BRITISH COLUMBIA

Workers Compensation Act

OCCUPATIONAL HEALTH AND SAFETY REGULATION

B.C. Reg. 296/97

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This consolidation includes any amendments deposited and in force as of the currency date at the bottom of each page. See the end of this regulation for any amendments deposited but not in force as of the currency date. Any amendments deposited after the currency date are listed in the B.C. Regulations Bulletins. All amendments to this regulation are listed in the *Index of B.C. Regulations*. Regulations Bulletins and the Index are available online at www.bclaws.ca.

See the User Guide for more information about the *Consolidated Regulations of British Columbia*. The User Guide and the *Consolidated Regulations of British Columbia* are available online at www.bclaws.ca.

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Workers Compensation Act

OCCUPATIONAL HEALTH AND SAFETY REGULATION

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Workers Compensation Act

OCCUPATIONAL HEALTH AND SAFETY REGULATION

B.C. Reg. 296/97

PART 1 – DEFINITIONS

Definitions

1.1 (1) In this Occupational Health and Safety Regulation:

"administrative controls" means the provision, use and scheduling of work activities and resources in the workplace, including planning, organizing, staffing and coordinating, for the purpose of controlling risk;

"B.C. Electrical Code" has the same meaning as in the Electrical Safety Regulation;

"Board" means the Workers' Compensation Board;

"combustible liquid" means a liquid that has a flash point at or above 37.8 degrees Celsius (100 degrees Fahrenheit) and below 93.3 degrees Celsius (200 degrees Fahrenheit);

"contaminant" means a harmful or irritant material, or nuisance dust, foreign to the normal composition of a substance, or a material that varies the normal proportions of components in a mixture such as air;

"engineering controls" means the physical arrangement, design or alteration of workstations, equipment, materials, production facilities or other aspects of the physical work environment, for the purpose of controlling risk;

"flammable liquid" means a liquid that has a flash point below 37.8 degrees Celsius (100 degrees Fahrenheit) and a vapour pressure of not more than 275.8 kPa at 37.8 degrees Celsius;

"hazard" means a thing or condition that may expose a person to a risk of injury or occupational disease;

"hazard area" means an area in a workplace where a hazard exists, or is created, due to a condition in the area or the activities conducted in it;

"hazardous product" means any product, mixture, material or substance that is classified in accordance with the regulations made under section 15 (1) of the *Hazardous Products Act* (Canada) in a category or subcategory of a hazard class listed in Schedule 2 of that Act;

"HEPA" means, in reference to air filtration, a high efficiency particulate air filter meeting the specifications of a nuclear grade filter, providing a 99.97% filtration efficiency at a 0.3 micrometre particle size;

"IDLH atmosphere" means an atmosphere containing a substance at a concentration which is immediately dangerous to life or health (IDLH) because the concentration is greater than that from which one could escape without any escape-impairing symptoms or irreversible health effects, and includes an atmosphere with an unknown concentration with the potential to be immediately dangerous to life or health;

"incident" includes an accident or other occurrence which resulted in or had the potential for causing an injury or occupational disease;

"mg/m^3" means milligrams of a substance per cubic metre of air;

"mobile equipment" has the same meaning as in section 16.1;

"oxygen deficient" means, in relation to air, a condition in which there is less than 19.5% oxygen by volume, or the partial pressure of oxygen is less than 16.3 kPa (122 mm Hg);

"ppm" means parts of a vapour or a gas per million parts of contaminated air by volume at a temperature of 25 degrees Celsius and an atmospheric pressure of 760 millimetres of mercury;

"practicable" means that which is reasonably capable of being done;

"professional engineer" means a person who is registered under the *Professional Governance Act* as a professional engineer or professional engineering licensee;

"professional geoscientist" means a person who is registered under the *Professional Governance Act* as a professional geoscientist or professional geoscience licensee;

"qualified" means being knowledgeable of the work, the hazards involved and the means to control the hazards, by reason of education, training, experience or a combination thereof;

"qualified registered professional" means

(a) a professional engineer or professional geoscientist, and

(b) in relation to a forestry operation, a person referred to in paragraph (a) or a person registered under the *Professional Governance Act* as

(i) a professional forester, or

(ii) a registered forest technologist;

"rated capacity" or **"rated load"** means the load that machinery or a piece of equipment is, in accordance with its design, rated to bear under section 4.8;

"resource road" means a road or portion of a road on Crown land, and includes a bridge, culvert, ford or other structure or work associated with the road, but does not include a highway within the meaning of the *Transportation Act*;

"risk" means a chance of injury or occupational disease;

"rollover", in respect of mobile equipment, means a roll about the longitudinal axis of more than 90°, or a rear or frontal pitchover about the transverse axis of more than 90°, whether or not the roof or topside comes into contact with the travel surface;

"rollover hazard area", with respect to mobile equipment, means an area that is comprised of

(a) grades or slopes that exceed

(i) the manufacturer's maximum slope operating stability limit for the mobile equipment, or

(ii) 10%, if the manufacturer has not set a maximum slope operating stability limit for the mobile equipment, or

(b) open edges, open ramps, loading docks, ditches, drop-offs, holes, soft spots or mounds, or other terrain hazards, that may cause a rollover;

"rollover protective structure" or **"ROPS"** means a rollover protective structure that is affixed to mobile equipment and designed to protect an on-board operator in the event of a rollover of the mobile equipment;

"safety data sheet" or **"SDS"** means a document that contains, under the headings that, by virtue of the regulations made under section 15 (1) of the *Hazardous Products Act* (Canada), are required to appear in the document, information about a hazardous product, including information related to the hazards associated with any use, handling or storage of the hazardous product in the workplace;

"sensitizer" means a substance that has been shown to elicit an allergenic type of response in humans after an initial exposure, resulting in development of symptoms upon subsequent exposure at much lower concentrations;

"supervisor" means a person who instructs, directs and controls workers in the performance of their duties;

"utility service" means a petroleum pipeline, sanitary sewer line, enclosed storm sewer, water line, steam line or electrical cable;

"WHMIS" means the Workplace Hazardous Materials Information System referred to in section 5.3;

"working load limit" or **"WLL"** means the maximum load which a product is authorized by the manufacturer to support in a particular service.

(2) Subject to subsection (3), in this Regulation, **"workplace"** does not include a resource road.

(3) A portion of a resource road is a workplace during any period within which the portion is being built, maintained, repaired, rehabilitated, stabilized, upgraded, removed or deactivated.

(4) Although a resource road does not constitute a workplace for the purposes of this Regulation, other than in one of the limited circumstances referred to in subsection (3), a reference to a workplace in this Regulation continues to include a thing or place that constitutes a workplace even though that thing, or an activity or the result of an activity initiated or carried out at that place, is in whole or in part on a resource road.

[am. B.C. Regs. 185/99, s. 1; 253/2001, s. 1; 312/2003, App. C, s. 1; 315/2003, App. A, s. 1; 20/2008, App. A, s. 59; 258/2008, App. A, s. 1; 312/2010, App. A, s. 1 and App. D, s. 1; 305/2012, s. 1; 30/2015, s. 1; 9/2017, App. A and App. D, s. 1; 139/2021, App. D, s. 1; 222/2021, App. A, s. 1; 116/2022, App. B, s. 1.]

PART 2 – APPLICATION

Scope of application

2.1 This Occupational Health and Safety Regulation applies to all employers, workers and all other persons working in or contributing to the production of any industry within the scope of the OHS provisions of the *Workers Compensation Act*.

[am. B.C. Regs. 185/99, s. 2; 279/2019, App. D, s. 1.]

General duty

2.2 Despite the absence of a specific requirement, all work must be carried out without undue risk of injury or occupational disease to any person.

Conflict with a code or standard

2.3 If there is any conflict between the requirements of this Regulation and any code or standard with which compliance is required by this Regulation, the provisions of this Regulation prevail.

Compliance

2.4 Every person to whom an order or directive is issued by the Board must comply promptly or by the time set out in the order or directive.

[am. B.C. Reg. 185/99, s. 4.]

Inspection reports

2.5 (1) An inspection report must remain posted for at least 7 days, or until compliance has been achieved, whichever is the longer period.

(2) When a joint committee or a worker health and safety representative is required at a workplace, the employer must produce for the committee or representative the inspection report, or a copy of it, at or before the next meeting of the committee or with the representative.

[am. B.C. Reg. 185/99, s. 5.]

Notification of compliance

2.6 When an employer is required to provide notification of compliance in response to an inspection report the employer must ensure that

(a) a copy of the notification is posted next to the originating inspection report until compliance has been achieved.

(b) Repealed. [B.C. Reg. 185/99, s. 6.]

[am. B.C. Reg. 185/99, s. 6.]

Notice to workers

2.7 Every employer must post in a conspicuous place at each workplace any placard issued by the Board titled "Notice to Workers".

[am. B.C. Reg. 185/99, s. 7.]

Contravention

2.8 (1) A contravention of this Regulation will be deemed to be a contravention by the employer and will make that employer liable for any penalty prescribed by the *Workers Compensation Act*.

(2) A contravention of this Regulation by a supervisor or a worker will be deemed to be a contravention by the supervisor and will make that supervisor liable for any penalty prescribed by the *Workers Compensation Act*.

(3) A contravention of this Regulation by a worker will make that worker liable for any penalty prescribed by the *Workers Compensation Act*.

(4) A contravention of this Regulation by a person working in or contributing to the production of an industry within the scope of the *Workers Compensation Act* will make that person liable for any penalty prescribed by the Act.

[am. B.C. Reg. 185/99, s. 9.]

PART 3 – RIGHTS AND RESPONSIBILITIES

Occupational Health and Safety Programs

When program required

3.1 (1) An occupational health and safety program as outlined in section 3.3 must be initiated and maintained

(a) by each employer that has

(i) a workforce of 20 or more workers, and

(ii) at least one workplace that is determined under section 3.16 (2) (b) to create a moderate or high risk of injury, or

(b) by each employer that has a workforce of 50 or more workers.

(1.1) If subsection (1) (a) or (b) applies to the employer, the occupational health and safety program applies to the whole of the employer's operations.

(2) Despite subsection (1) an occupational health and safety program may be required in any workplace when, in the opinion of an officer, such a program is necessary.

