)** A diving supervisor shall ensure that a diver

(a) is tethered to the work base by a breathing mixture umbilical,

(b) is provided with effective two-way voice communication, and

(c) is tended by

(i) a tender on the surface,

(ii) a tender in a submersible chamber or stage if one is used in the diving operation, or

(iii) another diver in the water who is connected to the diver and is tended.

**342(14)** Where a submersible compression chamber is used, a diving supervisor shall ensure that at least one diver remains in the chamber to monitor a diver who has left the chamber.

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## **PART XXI**

### **LOGGING AND SILVICULTURE OPERATIONS**

**343** This Part applies to logging and silviculture operations.

**344** An employer shall ensure that

(a) at least one supervisor is present in each work area, and

(b) a procedure is established for responding to an emergency that may occur in a work area and that all employees are informed of such procedure.

**345** An employer shall ensure that each employee is competent with respect to the tools, equipment, machines, devices and materials that the employee is to use.

#### **Protective Equipment**

**346** An employer shall, in addition to complying with the appropriate requirements for protective equipment under Part VII, ensure that an employee who operates a chain saw wears

(a) safety footwear that meets the requirements of CSA standard CAN/CSA-Z195-M92, "Protective Footwear" or a standard offering equivalent protection, has chain saw protection on the top and sides and has non-slip soles, and

(b) leg protection that

(i) is of the appropriate size to protect the knee and leg from the top of the safety footwear to the groin, and

(ii) is made of a minimum of three ply 2108 nylon or a material affording equivalent protection, secured in a manner that allows the leg protection to perform its function.

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**347** An employee shall, in addition to complying with the appropriate requirements for protective equipment under Part VII, wear the protective equipment required in section 346.

#### **Chain Saws, Brush Saws and Clearing Saws**

**348(1)** An owner of a chain saw shall ensure that the chain saw meets the applicable requirements of CSA standard Z62.1-95, "Chain Saws" and CSA standard Z62.3-96 "Chain Saw Kickback".

**348(2)** An owner of a chain saw shall ensure that the chain saw

(a) is used only with a safety chain that is filed according to the manufacturer's specifications,

(b) is equipped with an adequate chain brake, and

(c) is fitted only with component parts specified by the manufacturer.

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**349** An employee who operates a chain saw shall

(a) stop the motor before carrying the saw from one location to another,

(b) stop the motor before adjusting the chain,

(c) adjust the saw according to the manufacturer's specifications so that the chain is stopped while the motor is idling,

(d) immediately remove a defective saw from use until repaired,

(e) start the saw when it is cold by holding it against a solid object below waist level,

(f) not start the saw by pulling on the cord while the other hand engages the throttle mechanism,

(g) hold the saw in both hands while operating it,

(h) not operate the saw above shoulder height,

(i) stand on a solid base when operating the saw, and

(j) not climb on or work under a felled tree.

**350** An employee who operates a brush saw or a clearing saw shall

(a) operate and maintain the saw in accordance with the manufacturer's specifications,

- (b) ensure that the saw is equipped with an adequate blade guard,
- (c) maintain a minimum 10 m distance from any other person while operating the saw,
- (d) regularly inspect the blade and file it when necessary,
- (e) replace the blade at the first sign of cracks or fractures,
- (f) fit the saw only with blades and component parts as specified by the manufacturer,
- (g) use a harness suitable for use with the saw,
- (h) ensure that the harness is well maintained and properly adjusted and that the emergency release on the harness functions properly,
- (i) stop the engine before any manual adjustment, cleaning, clearing of debris or other work is carried out on the blade or blade guard, and
- (j) not start the saw while it is attached to the harness.

**351(1)** An employer shall ensure that an employee who operates a chain saw, brush saw or clearing saw does not work alone.

**351(2)** An employer shall ensure that an employee who operates a chain saw, brush saw or clearing saw has

- (a) a suitable fire extinguisher or a round point shovel readily available,
- (b) suitable first aid supplies readily available, and
- (c) a pressure bandage.

**352** An employee who operates a chain saw, brush saw or clearing saw shall

- (a) not work alone,
- (b) not girdle trees,
- (c) not refuel the saw while the engine is operating,
- (d) move the saw at least 3 m from where it was refuelled before starting the engine,
- (e) refuel only from a non-glass container with spout or funnel,
- (f) not refuel the saw near any source of ignition, and
- (g) carry or keep close at hand the pressure bandage provided by the employer.

#### **Felling Procedures**

**353(1)** Before starting to fell a tree, an employee shall ensure that

- (a) all standing dead trees and other potential hazards are removed from the work area,
- (b) there is a clear path of retreat to safety, and

(c) all other persons have moved at least 40 m from the felling area.

**353(2)** Notwithstanding paragraph (1)(c), in a trail-cut operation, an employee shall ensure that any person assisting the employee has moved a safe distance away from the tree at a 45 degree angle from the direction in which the tree is intended to fall.

**354(1)** In this section

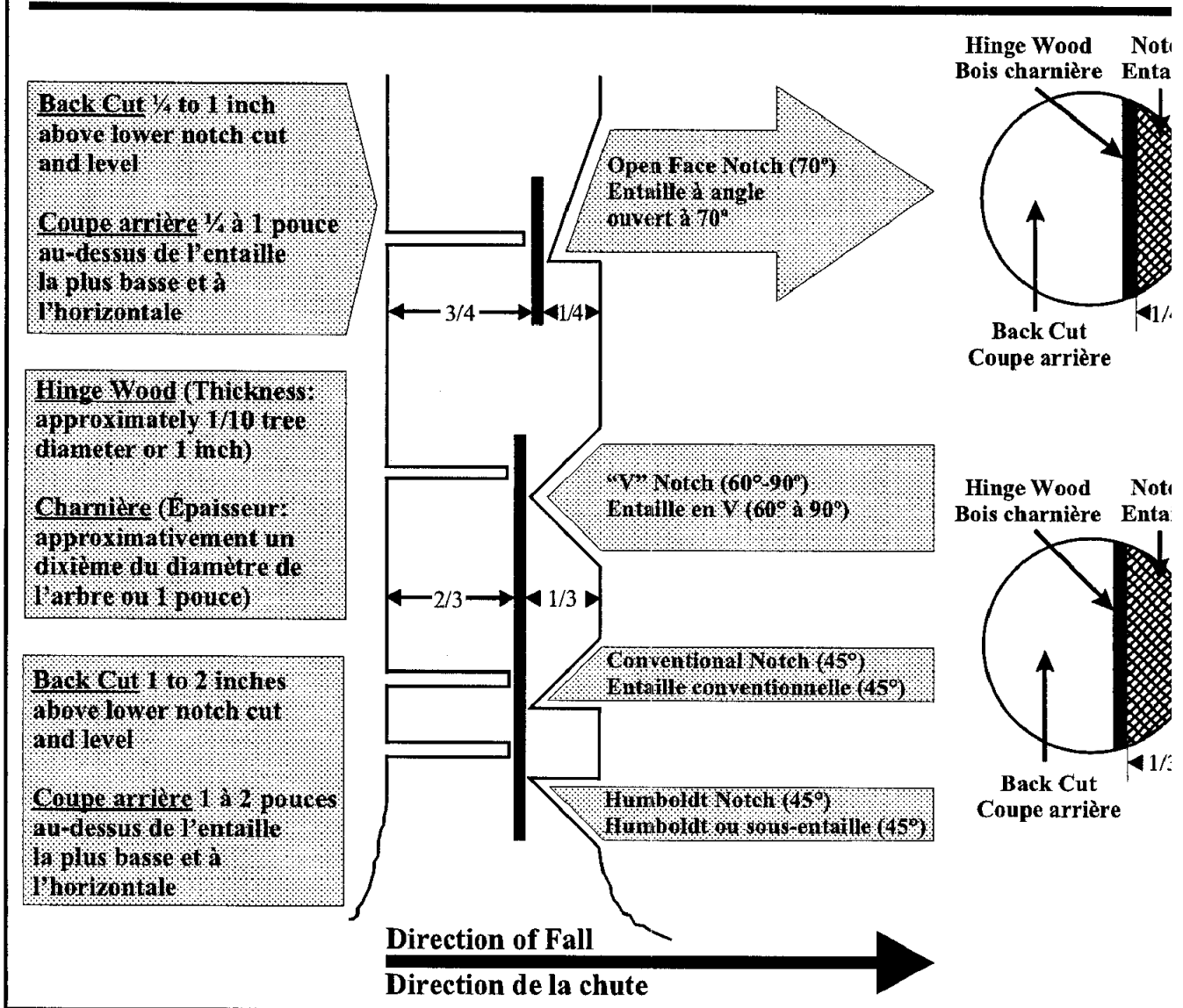
"lodged tree" means a tree that has not fallen to the ground or a bed after being displaced from its natural position;