[am. B.C. Regs. 348/2003, s. 10; 19/2006, s. 1; 320/2007, App. A, s. 1.]

Small operations

3.2 In any operation where the workforce is less than that referred to in section 3.1 (1) the employer must

(a) initiate and maintain a less formal program based on regular monthly meetings with workers for discussion of health and safety matters,

(b) ensure that meetings are directed to matters concerning the correction of unsafe conditions and practices and the maintenance of cooperative interest in the health and safety of the workforce, and

(c) maintain a record of the meetings and the matters discussed.

Contents of program

3.3 The occupational health and safety program must be designed to prevent injuries and occupational diseases, and without limiting the generality of the foregoing, the program must include

(a) a statement of the employer's aims and the responsibilities of the employer, supervisors and workers,

(b) provision for the regular inspection of premises, equipment, work methods and work practices, at appropriate intervals, to ensure that prompt action is undertaken to correct any hazardous conditions found,

(c) appropriate written instructions, available for reference by all workers, to supplement this Occupational Health and Safety Regulation,

(d) provision for holding periodic management meetings for the purpose of reviewing health and safety activities and incident trends, and for the determination of necessary courses of action,

(e) provision for the prompt investigation of incidents to determine the action necessary to prevent their recurrence,

(f) the maintenance of records and statistics, including reports of inspections and incident investigations, with provision for making this information available to the joint committee or worker health and safety representative, as applicable and, upon request, to an officer, the union representing the workers at the workplace or, if there is no union, the workers at the workplace, and

(g) provision by the employer for the instruction and supervision of workers in the safe performance of their work.

[am. B.C. Reg. 185/99, s. 12.]

3.4 Repealed. [B.C. Reg. 195/2015, s. 1.]

Workplace Inspections

General requirement

3.5 Every employer must ensure that regular inspections are made of all workplaces, including buildings, structures, grounds, excavations, tools, equipment, machinery and work methods and practices, at intervals that will prevent the development of unsafe working conditions.

[am. B.C. Reg. 185/99, s. 16.]

3.6 Repealed. [B.C. Reg. 312/2003, App. B, s. 1.]

Special inspections

3.7 A special inspection must be made when required by malfunction or accident.

[am. B.C. Reg. 185/99, s. 16.]

Committee participation

3.8 An inspection required by section 3.5 and a major inspection required by section 3.7 must, where feasible, include the participation of members of the joint committee or the worker health and safety representative, as applicable, but

(a) if there is no committee or worker health and safety representative the employer must designate an employer representative and the union must designate a worker representative, or

(b) if there is no union the employer must invite the workers to designate one of their number.

[en. B.C. Reg. 185/99, s. 17, am. B.C. Reg. 185/99, s. 18.]

Correction of Unsafe Conditions

Remedy without delay

3.9 Unsafe or harmful conditions found in the course of an inspection must be remedied without delay.

[am. B.C. Reg. 185/99, s. 18.]

Reporting unsafe conditions

3.10 Whenever a person observes what appears to be an unsafe or harmful condition or act the person must report it as soon as possible to a supervisor or to the employer, and the person receiving the report must investigate the reported unsafe condition or act and must ensure that any necessary corrective action is taken without delay.

[am. B.C. Reg. 185/99, s. 18.]

Emergency circumstances

3.11 If emergency action is required to correct a condition which constitutes an immediate threat to workers only those qualified and properly instructed workers necessary to correct the unsafe condition may be exposed to the hazard, and every possible effort must be made to control the hazard while this is being done.

[am. B.C. Reg. 185/99, s. 18.]

Refusal of Unsafe Work

Procedure for refusal

3.12 (1) A person must not carry out or cause to be carried out any work process or operate or cause to be operated any tool, appliance or equipment if that person has reasonable cause to believe that to do so would create an undue hazard to the health and safety of any person.

(2) A worker who refuses to carry out a work process or operate a tool, appliance or equipment pursuant to subsection (1) must immediately report the circumstances of the unsafe condition to the worker's supervisor or employer.

(3) A supervisor or employer receiving a report made under subsection (2) must immediately investigate the matter and

(a) ensure that any unsafe condition is remedied without delay, or

(b) if, in the supervisor's or employer's opinion, the report is not valid, must so inform the person who made the report.

(4) If the procedure under subsection (3) does not resolve the matter and the worker continues to refuse to carry out the work process or operate the tool, appliance or equipment, the supervisor or employer must investigate the matter in the presence of the worker who made the report and in the presence of

(a) a worker member of the joint committee,

(b) a worker who is selected by a trade union representing the worker, or

(c) if there is no joint committee or the worker is not represented by a trade union, any other reasonably available worker selected by the worker.

(5) If the investigation under subsection (4) does not resolve the matter and the worker continues to refuse to carry out the work process or operate the tool, appliance or equipment, both the supervisor, or the employer, and the worker must immediately notify an officer, who must investigate the matter without undue delay and issue whatever orders are deemed necessary.

[am. B.C. Regs. 185/99, s. 19; 116/2022, App. B, s. 2.]

Reassignment of refused work

3.12.1 If a worker refuses work under section 3.12, the employer must not require or permit another worker to do the refused work unless

(a) the matter has been resolved under section 3.12 (3), (4) or (5), or

(b) the employer has, in writing, advised the other worker and a person referred to in section 3.12 (4) (a), (b) or (c) of all of the following:

(i) the refusal;

(ii) the unsafe condition reported under section 3.12 (2);

(iii) the reasons why the work would not create an undue hazard to the health and safety of the other worker or any other person;

(iv) the right of the other worker under section 3.12 to refuse unsafe work.

[en. B.C. Reg. 116/2022, App. A, s. 1.]

No prohibited action

3.13 (1) A worker must not be subject to prohibited action as defined in section 47 of the *Workers Compensation Act* because the worker has acted in compliance with section 3.12 or with an order made by an officer.

(2) Temporary assignment to alternative work at no loss in pay to the worker until the matter in section 3.12 is resolved under section 3.12 (3), (4) or (5) is deemed not to constitute prohibited action.

[am. B.C. Regs. 185/99, s. 20; 279/2019, App. D, s. 2; 116/2022, App. A, s. 2.]

Occupational First Aid

Definitions

3.14 In this section and in sections 3.15 to 3.21:

"first aid" means

(a) in cases in which a person will need medical treatment, treatment for the purpose of preserving life and minimizing the consequences of injury until medical treatment is obtained, and

(b) treatment of minor injuries that would otherwise receive no medical treatment or that do not need medical treatment;

"first aid attendant" means a person who holds a valid first aid certificate issued by the Board or by a person recognized by the Board and who is designated as a first aid attendant by the employer;

"injured worker" means a worker who suffers an injury during work;

"injury" includes an occupational disease or illness;

"medical certificate" means a report in a form acceptable to the Board from a physician registered under the *Medical Practitioners Act* as to a person's fitness to perform the functions of a first aid attendant.

[en. B.C. Reg. 348/2003, s. 2.]

First aid attendant qualifications

3.15 The employer must ensure that a person who is designated as a first aid attendant

(a) is at least 16 years old,

(b) has successfully completed the first aid training course or first aid examination developed or approved by the Board,

(c) has a first aid certificate in good standing at the required level issued by the Board or a person recognized by the Board, and

(d) meets any other requirements determined by the Board for designation as a first aid attendant.

[en. B.C. Reg. 348/2003, s. 2.]

Basic requirements

3.16 (1) The employer must provide for each workplace such equipment, supplies, facilities, first aid attendants and services as are adequate and appropriate for

(a) promptly rendering first aid to workers if they suffer an injury at work, and

(b) transporting injured workers to medical treatment.

(1.1) The type and quantity of equipment, supplies, facilities, first aid attendants and services referred to in subsection (1) must be no less than is required by Schedule 3-A.

(1.2) The quality, maintenance and use of equipment, facilities and methods of transportation referred to in this section must be acceptable to the Board.

(2) For the purpose of complying with subsection (1), the employer must conduct an assessment of the circumstances of the workplace, including

(a) the number of workers who may require first aid at any time,

(b) the nature and extent of the risks and hazards in the workplace, including whether or not the workplace as a whole creates a low, moderate or high risk of injury,

(c) the types of injuries likely to occur,

(d) any barriers to first aid being provided to an injured worker, and

(e) the time that may be required to obtain transportation and to transport an injured worker to medical treatment.

(3) The employer must review the assessment under subsection (2)

(a) within 12 months after the previous assessment or review, and

(b) whenever a significant change affecting the assessment occurs in the employer's operations.

(4) First aid equipment, supplies and facilities must be kept clean, dry and ready for use, and be readily accessible at any time a worker works in the workplace.

[en. B.C. Reg. 348/2003, s. 2; am. B.C. Reg. 320/2007, App. A, ss. 2 and 3.]

First aid procedures

3.17 (1) The employer must keep up-to-date written procedures for providing first aid at the worksite including

(a) the equipment, supplies, facilities, first aid attendants and services available,

(b) the location of, and how to call for, first aid,

(c) how the first aid attendant is to respond to a call for first aid,

(d) the authority of the first aid attendant over the treatment of injured workers and the responsibility of the employer to report injuries to the Board,

(e) who is to call for transportation for the injured worker, and the method of transportation and calling, and

(f) prearranged routes in and out of the workplace and to medical treatment.

(2) The employer must post the procedures conspicuously in suitable locations throughout the workplace or, if posting is not practicable, the employer must adopt other measures to ensure that the information is effectively communicated to workers.

(3) The first aid attendant and all other persons authorized to call for transportation for injured workers must be trained in the procedures.

[en. B.C. Reg. 348/2003, s. 2.]

Air transportation

3.17.1 If air transportation is the primary or only method for transporting an injured worker, all of the following requirements must be met:

(a) before the start of operations in a workplace, arrangements must be made with an air service to ensure that an appropriate aircraft is reasonably available to the workplace during those operations;

(b) the arrangements in paragraph (a) must include procedures for

(i) the employer to determine the availability of appropriate aircraft before the start of each work day, and

(ii) the air service to notify the employer if an appropriate aircraft ceases to be available;

(c) a system must be provided that enables the pilot of the aircraft and the first aid attendant attending to an injured worker to communicate at all times when the aircraft is in transit to the location of the injured worker and during transport of the injured worker to medical treatment.

[en. B.C. Reg. 320/2007, App. A, s. 4.]

Communication and availability

3.18 (1) The employer must provide an effective means for

(a) communication between the first aid attendant and the workers served, and

(b) the first aid attendant to call for assistance.

(2) The employer must not assign, and the first aid attendant must not undertake, employment activities that will interfere with the attendant's ability to receive and respond to a request for first aid.

[en. B.C. Reg. 348/2003, s. 2.]

First aid records

3.19 (1) The employer must maintain at the workplace, in a form acceptable to the Board, a record of all injuries and exposures to contaminants covered by this Regulation that are reported or treated.

(2) First aid records must be kept for at least 3 years.

(3) First aid records are to be kept confidential and may not be disclosed except as permitted by this Regulation or otherwise permitted by law.

(4) First aid records must be available for inspection by an officer of the Board.

(5) Workers may request or authorize access to their first aid records for any treatment or report about themselves.

[en. B.C. Reg. 348/2003, s. 2.]

Multiple employer workplaces

3.20 If workers of 2 or more employers are working at a workplace at the same time, the prime contractor must

(a) conduct an assessment of the circumstances of the workplace under section 3.16 (2) in relation to all the workers in the workplace, and

(b) do everything that is reasonably practicable to establish and maintain the first aid equipment, supplies, facilities, first aid attendants and services required under section 3.16.

[en. B.C. Reg. 348/2003, s. 2; am. B.C. Reg. 320/2007, App. A, s. 5.]

First aid attendant responsibilities

3.21 (1) The first aid attendant must

(a) promptly provide injured workers with a level of care within the scope of the attendant's training and this Part,

(b) objectively record observed or reported signs and symptoms of injuries and exposures to contaminants covered by this Regulation, and

(c) refer for medical treatment workers with injuries considered by the first aid attendant as being serious or beyond the scope of the attendant's training.

(2) A first aid attendant must be physically and mentally capable of safely and effectively performing the required duties, and the Board may at any time require the attendant to provide a medical certificate.

(3) The first aid attendant is responsible, and has full authority, for all first aid treatment of an injured worker until responsibility for treatment is accepted

(a) at a place of medical treatment,

(b) by an ambulance service acceptable to the Board, or

(c) by a person with higher or equivalent first aid certification.

(4) The first aid attendant does not have authority to overrule a worker's decision to seek medical treatment or the worker's choice of medical treatment.

[en. B.C. Reg. 348/2003, s. 2.]

Young or New Workers

Definitions

3.22 In sections 3.23 to 3.25:

"new worker" means any worker who is

(a) new to the workplace,

(b) returning to a workplace where the hazards in that workplace have changed during the worker's absence,

(c) affected by a change in the hazards of a workplace, or

(d) relocated to a new workplace if the hazards in that workplace are different from the hazards in the worker's previous workplace;

"young worker" means any worker who is under 25 years of age.

[en. B.C. Reg. 105/2007.]

Young or new worker orientation and training

3.23 (1) An employer must ensure that before a young or new worker begins work in a workplace, the young or new worker is given health and safety orientation and training specific to that young or new worker's workplace.

(2) The following topics must be included in the young or new worker's orientation and training:

(a) the name and contact information for the young or new worker's supervisor;

(b) the employer's and young or new worker's rights and responsibilities under the *Workers Compensation Act* and this Regulation including the reporting of unsafe conditions and the right to refuse to perform unsafe work;

(c) workplace health and safety rules;

(d) hazards to which the young or new worker may be exposed, including risks from robbery, assault or confrontation;

(e) working alone or in isolation;

(f) violence in the workplace;

(g) personal protective equipment;

(h) location of first aid facilities and means of summoning first aid and reporting illnesses and injuries;

(i) emergency procedures;

(j) instruction and demonstration of the young or new worker's work task or work process;

(k) the employer's health and safety program, if required under section 3.1 of this Regulation;

(l) WHMIS information requirements set out in Part 5, as applicable to the young or new worker's workplace;

(m) contact information for the occupational health and safety committee or the worker health and safety representative, as applicable to the workplace.

[en. B.C. Reg. 105/2007.]

Additional orientation and training

3.24 An employer must provide a young or new worker with additional orientation and training if

(a) workplace observation reveals that the young or new worker is not able to perform work tasks or work processes safely, or

(b) requested by the young or new worker.

[en. B.C. Reg. 105/2007.]

Documentation

3.25 An employer must keep records of all orientation and training provided under sections 3.23 and 3.24.

[en. B.C. Reg. 105/2007.]

Joint Health and Safety Committees

Evaluation of joint committees

3.26 (1) In this section, a reference to a joint committee does not include a joint committee established and maintained under section 32 of the *Workers Compensation Act*, if

(a) an order under section 32 (1) of the *Workers Compensation Act* respecting the joint committee provides for a variation as set out in subsection (2) (b) of that section of that Act, and

(b) the variation is in regards to evaluating the joint committee.

(2) An employer must ensure that, with respect to each of the employer's joint committees, a written evaluation is conducted annually by

(a) the co-chairs of the joint committee or, with respect to each co-chair, the member or members of the joint committee designated by the co-chair, or

(b) the employer or a person retained by the employer.

(3) The evaluation must contain, but is not limited to, the following information:

(a) whether or not, throughout the period of time that is the subject of the evaluation,

(i) the joint committee met the membership requirements under section 33 of the *Workers Compensation Act*,

(ii) worker representatives on the joint committee were selected in accordance with section 34 of the *Workers Compensation Act*,

(iii) employer representatives on the joint committee were selected in accordance with section 35 of the *Workers Compensation Act*,

(iv) the joint committee fulfilled each of its duties and functions under section 36 of the *Workers Compensation Act*,

(v) the joint committee met regularly as required under section 37 (2) of the *Workers Compensation Act*,

(vi) the employer met the requirements under section 39 of the *Workers Compensation Act* in respect of the written recommendations sent to the employer by the joint committee with a written request for a response from the employer, if any,

(vii) each member of the joint committee received the time off from work the member was entitled to receive under section 40 of the *Workers Compensation Act*,

(viii) each member of the joint committee attended the occupational health and safety training courses the member was entitled to attend under section 41 of the *Workers Compensation Act*,

(ix) the employer provided to the joint committee the equipment, premises, clerical personnel and information the employer was required to provide under section 42 of the *Workers Compensation Act*,

(x) the joint committee prepared reports of its meetings and provided copies to the employer as required under section 43 (1) of the *Workers Compensation Act*,

(xi) the employer met the requirements of posting and keeping posted committee information as set out in section 44 of the *Workers Compensation Act*, and

(xii) each member of the joint committee received the instruction and training the employer was required to ensure was provided to the member under section 3.27 of this regulation;

(b) an assessment of the effectiveness of the joint committee's rules of procedure as established under section 37 (1) of the *Workers Compensation Act*;

(c) an assessment of the overall effectiveness of the joint committee.

(4) If the employer or a person retained by the employer conducts the evaluation, the employer or person retained by the employer, as the case may be, must, as part of the evaluation, obtain and consider the input of the co-chairs of the joint committee or, with respect to each co-chair, the member or members of the joint committee designated by the co-chair, on the matters listed in subsection (3).

(5) The employer and the joint committee must each provide to the other a copy of the evaluation if the other does not have a copy.

(6) The joint committee must

(a) discuss the evaluation at the joint committee meeting immediately following

(i) receipt of the evaluation, if the employer or a person retained by the employer conducted the evaluation, or

(ii) the completion of the evaluation, if members of the joint committee conducted the evaluation, and

(b) ensure that the evaluation and a summary of the discussion referred to in paragraph (a) are included in the report of that meeting.

[en. B.C. Reg. 312/2016, App. A; am. B.C. Reg. 279/2019, App. D, s. 10.]

Minimum training requirements for new joint committee members or worker health and safety representatives

3.27 (1) In this section, a reference to a joint committee does not include a joint committee established and maintained under section 32 of the *Workers Compensation Act*, if

(a) an order under section 32 (1) of the *Workers Compensation Act* respecting the joint committee provides for a variation as set out in subsection (2) (b) of that section of that Act, and

(b) the variation is in regards to providing instruction and training to the members of the joint committee.

(2) The employer must ensure that each member of the employer's joint committees who was selected on or after April 3, 2017 to be a member receives, as soon as practicable but no more than 6 months after becoming a member, a total of at least 8 hours of instruction and training, as set out in subsection (4).

(3) The employer must ensure that the worker health and safety representative at each of the employer's workplaces who was selected on or after April 3, 2017 to be a representative receives, as soon as practicable but no more than 6 months after becoming a representative, a total of at least 4 hours of instruction and training, as set out in subsection (5).

(4) The instruction and training referred to in subsection (2) must include the following topics:

(a) the duties and functions of a joint committee under section 36 of the *Workers Compensation Act*;

(b) the rules of procedure of the joint committee as established under or set out in section 37 of the *Workers Compensation Act*;

(c) the requirements respecting investigations under sections 69 to 72 of the *Workers Compensation Act*;

(d) the requirements respecting inspections under sections 3.5, 3.7 and 3.8 of this regulation and how to make regular inspections under section 3.5 of this regulation;

(e) the requirements respecting refusal of unsafe work under section 3.12 of this regulation;

(f) the requirements respecting the evaluation of joint committees under section 3.26 of this regulation.

(5) The instruction and training referred to in subsection (3) must include the topics described in subsection (4) (a), (c), (d) and (e).

(6) Subsection (2) does not apply in respect of a person who is a member of a joint committee if

(a) 2 years or less before becoming a member of the joint committee, the person was a member of that joint committee or a different joint committee, and

(b) the person, as a member of the joint committee or a different joint committee as set out in paragraph (a), received at least 8 hours of instruction and training on the topics described in subsection (4).

(7) Subsection (3) does not apply in respect of a person who is a worker health and safety representative at a workplace if

(a) 2 years or less before becoming a worker health and safety representative at the workplace, the person was

(i) a member of a joint committee, or

(ii) a worker health and safety representative at that workplace or a different workplace, and

(b) the person, as a member of a joint committee, or as a worker health and safety representative at the workplace or a different workplace, as set out in paragraph (a), received at least 4 hours of instruction and training on the topics described in subsection (5).