"spring pole" means a section of tree or bush which is, by virtue of its arrangement in relation to other materials, under compression.

**354(2)** When felling a tree, an employee shall

(a) properly notch and back-cut the tree as illustrated below:

# Proper Notches and Back Cuts Entailles et coupes arrières adéquates



- (b) use a felling lever or wedge as required;
- (c) complete the felling once it has been started; and
- (d) move a safe distance away from the tree at a 45 degree angle from the direction in which the tree is intended to fall.

354(3) Where an employee fells a tree and the tree becomes lodged, the employee shall

(a) stay in the area until the lodged tree is removed or if it is necessary to leave the area to obtain help to remove the tree, clearly mark the area as hazardous, and

(b) ensure that the lodged tree is removed as soon as possible without being climbed by any person, having another tree felled on it or having the supporting tree cut.

**354(4)** An employee shall not cut a spring pole in a manner that will endanger any person.

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### **Delimiting and Bucking**

**355(1)** When delimiting a fallen tree, an employee shall ensure that

(a) the tree to be delimited is resting solidly on the ground,

(b) no person walks on the trunk of the tree while it is being delimited, and

(c) whenever possible, the tree is worked on from the uphill side.

**355(2)** When delimiting a fallen tree using a chain saw, an employee shall ensure that

(a) the tip of the chain saw guidebar is never used for delimiting,

(b) the chain saw is never positioned directly in front of the operator, and

(c) while delimiting or topping, the chain saw is never used with motions towards the employee.

**356(1)** In this section

"bucking" means cutting a tree into lengths after it has been felled and delimited.

**356(2)** When bucking a tree using a chain saw, an employee shall ensure that

(a) both feet are on the ground,

(b) the tree to be bucked is resting solidly on the ground, and

(c) the chain saw is never positioned directly in front of the employee.

### **Safe Operation of Powered Mobile Equipment**

**357(1)** An employer shall ensure that

(a) subject to subsection (2), another employee is within 200 m of an employee operating powered mobile equipment, or

(b) the employee operating the powered mobile equipment is contacted at least every two hours.

**357(2)** An employee other than the employee who is the operator of powered mobile equipment shall not work closer than 50 m from powered mobile equipment while the equipment is being operated, except when assisting an employee operating a skidder.

**357(3)** An employee operating a skidder shall

(a) direct any person assisting the operator to stand clear of any trees or logs after the trees or logs have been attached to the skidder,

- (b) not winch any trees or logs until the person assisting the operator is standing clear and has signalled to the operator that the person is clear,
- (c) operate the winch from the seat unless it is designed to be operated by remote control,
- (d) keep the wheel chains on the skidder properly adjusted, and
- (e) lower the blade and apply the brakes when winching.

### **Hauling Logs**

**358(1)** An employer shall ensure that wire rope used for hauling logs is replaced when signs of wear or damage appear.

**358(2)** Where wire rope is used for hauling logs, an employer shall ensure that cable cutters are readily available.

**359** When hauling logs with a wire rope, an employee shall attach the wire rope no farther than 1 m from the end of the log.

### **Woods Roads**

**360(1)** In this section and sections 361 to 363

"woods road" means any road, other than a municipal road, rural community road or provincial highway, through a forest area that provides access for the harvesting and extraction of raw forest products by means of a motor vehicle.