(8) The employer must ensure that a person who receives instruction and training as set out in subsection (2) or (3) receives a copy of the person's training record as soon as practicable after the training is completed.

(9) The employer must, with respect to each person who receives instruction and training as set out in subsection (2) or (3), keep the person's training record until 2 years from the date the person ceases to be a member of the employer's joint committee or a worker health and safety representative, as applicable.

(10) For greater certainty, the instruction and training required under subsection (2) or (3) of this section is not educational leave as set out in section 41 of the *Workers Compensation Act*.

[en. B.C. Reg. 312/2016, App. B; am. B.C. Reg. 279/2019, App. D, s. 10.]

Participation in Investigations

Participation by employer or representative of employer and worker representative

3.28 For the purposes of section 70 (2) (c) of the *Workers Compensation Act*, the following activities are prescribed:

(a) assisting the persons carrying out the investigation with gathering information relating to the investigation;

(b) assisting the persons carrying out the investigation with analyzing the information gathered during the investigation;

(c) assisting the persons carrying out the investigation with identifying any corrective actions necessary to prevent recurrence of similar incidents.

[en. B.C. Reg. 312/2016, App. C; am. B.C. Reg. 279/2019, App. D, s. 10.]

SCHEDULE 3-A

[en. B.C. Reg. 320/2007, App. A, s. 6.]

MINIMUM LEVELS OF FIRST AID

1 In this Schedule:

"ambulance service" means an ambulance service acceptable to the Board;

"hospital" means a hospital within the meaning of the *Hospital Act* or a diagnostic and treatment centre where the hospital or centre has

(a) an emergency department or resuscitation area, and

(b) a physician on duty or immediately available on call.

2 (1) Tables 1 to 6 have different levels of first aid service that are based on how long it takes to transport an injured person to a hospital and the number of workers per shift.

(2) Exceptions to note: In circumstances in which Tables 1 to 6 would otherwise require a Level 2 first aid certificate under column 3 *[noted with an asterisk (*)]*,

a Level 3 first aid certificate is required and an Emergency Transportation Vehicle ("ETV") must be provided, if

(a) there is on the access route to the workplace an obstruction, barrier, rough terrain or other similar circumstances likely to delay the arrival of an ambulance service for more than 20 minutes after it was dispatched, or

(b) there are areas in the workplace which an ambulance service cannot safely access, and for which workers at the workplace are required by this Regulation to be trained, equipped and capable of effecting rescue.

Table 1: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a low risk of injury and that is more than 20 minutes surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1	• Personal first aid kit		
2	2-5	• Basic first aid kit		
3	6-30	• Level 1 first aid kit	Level 1 certificate	
4	31-50	• Level 1 first aid kit • ETV equipment	Level 1 certificate with Transportation Endorsement	
5	51-75	• Level 3 first aid kit • Dressing station • ETV equipment	Level 3 certificate	
6	76 or more	• Level 3 first aid kit • First aid room • ETV equipment	Level 3 certificate	ETV

Table 2: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a low risk of injury and that is 20 minutes or less surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1			
2	2-10	• Basic first aid kit		
3	11-50	• Level 1 first aid kit	Level 1 certificate	
4	51-100	• Level 2 first aid kit • Dressing station	* Level 2 certificate	
5	101 or more	• Level 2 first aid kit • First aid room	*Level 2 certificate	

Table 3: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a moderate risk of injury and that is more than 20 minutes surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1	• Personal first aid kit		
2	2-5	• Level 1 first aid kit	Level 1 certificate	
3	6-15	• Level 1 first aid kit • ETV equipment	Level 1 certificate with Transportation Endorsement	
4	16-50	• Level 3 first aid kit • Dressing station • ETV equipment	Level 3 certificate	ETV
5	51-100	• Level 3 first aid kit • First aid room • ETV equipment	Level 3 certificate	ETV
6	101-300	• Level 3 first aid kit • First aid room • Industrial ambulance equipment	Level 3 certificate	Industrial ambulance
7	301 or more	• Level 3 first aid kit • First aid room • Industrial ambulance equipment	2 attendants, each with Level 3 certificates	Industrial ambulance

Table 4: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a moderate risk of injury and that is 20 minutes or less surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1	• Personal first aid kit		
2	2-5	• Basic first aid kit		
3	6-25	• Level 1 first aid kit	Level 1 certificate	
4	26-75	• Level 2 first aid kit • Dressing station	* Level 2 certificate	
5	76 or more	• Level 2 first aid kit • First aid room	*Level 2 certificate	

Table 5: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a high risk of injury and that is more than 20 minutes surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1	• Personal first aid kit		
2	2-5	• Level 1 first aid kit	Level 1 certificate	
3	6-10	• Level 1 first aid kit • ETV equipment	Level 1 certificate with Transportation Endorsement	ETV
4	11-30	• Level 3 first aid kit • Dressing station • ETV equipment	Level 3 certificate	ETV
5	31-50	• Level 3 first aid kit • First aid room • ETV equipment	Level 3 certificate	ETV
6	51-200	• Level 3 first aid kit • First aid room • Industrial ambulance equipment	Level 3 certificate	Industrial ambulance
7	201 or more	• Level 3 first aid kit • First aid room • Industrial ambulance equipment	2 attendants, each with Level 3 certificates	Industrial ambulance

Table 6: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a high risk of injury and that is 20 minutes or less surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1	• Personal first aid kit		
2	2-15	• Level 1 first aid kit	Level 1 certificate	
3	16-30	• Level 2 first aid kit • Dressing station	* Level 2 certificate	
4	31-300	• Level 2 first aid kit • First aid room	* Level 2 certificate	
5	301 or more	• Level 2 first aid kit • First aid room	* 2 attendants, each with Level 2 certificates	

PART 4 – GENERAL CONDITIONS

Buildings, Structures and Equipment

Safe workplace

4.1 A workplace must be planned, constructed, used and maintained to protect from danger any person working at the workplace.

[en. B.C. Reg. 258/2008, App. A, s. 2.]

Avalanche risk assessment and safety plan

4.1.1 (1) In this section and section 4.1.2:

"avalanche" means snow avalanche;

"avalanche risk assessment" means the assessment referred to in subsection (2) (a);

"avalanche safety plan" means the plan referred to in subsection (2) (b);

"avalanche safety program" means the program referred to in subsection (6).

(2) Subject to section 4.1.2, if a person working at a workplace may be exposed to a risk associated with an avalanche, the employer must ensure that no work is carried out at the workplace until

(a) a written avalanche risk assessment is completed, and

(b) if the avalanche risk assessment indicates that a person working at the workplace will be exposed to a risk associated with an avalanche, a written avalanche safety plan is developed and implemented.

(3) The avalanche risk assessment must be conducted by a qualified person.

(4) In conducting the avalanche risk assessment, the qualified person must consider all of the hazards and risks associated with an avalanche, including, without limitation, the following:

(a) the topography and vegetation in the area of the workplace;

(b) the snow conditions in the area of the workplace;

(c) the history of avalanches in the area of the workplace;

(d) the nature and duration of work activities to be carried out at the workplace;

(e) the extent, if any, to which the nature and duration of work activities to be carried out at the workplace may affect the topography, vegetation or snow conditions in the area of the workplace;

(f) the nature of the workplace and the buildings and structures at the workplace.

(5) The avalanche safety plan must be developed by a qualified person and, subject to subsection (6), must include measures to eliminate the risks associated with an avalanche.

(6) If eliminating the risks associated with an avalanche is not practicable, the avalanche safety plan must include measures and procedures to minimize those risks, including an avalanche safety program that provides for

(a) the regular monitoring of weather, snow and avalanche conditions in the area of the workplace, at intervals the qualified person considers will be effective,

(b) the implementation of closures or other measures, as specified in the avalanche safety program, and

(c) safe work procedures to be followed by persons working at the workplace.

(7) The employer must make a copy of the avalanche safety program readily available to each person who administers or implements the avalanche safety program for the workplace.

(8) Whenever there is a significant change in the hazards or risks associated with an avalanche in the area of the workplace, the employer must do the following, unless the change is already addressed by the avalanche safety plan:

(a) ensure that a qualified person reviews the avalanche risk assessment and the avalanche safety plan;

(b) make changes to the avalanche risk assessment and the avalanche safety plan, as considered necessary by the qualified person, to reflect the current hazards and risks associated with an avalanche in the area of the workplace.

(9) If the avalanche safety plan includes procedures applicable to a person's work at the workplace,

(a) the employer must provide information and training to the person respecting the procedures, and

(b) the person must comply with the procedures.

[en. B.C. Reg. 199/2014, App. A, s. 1.]

Avalanche risk assessment and safety plan exception

4.1.2 (1) Section 4.1.1 does not apply to work carried out to evaluate whether a person working at the workplace may be exposed to a risk associated with an avalanche.

(2) Section 4.1.1 does not apply if compliance with that section is not practicable when carrying out the following types of work at a workplace where a person may be exposed to a risk associated with an avalanche:

(a) work that

(i) is carried out intermittently,

(ii) involves moving through the workplace without stopping for a significant length of time in a particular area of the workplace, and

(iii) has minimal potential to trigger an avalanche;

(b) work related to an emergency;

(c) work carried out to complete an avalanche risk assessment;

(d) work carried out to develop an avalanche safety plan.

(3) Before a person carries out work to which subsection (2) applies, the employer must ensure that

(a) written safe work procedures are in place to minimize the risks associated with an avalanche, and

(b) the person

(i) understands the risks associated with an avalanche, and

(ii) is trained in the procedures referred to in paragraph (a) of this subsection.

(4) The safe work procedures required under subsection (3) must be developed by a qualified person and must set out the following:

(a) the qualifications and training a person must have in order to be eligible to carry out work to which subsection (2) applies;

(b) the procedures the person referred to in paragraph (a) of this subsection must follow to identify and address risks associated with an avalanche;

(c) the requirements the person referred to in paragraph (a) of this subsection must comply with when using equipment.

(5) A person carrying out work to which subsection (2) applies must comply with the safe work procedures required under subsection (3).

[en. B.C. Reg. 199/2014, App. A, s. 1.]

Safe buildings and structures

4.2 The employer must ensure that each building and temporary or permanent structure in a workplace is capable of withstanding any stresses likely to be imposed on it.