**360(2)** An employer shall ensure that a woods road

- (a) is provided with wide sections for passing if the road has only one travelling lane,
- (b) has stop signs conspicuously located at intersections,
- (c) has signs warning of dangerous curves and blind or steep hills conspicuously located to allow for ample reaction time, and
- (d) is kept in a safe condition.

**360(3)** An employer shall ensure that a woods road is constructed as close as is practicable to a logging area to allow reasonable access and efficient evacuation in the event of an emergency.

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**361(1)** An employer shall ensure that a bridge on a woods road

- (a) is constructed according to a plan approved by an engineer,
- (b) has the load capacity conspicuously posted 30 m from both ends of the bridge, and
- (c) has a warning sign conspicuously located 90 m from the bridge if the bridge is not visible from that distance.

**361(2)** An employer shall ensure that a bridge or culvert on a woods road

- (a) that is over 1.2 m in height has bumpers at least 250 mm high running the length of the bridge or culvert on both sides,

(b) has a hazard marker located on each corner of the bridge or culvert with the bottom of the marker not less than 1.5 m or more than 2.5 m above the level of the travelled portion of the road, and

(c) has a sign conspicuously located along the side of the road at least 150 m from the bridge or culvert warning of a narrow passage if the width of the bridge or culvert is less than that of the woods road.

**362** An employer shall ensure that a sign or hazard marker used on a woods road is constructed of light reflective material and is of suitable dimensions so as to be clearly visible under normal driving conditions.

**363** An operator of a vehicle shall keep the headlights of the vehicle on while driving on a woods road.

### **Loading Operations**

**364** An employer shall ensure that a truck load of logs is securely fastened before leaving the work area.

**365(1)** An employer shall ensure that an employee does not ride on logs and no employee shall ride on logs that are being on or off loaded or drawn by a moving vehicle.

**365(2)** Where a vehicle is being loaded with logs, an employer shall ensure that an employee does not stand on and no employee shall stand on top of the load.

**365(3)** Where hydraulic loaders are used to load or unload logs, an employer shall ensure that an employee does not work or stand under and no employee shall work or stand under the suspended load.

## **PART XXII**

### **ARBORICULTURAL OPERATIONS**

**366** This Part applies to arboricultural operations.

**367** An employer who provides tree removal or tree maintenance services shall ensure that an employee who removes a tree or provides tree maintenance services is competent and has adequate equipment for the work that is being done.

**368** Sections 346, 347 and 348, paragraphs 349(a) to (g) and (j), section 351 and paragraphs 352(a) and (c) to (g) apply to an arboricultural operation with the necessary modifications.

**369** Where tree removal or tree maintenance makes it necessary for an employee or for any object to approach closer to an energized electrical utility line or utility line equipment than the distances specified in subsection 289(1), an employee may undertake the tree removal or tree maintenance only if the employee has participated in and successfully completed a course in arboricultural electrical safety offered by the NB Safety Council Inc. or a course offered by another organization that is equivalent in content.

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**370** An employer shall notify the authority owning or operating an energized electrical utility line or utility line equipment of the intention to work closer to the electrical utility line or utility equipment than the distances specified in subsection 289(1), the location of the planned work and the time and duration of the planned work before any such work is done.

**371(1)** An employee who works closer to an energized electrical utility line or utility line equipment than the distances specified in subsection 289(1) shall not approach, or allow any object to approach, any energized electrical utility line or utility line equipment closer than the distances specified in the following table:



**DISTANCE OF EMPLOYEE, UNINSULATED OBJECT OR INSULATED OBJECT FROM ENERGIZED ELECTRICAL UTILITY LINE OR UTILITY LINE EQUIPMENT**

<b>Voltage Phase to Phase</b>	<b>Employee or Uninsulated Object</b>	<b>Insulated Object</b>
Up to 750V	600 mm	150 mm
750V - 15kV	900 mm	300 mm
16kV - 25kV	1.2 m	450 mm
26kV - 69kV	1.5 m	900 mm
70kV - 138kV	1.8 m	1.2 m
139kV - 230kV	2.1 m	1.5 m
231kV - 345kV	3.7 m	3.0 m

**371(2)** An employee who works closer to an energized electrical utility line or utility line equipment than the distances specified in subsection 289(1)

(a) shall not climb or cut a tree where any portion of the tree is closer to an energized electrical utility line or utility line equipment than the distances specified in the following table, and

(b) shall ensure that no portion of a tree that is being cut, trimmed or maintained approaches any energized electrical utility line or utility line equipment closer than the distances specified in the following table:

**DISTANCE OF PORTION OF TREE FROM ENERGIZED ELECTRICAL UTILITY LINE OR UTILITY LINE EQUIPMENT**

<b>Voltage Phase to Phase</b>	<b>Where Employee is Using an Uninsulated Object</b>	<b>Where Employee is Using an Insulated Object without an Insulated Aerial Device</b>	<b>Where Employ is Using an Insula Object with a Insulated Aeri Device</b>
Up to 750v	300 mm	Up to but not touching 300 mm	Up to but not touching
750v -15kV	600 mm	300 mm	Up to but not touching
16kV -25kV	750 mm	450 mm	Up to but not touching
26kV -69kV	1.5 m	1.0 m	750 mm
70kV - 138kV	1.8 m	1.2 m	900 mm
139kV - 230kV	2.1 m	1.8 m	1.5 m
231kV - 345kV	3.7 m	3.4 m	3.0 m

**371(3)** An employer shall ensure that an employee who is permitted to work closer to an energized electrical utility line or utility line equipment than the distances specified in subsection 289(1) does not work closer to the electrical utility line or utility line equipment than the distances specified in subsections (1) and (2).

**371(4)** Where an employee referred to in subsection (1) or (2) is about to commence work that may bring any person or object closer to an energized electrical utility line or utility line equipment than the

distances specified in subsection (1) or (2), an employer shall contact the authority owning or operating the electrical utility line or utility line equipment and shall ensure that the electrical utility line or utility line equipment

- (a) is de-energized, or
- (b) is adequately insulated or guarded

before permitting the employee to commence the work.

**372(1)** An employer shall ensure that an employee who works closer to an energized electrical utility line or utility line equipment than the distances specified in subsection 289(1) uses the protective equipment referred to in section 288.

**372(2)** An employee who works closer to an energized electrical utility line or utility line equipment than the distances specified in subsection 289(1) shall use the protective equipment referred to in section 288.

**373** An employee shall, before felling a tree or part of a tree, take necessary precautions for the safety of persons in the felling area.

**374** An employer shall ensure that an employee working more than 3 m above the nearest safe level uses an individual fall-arresting system or

- (a) wears a safety belt, a tree-trimming saddle belt or a saddle formed by a double bowline on a bight, and
- (b) uses as a life line, a rope designed for use in tree maintenance operations that is
  - (i) inspected by the employee before each use,
  - (ii) properly knotted when in use, and
  - (iii) stored in a separate protective container.

## **PART XXIII**

### **REPEAL AND COMMENCEMENT**

**375(1)** *New Brunswick Regulation 77-1 under the Occupational Health and Safety Act is repealed.*

**375(2)** *New Brunswick Regulation 89-66 under the Occupational Health and Safety Act is repealed.*

**376** *New Brunswick Regulation 77-58 under the Mining Act is amended*

- (a) *by repealing section 41;*
- (b) *by repealing section 46;*
- (c) *by repealing section 48;*
- (d) *by repealing section 50;*
- (e) *by repealing section 54;*
- (f) *by repealing sections 268 to 274;*

- (g) by repealing subsections 276(1) and (3);*
- (h) by repealing sections 277 to 286;*
- (i) by repealing subsection 287(1);*
- (j) by repealing sections 289 and 290;*
- (k) by repealing sections 292 to 301;*
- (l) by repealing sections 315 to 318;*
- (m) by repealing subsection 319(1); and*
- (n) by repealing sections 320 and 321.*

**377**        *This Regulation comes into force on March 1, 1992.*

**N.B.** This Regulation is consolidated to February 13, 2007.