Safe machinery and equipment

4.3 (1) The employer must ensure that each tool, machine and piece of equipment in the workplace is

(a) capable of safely performing the functions for which it is used, and

(b) selected, used and operated in accordance with

(i) the manufacturer's instructions, if available,

(ii) safe work practices, and

(iii) the requirements of this Regulation.

(2) Unless otherwise specified by this Regulation, the installation, inspection, testing, repair and maintenance of a tool, machine or piece of equipment must be carried out

(a) in accordance with the manufacturer's instructions and any standard the tool, machine or piece of equipment is required to meet, or

(b) as specified by a professional engineer.

(3) A tool, machine or piece of equipment determined to be unsafe for use must be identified in a manner which will ensure it is not inadvertently returned to service until it is made safe for use.

(4) Unless otherwise specified by this Regulation, any modification of a tool, machine or piece of equipment must be carried out in accordance with

(a) the manufacturer's instructions, if available,

(b) safe work practices, and

(c) the requirements of this Regulation.

[en. B.C. Reg. 312/2003, App. B, s. 2; am. B.C. Reg. 243/2006, s. 1.]

Conformity to standards

4.4 (1) If this Regulation requires that a tool, machine or piece of equipment manufactured before April 15, 1998 must meet a code or standard, the tool, machine or piece of equipment must conform to the edition of the code or standard referred to in this Regulation or the edition of the code or standard published at the time the tool, machine or piece of equipment was manufactured, subject only to the modification or upgrading specified to be necessary in this Regulation or in a directive issued by the Board.

(2) When this Regulation requires a person to comply with

(a) a publication, code or standard of the Board or another agency, the person may, as an alternative, comply with another publication, code or standard acceptable to the Board, or

(b) practices, procedures or rules of the Board or another agency, the person may, as an alternative, comply with another practice, procedure or rule acceptable to the Board.

[en. B.C. Reg. 253/2001, s. 2; am. B.C. Reg. 312/2003, App. A, s. 1.]

Manuals and information

4.5 If this Regulation requires an operation or maintenance manual for a tool, machine or piece of equipment, the employer must ensure that before the tool, machine or piece of equipment is used in the workplace

(a) the manual has been obtained, and

(b) the supplier has provided sufficient information to identify the standard or standards to which the tool, machine or equipment has been manufactured.

(c) Repealed. [B.C. Reg. 312/2003, App. J, s. 1 (c).]

[am. B.C. Reg. 312/2003, App. J, s. 1.]

Reassembly

4.6 If machinery, equipment or a structure is dismantled in whole or in part, and subsequently re-assembled, it must be checked by a qualified person and determined to be safe before operation or use.

Information on rated capacity

4.7 If a machine or piece of equipment has a rated capacity which varies with the reach or configuration of the machine or equipment, or has other operating limitations,

(a) appropriate instructions, load charts and warning notices must be affixed to the machine or equipment so as to be visible to the operator when the operator is at the controls, or

(b) the information, in written form, must be available to the operator.

Rated capacity

4.8 (1) Unless provided elsewhere in this Regulation, the rated capacity or rated load of a machine or piece of equipment is that specified by the manufacturer of the machine or piece of equipment based on its design.

(2) The rated capacity or rated load must be certified by a professional engineer if

(a) the manufacturer's specification or other acceptable warranty cannot be produced,

(b) the equipment or machine has been modified in a manner which will change its rated capacity or rated load,

(c) wear, corrosion, damage or signs of fatigue are found which may reduce the rated capacity or rated load,

(d) the equipment or machine is used in a manner or for a purpose other than that for which it was originally designed, if the use will change the safe working load, or

(e) in the opinion of the Board, the provision of such certification is deemed necessary.

[am. B.C. Reg. 312/2003, App. C, s. 2.]

Inspection and maintenance records

4.9 (1) If this Regulation requires a machine or piece of equipment to have an inspection and maintenance record, then an effective written or other permanent recording system or log must be immediately available to the equipment operator and to any other person involved with inspection and maintenance of the equipment.

(2) The recording system must

(a) identify the make, model and serial number of the equipment, and the name and address of the current owner,

(b) contain an entry on each shift, signed by the operator of the machine or equipment, reporting the result of each start of shift inspection and safety check, and any observed defect, operating difficulty or need for maintenance occurring on the shift, and

(c) contain an entry signed by the person responsible for any test, inspection, modification, repair or maintenance performed on the equipment, summarizing the work done, indicating the status of the equipment or

machine for further use, and if appropriate, noting where a detailed record of the test, inspection, modification, repair or maintenance can be obtained.

(3) If this Regulation requires a machine or piece of equipment to have inspection and maintenance records, then detailed reports of inspection, maintenance, repairs and modifications must be kept for the duration of the service life of the machine or equipment and must be reasonably available to the workplace and made available, upon request, to the operator and to anyone else involved in the operation, inspection, testing or maintenance of the equipment.

Authorization

4.10 (1) A machine or piece of equipment may only be operated by authorized persons.

(2) A person must not be authorized to operate a machine or piece of equipment until the person has been adequately instructed and trained, and has demonstrated an ability to safely operate it.

Startup

4.11 Before any equipment, machinery or work process is put into operation the persons responsible for doing so must ensure that

(a) safeguards and air contaminant controls required by this Regulation are in place and functioning, and

(b) no person will be exposed to undue risk by putting the equipment, machinery or work process into operation.

Circumvention of safeguards

4.12 A person must not intentionally remove, impair, or render ineffective any safeguard provided for the protection of workers, except as permitted by this Regulation.

Emergency Preparedness and Response

Risk assessment

4.13 (1) The employer must conduct a risk assessment in any workplace in which a need to rescue or evacuate workers may arise.

(2) If the risk assessment required by subsection (1) shows a need for evacuation or rescue, appropriate written procedures must be developed and implemented, and a worker assigned to coordinate their implementation.

(3) Written rescue and evacuation procedures are required for but not limited to

(a) work at high angles,

(b) work in confined spaces or where there is a risk of entrapment,

(c) work with hazardous substances,

(d) underground work,

(e) work on or over water, and

(f) workplaces where there are persons who require physical assistance to be moved.

Emergency procedures

4.14 (1) Emergency means of escape must be provided from any work area in which the malfunctioning of equipment or a work process could create an immediate danger to workers and the regular means of exit could become dangerous or unusable.

(2) Emergency exit routes must be designed and marked to provide quick and unimpeded exit.

(3) At least once each year emergency drills must be held to ensure awareness and effectiveness of emergency exit routes and procedures, and a record of the drills must be kept.

4.15 Repealed. [B.C. Reg. 312/2003, App. E, s. 1.]

Training

4.16 (1) All workers must be given adequate instruction in the fire prevention and emergency evacuation procedures applicable to their workplace.

(2) Workers assigned to firefighting duties in their workplace must be given adequate training, by a qualified instructor, in fire suppression methods, fire prevention, emergency procedures, organization and chain of command, firefighting crew safety and communications applicable to their workplace.

(3) Retraining for firefighting duties must be provided periodically, but not less than once a year.

(4) A worker not covered by Part 31 *[Firefighting]*, who is assigned to firefighting duties, must be physically capable of performing the assigned duties safely and effectively before being permitted to do them.

Notification of fire departments

4.17 (1) An employer having at a workplace hazardous products covered by WHMIS, explosives, pesticides, radioactive material, consumer products or hazardous wastes in quantities which may endanger firefighters, must ensure the local fire department is notified of the nature and location of the hazardous materials or substances and methods to be used in their safe handling.

(2) Subsection (1) does not apply to a workplace

(a) where materials are kept on site for less than 15 days if the employer ensures an alternative effective means for notification of fire departments is in place in the event of fire or other emergency, or

(b) which is not within the service area of a fire department.

[am. B.C. Reg. 30/2015, s. 2.]

Notification of utility service providers

4.18 If work activities conducted by or on behalf of an employer cause a utility service to be hit or damaged, the employer must notify the owner of the utility service without delay.

[en. B.C. Reg. 312/2010, App. D, s. 2.]

Impairment

Physical or mental impairment

4.19 (1) A worker with a physical or mental impairment which may affect the worker's ability to safely perform assigned work must inform the worker's supervisor or employer of the impairment, and must not knowingly do work where the impairment may create an undue risk to the worker or anyone else.

(2) A worker must not be assigned to activities where a reported or observed impairment may create an undue risk to the worker or anyone else.

[am. B.C. Regs. 185/99, s. 21; 116/2022, App. B, s. 3.]

Impairment by alcohol, drug or other substance

4.20 (1) A person must not enter or remain at any workplace while the person's ability to work is affected by alcohol, a drug or other substance so as to endanger the person or anyone else.

(2) The employer must not knowingly permit a person to remain at any workplace while the person's ability to work is affected by alcohol, a drug or other substance so as to endanger the person or anyone else.

(3) A person must not remain at a workplace if the person's behaviour is affected by alcohol, a drug or other substance so as to create an undue risk to workers, except where such a workplace has as one of its purposes the treatment or confinement of such persons.

Working Alone or in Isolation

Definition

4.20.1 In sections 4.20.2 to 4.23, **"to work alone or in isolation"** means to work in circumstances where assistance would not be readily available to the worker

(a) in case of an emergency, or

(b) in case the worker is injured or in ill health.

[en. B.C. Reg. 318/2007, s. 1.]

Hazard identification, elimination and control

4.20.2 (1) Before a worker is assigned to work alone or in isolation, the employer must identify any hazards to that worker.

(2) Before a worker starts a work assignment with a hazard identified under subsection (1), the employer must take measures

(a) to eliminate the hazard, and

(b) if it is not practicable to eliminate the hazard, to minimize the risk from the hazard.

(3) For purposes of subsection (2) (b), the employer must minimize the risk from the hazard to the lowest level practicable using engineering controls, administrative controls or a combination of engineering and administrative controls.

[en. B.C. Reg. 318/2007, s. 1.]

Procedures for checking well-being of worker

4.21 (1) The employer must develop and implement a written procedure for checking the well-being of a worker assigned to work alone or in isolation.

(2) The procedure for checking a worker's well-being must include the time interval between checks and the procedure to follow in case the worker cannot be contacted, including provisions for emergency rescue.

(3) A person must be designated to establish contact with the worker at predetermined intervals and the results must be recorded by the person.

(4) In addition to checks at regular intervals, a check at the end of the work shift must be done.

(5) The procedure for checking a worker's well-being, including time intervals between the checks, must be developed in consultation with the joint committee or worker health and safety representative, as applicable.

(6) Time intervals for checking a worker's well-being must be developed in consultation with the worker assigned to work alone or in isolation.

[am. B.C. Reg. 318/2007, s. 2.]

Training

4.22 A worker described in section 4.21 (1) and any person assigned to check on the worker must be trained in the written procedure for checking the worker's well-being.

[am. B.C. Reg. 318/2007, s. 3.]

Late night retail safety procedures and requirements

4.22.1 (1) In this section:

"late night hours" means any time between 11:00 p.m. and 6:00 a.m.;

"late night retail premises" means

(a) a gas station or other retail fueling outlet, or

(b) a convenience store or any other retail store where goods are sold directly to consumers

that is open to the public for late night hours;

"violence prevention program" means a program implemented under subsection (2) (b) (iii).

(2) If a worker is assigned to work alone or in isolation in late night retail premises and there is any risk of harm from a violent act to the worker, then, in addition to any other obligations the employer has under sections 4.20.2 to 4.23 and 4.28 to 4.30,

(a) the employer must develop and implement a written procedure to ensure the worker's safety in handling money, and

(b) when that worker is assigned to work late night hours, the employer must also do one or more of the following:

(i) ensure that the worker is physically separated from the public by a locked door or barrier that prevents physical contact with or access to the worker;

(ii) assign one or more workers to work with the worker during that worker's assignment;

(iii) implement a violence prevention program in accordance with subsections (2.1) to (2.3).

(2.1) A violence prevention program must include procedures, policies and work environment arrangements necessary to ensure that all of the following requirements are met:

(a) there is a time lock safe on the premises that cannot be opened during late night hours;

(b) cash and lottery tickets that are not reasonably required in order to operate during late night hours are stored in the time lock safe referred to in paragraph (a);

(c) there is good visibility both into and out of the premises;

(d) there is limited access to the inside of the premises;

(e) the premises is monitored by video surveillance;

(f) there are signs on the premises, visible to the public, indicating that

(i) the safe on the premises is a time lock safe that cannot be opened during late night hours,

(ii) there is a limited amount of accessible cash and lottery tickets on the premises, and

(iii) the premises is monitored by video surveillance;

(g) a worker described in subsection (2)

(i) is at least 19 years of age, and

(ii) is provided with a personal emergency transmitter that is monitored by

(A) the employer, or

(B) a security company or other person designated by the employer.

(2.2) By the end of the first year of the implementation of a violence prevention program and by the end of every second year after that first year, the employer must receive a security audit report, in writing, from an independent qualified person confirming that the program meets all of the requirements under subsection (2.1).

(2.3) The written security audit report referred to in subsection (2.2) must be

(a) retained by the employer, and

(b) posted by the employer in the workplace

for a period beginning on or immediately after the date the report is received and ending no earlier than the date on which the next report is posted.

(3) The employer must train a worker described in subsection (2) in

(a) the written procedure referred to in subsection (2) (a), and

(b) if the employer implements a violence prevention program, the procedures, policies and work environment arrangements referred to in subsection (2.1).

(4) A worker described in subsection (2) must

(a) follow the written procedure referred to in subsection (2) (a), and

(b) if the employer implements a violence prevention program,

(i) follow the procedures, policies and work environment arrangements referred to in subsection (2.1), and

(ii) wear, during late night hours, the personal emergency transmitter referred to in subsection (2.1) (g) (ii).

[en. B.C. Reg. 318/2007, s. 4; am. B.C. Regs. 312/2010, App. B; 230/2011, s. 1.]

Mandatory prepayment for fuel

4.22.2 An employer must require that customers prepay for fuel sold in gas stations and other retail fueling outlets.

[en. B.C. Reg. 318/2007, s. 4.]

Annual review of procedures

4.23 The procedures referred to in sections 4.21 and 4.22.1 (2) (a) and, if a violence prevention program is implemented, the procedures, policies and work environment arrangements referred to in section 4.22.1 (2.1), must be reviewed at least annually, or more frequently if there is

(a) a change in work environment arrangements that could adversely affect

(i) the effectiveness of the violence prevention program, or

(ii) a worker's well-being or safety, or

(b) a report that the procedures, policies or work environment arrangements, as applicable, are not working effectively.

[en. B.C. Reg. 230/2011, s. 2.]

Workplace Conduct

Definition

4.24 In sections 4.25 and 4.26, **"improper activity or behaviour"** includes

(a) the attempted or actual exercise by a worker towards another worker of any physical force so as to cause injury, and includes any threatening statement or behaviour which gives the worker reasonable cause to believe the worker is at risk of injury, and

(b) horseplay, practical jokes, unnecessary running or jumping or similar conduct.

[am. B.C. Reg. 116/2022, App. B, s. 4.]

Prohibition

4.25 A person must not engage in any improper activity or behaviour at a workplace that might create or constitute a hazard to themselves or to any other person.

Investigation

4.26 Improper activity or behaviour must be reported and investigated as required by Part 3 (Rights and Responsibilities).

Violence in the Workplace

Definition

4.27 In sections 4.28 to 4.31, **"violence"** means the attempted or actual exercise by a person, other than a worker, of any physical force so as to cause injury to a worker, and includes any threatening statement or behaviour which gives a worker reasonable cause to believe that the worker is at risk of injury.

[am. B.C. Reg. 116/2022, App. B, s. 4.]

Risk assessment

4.28 (1) A risk assessment must be performed in any workplace in which a risk of injury to workers from violence arising out of their employment may be present.

(2) The risk assessment must include the consideration of

(a) previous experience in that workplace,

(b) occupational experience in similar workplaces, and

(c) the location and circumstances in which work will take place.

Procedures and policies

4.29 If a risk of injury to workers from violence is identified by an assessment performed under section 4.28 the employer must

(a) establish procedures, policies and work environment arrangements to eliminate the risk to workers from violence, and

(b) if elimination of the risk to workers is not possible, establish procedures, policies and work environment arrangements to minimize the risk to workers.

(c) Repealed. [B.C. Reg. 312/2003, App. D, s. 1 (c).]

[am. B.C. Regs. 185/99, s. 22; 312/2003, App. D, s. 1.]

Instruction of workers

4.30 (1) An employer must inform workers who may be exposed to the risk of violence of the nature and extent of the risk.

(2) The duty to inform workers in subsection (1) includes a duty to provide information related to the risk of violence from persons who have a history of violent behaviour and whom workers are likely to encounter in the course of their work.

(3) The employer must instruct workers who may be exposed to the risk of violence in

(a) the means for recognition of the potential for violence,

(b) the procedures, policies and work environment arrangements which have been developed to minimize or effectively control the risk to workers from violence,

(c) the appropriate response to incidents of violence, including how to obtain assistance, and

(d) procedures for reporting, investigating and documenting incidents of violence.

Advice to consult physician

4.31 (1) and (2) Repealed. [B.C. Reg. 312/2003, App. D, s. 2 (a).]

(3) The employer must ensure that a worker reporting an injury or adverse symptom as a result of an incident of violence is advised to consult a physician of the worker's choice for treatment or referral.

[am. B.C. Reg. 312/2003, App. D, s. 2.]

Work Area Requirements

Access to work areas

4.32 There must be a safe way of entering and leaving each place where work is performed and a worker must not use another way, if the other way is hazardous.

Arrangement of work areas

4.33 (1) A work area must be arranged to allow the safe movement of people, equipment and materials.

(2) If, to ensure safety, an aisle or passageway is designated for pedestrian traffic, the route must be clearly indicated by markings or other effective means and, where practicable, floor or grade markings must be used.

Restricted entry

4.34 Hazardous areas not intended to be accessible to workers must be secured by locked doors or equivalent means of security, and must not be entered unless safe work procedures are developed and followed.

Door installations

4.35 (1) Repealed. [B.C. Reg. 312/2003, App. A, s. 2 (a).]

(2) If a door installed in a workplace swings towards a stair, the full arc of its swing must be over a landing.

(3) A double-acting swing door must permit a person approaching the door to see any person approaching from the opposite side so as not to endanger their safety.

(4) A glass or transparent door must have hardware, bars or markings so that its presence and position are readily apparent.

[am. B.C. Reg. 312/2003, App. A, s. 2.]

Glass

4.36 (1) Repealed. [B.C. Reg. 312/2003, App. A, s. 3.]

(2) A panel, window or sidelight made of glass or similar transparent material, which could be mistaken for a doorway, must have bars or markings so that its presence and position are readily apparent.

[am. B.C. Reg. 312/2003, App. A, s. 3.]

Restricted visibility

4.37 A worker must not be permitted to enter or work in an area if visibility in the area is restricted by the presence of smoke, steam or other substance in the atmosphere, unless appropriate safe work procedures are followed.

Extreme temperatures

4.38 (1) An open flame or other high temperature or extreme low temperature source or surface, which could cause a burn or other injury, must be positioned or shielded to prevent contact by workers.

(2) If an extreme temperature source is necessarily exposed due to the work process, safe work procedures must be established, and workers must be instructed in those procedures and must wear appropriate clothing and personal protective equipment.

Slipping and tripping hazards

4.39 (1) Floors, platforms, ramps, stairs and walkways available for use by workers must be maintained in a state of good repair and kept free of slipping and tripping hazards.

(2) If such areas are taken out of service the employer must take reasonable means for preventing entry or use.

Wet floors

4.40 If a work process results in a liquid accumulating on the floor or grade surface in a work area and the liquid creates a slipping or other hazard, floor drains or other suitable means must be used to control the hazard.

Waste material

4.41 Refuse, spills and waste material must not be allowed to accumulate so as to constitute a hazard.

Cleaning with compressed air

4.42 (1) Compressed air or steam must not be used for blowing dust, chips, or other substances from equipment, materials and structures if any person could be exposed to the jet, or to the material it expels or propels and an injury or health hazard due to fire, explosion or other cause is likely to result.

(2) Subject to subsection (4) compressed air may not be used for blowing harmful or hazardous dusts or other harmful substances from clothing being worn by workers.

(3) If clothing is to be cleaned before leaving the work area, suitable cleaning equipment must be used.

(4) Compressed air may be used in specially designated areas for blowing dusts or other substances from clothing being worn by workers, provided that

(a) the substances have an exposure limit greater than 1.0 mg/m^3, as established by section 5.48,

(b) appropriate respirators and eye protection are worn, and

(c) the compressed air supply pressure is limited to a pressure of 70 kPa gauge (10 psig), or safety nozzles which have the same pressure limiting effect are used.

[am. B.C. Regs. 315/2003, App. A, s. 2; 312/2010, App. G, s. 1.]

Storing and Handling Materials

Stacking materials

4.43 (1) Material and equipment must be placed, stacked or stored in a stable and secure manner.

(2) Stacked material or containers must be stabilized as necessary by interlocking, strapping or other effective means of restraint to protect the safety of workers.

Storage racks

4.43.1 (1) In this section, **"storage rack"** means a combination of steel frames, beams and associated accessories used, once assembled into a structure, to support materials and products, including, for example, a pallet rack or cantilever rack, but excludes shelving and display fixtures used for retail purposes.

(2) This section applies in respect of a storage rack that is

(a) 2.4 m (8 ft) or taller in height, as measured from the floor to the top of the highest shelf level of the storage rack, or

(b) under 2.4 m (8 ft) in height, if the materials and products are loaded on or unloaded off the storage rack by other than manual means.

(3) The employer must ensure that a storage rack in the workplace is

(a) capable of safely supporting the items stored on it,

(b) designed and constructed in accordance with good engineering practice, and

(c) used in accordance with the specifications and instructions of the manufacturer or a professional engineer.

(4) The employer must ensure that a qualified person installs and uninstalls the storage rack, in whole or in part, in accordance with the instructions of the manufacturer or a professional engineer.

(5) The employer must ensure that the instructions of the manufacturer or a professional engineer for safely loading, unloading and maintaining the storage rack are readily available in the workplace to workers.

(6) The employer must ensure that the rated capacity of the storage rack is clearly posted near the storage rack and readily visible to workers.

(7) The employer must ensure that any structural modification, including reconfiguration, of the storage rack is carried out in accordance with the specifications of the manufacturer or a professional engineer.

(8) The employer must ensure that a qualified person

(a) inspects the storage rack

(i) for wear, corrosion, damage, missing or incompatible parts, and signs of fatigue, and

(ii) at regular intervals that will prevent the development of unsafe working conditions,

(b) makes a record of the results of each inspection, and

(c) provides the record to the employer.

(9) The employer must ensure that, with respect to the storage rack,

(a) regular maintenance is done, and

(b) wear, corrosion, damage, missing or incompatible parts, and signs of fatigue are repaired or replaced in accordance with the specifications and instructions of the manufacturer or a professional engineer.

[en. B.C. Reg. 143/2017.]

Entrapment

4.44 A worker must not enter or remain in any place where there is a danger of entrapment or engulfment in loose materials or from other circumstances unless

(a) safe access and a safe work area is provided by catwalks, walkways, barriers or other means, or

(b) measures are taken, where practicable, to control the risk of entrapment or engulfment and, if the risk is not eliminated, the worker uses a lifeline and harness of a type that will keep the worker in a position so as to be able to be rescued and is continuously tended by a standby person who is equipped for and capable of effecting immediate rescue.

Falling materials

4.45 An area in which material may be dropped, dumped or spilled must be guarded to prevent inadvertent entry by workers, or protected by adequate covers and guarding.

Ergonomics (MSI) Requirements

The purpose of sections 4.46 to 4.53 is to eliminate or, if that is not practicable, minimize the risk of musculoskeletal injury to workers.

Definition

4.46 In sections 4.47 to 4.53 (the Ergonomics (MSI) Requirements), **"musculoskeletal injury"** or **"MSI"** means an injury or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue including a sprain, strain and inflammation, that may be caused or aggravated by work.

Risk identification

4.47 The employer must identify factors in the workplace that may expose workers to a risk of musculoskeletal injury (MSI).

Risk assessment

4.48 When factors that may expose workers to a risk of MSI have been identified, the employer must ensure that the risk to workers is assessed.

Risk factors

4.49 The following factors must be considered, where applicable, in the identification and assessment of the risk of MSI:

(a) the physical demands of work activities, including

(i) force required,

(ii) repetition,

(iii) duration,

(iv) work postures, and

(v) local contact stresses;

(b) aspects of the layout and condition of the workplace or workstation, including

(i) working reaches,

(ii) working heights,

(iii) seating, and

(iv) floor surfaces;

(c) the characteristics of objects handled, including

(i) size and shape,

(ii) load condition and weight distribution, and

(iii) container, tool and equipment handles;

(d) the environmental conditions, including cold temperature;

(e) the following characteristics of the organization of work:

(i) work-recovery cycles;

(ii) task variability;

(iii) work rate.

Risk control

4.50 (1) The employer must eliminate or, if that is not practicable, minimize the risk of MSI to workers.

(2) Personal protective equipment may only be used as a substitute for engineering or administrative controls if it is used in circumstances in which those controls are not practicable.

(3) The employer must, without delay, implement interim control measures when the introduction of permanent control measures will be delayed.

Education and training

4.51 (1) The employer must ensure that a worker who may be exposed to a risk of MSI is educated in risk identification related to the work, including the recognition of early signs and symptoms of MSIs and their potential health effects.

(2) The employer must ensure that a worker to be assigned to work which requires specific measures to control the risk of MSI is trained in the use of those measures, including, where applicable, work procedures, mechanical aids and personal protective equipment.

Evaluation

4.52 (1) The employer must monitor the effectiveness of the measures taken to comply with the Ergonomics (MSI) Requirements and ensure they are reviewed at least annually.

(2) When the monitoring required by subsection (1) identifies deficiencies, they must be corrected without undue delay.

Consultation

4.53 (1) The employer must consult with the joint committee or the worker health and safety representative, as applicable, with respect to the following when they are required by the Ergonomics (MSI) Requirements:

(a) risk identification, assessment and control;

(b) the content and provision of worker education and training;

(c) the evaluation of the compliance measures taken.

(2) The employer must, when performing a risk assessment, consult with

(a) workers with signs or symptoms of MSI, and

(b) a representative sample of the workers who are required to carry out the work being assessed.

[am. B.C. Reg. 185/99, s. 23.]

Work Area Guards and Handrails

Definitions

4.54 In sections 4.54 to 4.63:

"guard" means a protective barrier around an opening in a floor or along the open sides of stairs or a ramp, landing, balcony, mezzanine, raised walkway or any other area to prevent a fall to a lower level, or inadvertent entry into a dangerous area;

"guardrail" means a guard consisting of a top rail 102 cm to 112 cm (40 in. to 44 in.) above the work surface, and a midrail located approximately midway between the underside of the top rail and the top of the toeboard, if one is provided, or the work surface if no toeboard is provided.

[am. B.C. Reg. 312/2010, App. E, s. 1.]

Guardrail locations

4.55 An area accessible to workers must have guards or guardrails installed in any of the following circumstances:

(a) if a raised floor, open-sided floor, mezzanine, gallery, balcony, work platform, ramp, walkway, or runway is 122 cm (4 ft.) or more above the adjacent floor or grade level;

(b) on both sides of any walkway over or adjacent to any substance which is a hazard if a worker fell in, or on it, or which is over machinery or work areas;

(c) around the perimeter of any open container or containment area such as an open vat, bin, tank or pit which is 122 cm (4 ft.) or more in depth and which has sides that do not extend at least as high as required for a guardrail above the adjacent grade or work surface;

(d) if a stairway ends in direct proximity to dangerous traffic or other hazard to prevent inadvertent entry into the dangerous area.

Exceptions

4.56 Section 4.55 does not apply

(a) to the front edge of a loading dock or to the viewing edge of a performance stage, and to parts of the scenic units which will be visible to the audience during a rehearsal or performance, provided effective measures are taken to ensure that workers are protected from injury,

(b) during the construction, demolition, renovation or modification of a work area provided that

(i) access is restricted only to the workers involved in the activity, and

(ii) the requirements of Part 11 *[Fall Protection]* are followed, or

(c) to a movable work platform or scaffold, as those terms are defined in section 13.1, if the movable work platform or scaffold meets the requirements set out in section 13.2 (1) (a) and (b) and (2) that apply in respect of guardrails on the movable work platform or scaffold.

[am. B.C. Reg. 9/2017, App. B, s. 1.]

Elevated workers

4.57 If a worker is employed on stilts or work platforms, or is otherwise elevated above the floor, and the effective height of guardrails, walls, or barricades is thus reduced to less than the height specified in section 4.54, additional guardrails must be installed or a personal fall protection system must be used in accordance with the relevant requirements contained in Part 11 *[Fall Protection]*.

Specifications for guards and guardrails

4.58 (1) Guards in a building must be appropriate for the use and occupancy of the area.

(2) Guards in areas not part of a building must meet the applicable criteria of subsections (3) to (5), or other standard acceptable to the Board.

(3) Unless otherwise permitted by subsections (4) and (4.1), guardrails must be installed to withstand a load applied horizontally and normal to the span of the rail, of 550 N (125 lb.) applied at any point along the rail, and a vertical, downward load of 1.5 kN per m (100 lb. per ft.) along the top rail, but the horizontal and vertical loads need not be considered to act simultaneously.

(4) Guardrails temporarily installed during the construction, demolition, maintenance or renovation of a work area must be able to withstand a load of 550 N (125 lb.) applied perpendicular to the span in a horizontal or vertically downward direction at any point on the top rail, or be built to the criteria of subsection (5).

(4.1) If part or all of the top rail or a midrail of a guardrail that is temporarily installed during the construction, demolition, maintenance or renovation of a work area is made of fibre rope, wire rope, chain or other non-rigid material, that part of the guardrail must meet the requirements of *WorkSafeBC Standard – Guardrails using rope or other non-rigid material*, as set out in Schedule 4-A to this Part.

(5) Unless designed by a professional engineer, temporary wooden guardrails on floors and platforms must meet the following criteria:

(a) posts must be spaced not more than 2.4 m (8 ft.) apart, except a scaffold may have posts spaced not more than 3 m (10 ft.) apart;

(b) wooden top rails must be at least 38 mm x 89 mm (2 in. x 4 in. nominal) lumber for a span of up to 2.4 m between supports, and at least 38 mm x 140 mm (2 in. x 6 in. nominal) lumber for a span of 2.4 m to 3 m between supports;

(c) wooden midrails must be 19 mm x 140 mm (1 in. x 6 in. nominal) or 38 mm x 89 mm (2 in. x 4 in. nominal) lumber;

(d) wooden rails must be secured to the tops or inner sides of their vertical supports;

(e) wooden guardrail posts must be at least 38 mm x 89 mm (2 in. x 4 in. nominal) lumber, and must be installed with the narrow dimension facing the open edge;

(f) plastic or wire mesh fencing of adequate strength may be used in place of the midrail, but posts and top rails must comply with the requirements of this section and such fencing must be secured in place.

[am. B.C. Regs. 312/2003, App. E, s. 2; 312/2010, App. E, s. 2.]

Temporary removal of guardrails

4.58.1 (1) If a guardrail must be removed to accommodate work,

(a) only that portion of the guardrail necessary to allow the work to be done may be removed, and

(b) workers exposed to a fall hazard must be protected by another fall protection system when the guardrail is absent.

(2) The guardrail must be replaced

(a) when the unguarded area is left unattended, and

(b) after the work is completed if the circumstances still require guardrails.

[en. B.C. Reg. 420/2004, s. 1.]

Floor and roof openings

4.59 (1) A pit or other opening in a floor, walkway, roof or other area accessible to workers, which is a danger to workers, must be securely covered with a cover of adequate size and strength or guarded by fixed or movable guardrails, which must be identified as such and kept in place except when necessarily removed to work in the opening or pit.

(2) If compliance with subsection (1) is not practicable for a vehicle service pit, the area around the perimeter of the pit must be marked in a high visibility colour extending back at least 1 m (3.3 ft.) from the edge of the pit, and the marking coating or material must provide a skid resistant surface.

(3) Subsection (1) does not apply to a trap door in a performance stage or scenic unit that will be visible to the audience during a rehearsal or performance, provided that effective measures are taken to protect performers and other workers from injury.

(4) If a worker must enter an area not normally accessible and that has openings that are a danger, such openings must be guarded or personal fall protection must be used while the worker is in the area.

[am. B.C. Reg. 312/2003, App. D, s. 3.]

Toeboards

4.60 (1) Floor openings, elevated walkways and platforms must have toeboards if there is a danger from tools, materials, equipment and debris falling off the edge of the work surface, or there is a danger of slipping off the work surface due to the environment or work practices being used.

(2) The top of a toeboard must be at least 10 cm (4 in.) above the floor or platform, and the space between the bottom of the toeboard and the floor or platform must not exceed 13 mm (1/2 in.).

(3) If material is stacked or stored on a platform or walkway, or near a floor opening, toeboards must be increased in height or solid or mesh panels of appropriate height must be installed to prevent the material from falling.

(4) Subsections (1) and (2) do not apply to a walkway or a platform that is on a performance stage or scenic unit and will be visible to the audience during a rehearsal or performance, provided that effective measures are taken to protect performers and other workers from injury.

Walkways

4.61 Elevated walkways must be at least 50 cm (20 in.) wide, and safe access to walkways must be provided by means of stairs, ramps or fixed ladders.

Handrails on stairways

4.62 (1) Stairs with more than 4 risers must have continuous handrails on

(a) any open side of the stairway,

(b) one side of enclosed stairways 112 cm (44 in.) or less in width, and

(c) both sides of enclosed stairways over 112 cm (44 in.) wide.

(2) The top of a handrail must be 76 cm to 92 cm (30 in. to 36 in.) above the stair tread, measured vertically from the nose of the tread, and the height must not vary on any flight or succession of flights of stairs.

(3) A handrail on an open side of a stairway must have a midrail located approximately midway between the top of the handrail and the nose of the stair tread.

(4) A handrail must be able to withstand a load of 1.3 kN (300 lbs) applied vertically or horizontally at any point along the handrail.

Vehicle travel areas

4.63 A curb must be installed, where practicable, whenever there is a danger of a vehicle or other equipment running off the edge of an elevated area.

Illumination

Definitions

4.64 In sections 4.64 to 4.69:

"brightness ratio" means for any 2 surfaces in the field of vision, the ratio of the luminance of one surface to the luminance of the other surface, expressed as a percentage;

"contrast" means the ratio of the luminance or light coming from an object and the luminance of its immediate background;

"general lighting" means an array of light fixtures that provides a fairly uniform illumination level for a large area, sometimes over the whole workplace, exclusive of any provision for special local lighting;

"glare" means brightness within the field of vision that causes eye fatigue or loss in visual performance;

"illumination level" means the amount of light falling on a surface;

"local lighting" means a light fixture or array of fixtures that provides illumination over a small area such as a service counter in a warehouse, without providing any significant general lighting in the surrounding area;

"luminance" means the amount of light reflected by a surface at a given angle;

"reflectance" means the ratio of the light reflected from a surface to that falling on the surface, expressed as a percentage.

Illumination levels

4.65 (1) Except as otherwise provided in this section and section 4.69, an employer must provide and maintain minimum illumination levels to ensure safe working

conditions, safe passage and the identification of hazards or obstructions as follows:

(a) 22 lux (2 fc) in areas of low activity, such as parking lots, building exteriors, outside areas and basement areas housing machinery, but which are not regular task areas;

(b) 54 lux (5 fc) in areas of high activity, such as frequently used walkways and building access and egress points.

(1.1) Cap lamps or other local sources of illumination acceptable to the Board must be used if the light intensity in a work area is less than 22 lux (2 fc) and it is impracticable to provide illumination by any other means.

(2) For tasks which require the ability to distinguish detail an employer must provide and maintain illumination as required by Table 4-1.

(3) For work processes which require lower illumination levels than those specified in subsections (1) and (2), such as photographic darkrooms, fish hatching rooms and poultry catching operations, the employer may use other effective means to ensure the safety of workers.

[am. B.C. Reg. 20/2008, App. A, s. 60.]

Table 4-1: Illumination levels for task categories

Task category	Examples[1]	Minimum[2] illumination level in lux
1. Simple orientation for short temporary visits	Inactive storage, waiting areas, VDT screens, log loading and unloading.	50
2. Working spaces where visual tasks are only occasionally performed	Stairways, freight elevators, truck loading, active bulk storage.	100
3. Visual tasks of high contrast or large size	Bakery mixing rooms, hospital central (clean) linen rooms, locker rooms, reading good quality text, casual reading, simple assembly, hand or simple spray painting, rough lumber grading, rough woodworking and benchwork.	200
4. Visual tasks of medium contrast or small size	Hair styling shops, kitchens, vehicle repair garages, sawmill filing room (work areas), reading poor quality text, prolonged or critical reading, medium bench or machine work, mail sorting, fine hand painting and finishing, fine woodworking and finishing.	500
5. Visual tasks of low contrast or very small size	Difficult assembly tasks, difficult inspections, weaving, clothing alteration, finished lumber grading.	1 000
6. Visual tasks of low contrast and very small size over a prolonged period	Very difficult assembly tasks, sewing, fine bench or machine work, extra-fine hand painting and finishing.	2 000

Task category	Examples[1]	Minimum[2] illumination level in lux
7. Very prolonged and exacting visual tasks	Exacting assembly or inspection, extra fine bench or machine work, precision manual arc-welding.	5 000
8. Very special visual tasks of extremely low contrast and small size	Very detailed cloth product inspection and examination.	10 000
Note 1: Further guidance in determining task categories that apply to specific work areas and activities is contained in the *IES Handbook*. This publication also provides information on acceptable measures to control brightness, reflectance and glare.		
Note 2: The lux is the metric unit of light measurement, and replaces the footcandle (fc), which was the traditional imperial unit of measurement. One lux equals about one tenth of a foot-candle. For example, the minimum illumination in footcandles for task category number 4, which is common in the office environment, is about 50 footcandles.		

Means of illumination

4.66 The lighting required by section 4.65 must be provided by general or local lighting, or an effective combination of the two.

Brightness, reflectance and glare

4.67 As far as practicable, the workplace must be designed and maintained in such a manner to adequately control

(a) brightness ratios,

(b) reflectance values, and

(c) glare.

Illumination measurement

4.68 (1) The measurement of illumination must be done in accordance with the procedures in the *Lighting Handbook – Reference and Application, 8th Edition, 1993 (IES Handbook)* published by the Illuminating Engineering Society of North America.

(2) A photometer used to measure illumination levels must be colour and cosine corrected.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Emergency lighting

4.69 (1) If failure of a lighting system would create conditions dangerous to the health and safety of workers, an emergency lighting system must be provided for the workplace and the exit routes.

(2) An emergency lighting system must provide dependable illumination while the primary lighting system is off to enable all emergency measures to be carried out, including

(a) emergency shutdown procedures, and

(b) evacuation of workers from the premises.

(3) An emergency lighting system in a fixed facility must meet the requirements of section 3.2.7 (Lighting and Emergency Power Systems) of the *BC Building Code* with regard to

(a) illumination level,

(b) use of recessed fixtures,

(c) duration of emergency lighting,

(d) the use of self-contained emergency lighting units, and

(e) emergency electrical power supply.

(4) The emergency lighting system must be inspected, tested and maintained to meet the requirements of section 6.5 (Emergency Power Systems and Unit Equipment for Emergency Lighting) of the *BC Fire Code*.

[am. B.C. Reg. 199/2014, App. B, s. 1.]

Indoor Air Quality

Application

4.70 Sections 4.71 to 4.80 apply to indoor or enclosed areas when occupied by workers, except

(a) a controlled atmosphere enclosure,

(b) a confined space, and

(c) when clearly impracticable, such as during some construction or renovation projects.

Submitting plans

4.71 An employer or the employer's agent must submit to the Board drawings and specifications for an existing or proposed ventilation system when requested by the Board.

Design and operation

4.72 (1) An employer must ensure that a ventilation system for the supply and distribution of air and removal of indoor air contaminants is designed, constructed and operated in accordance with

(a) established engineering principles, and

(b) *ASHRAE Standard 62-1989, Ventilation for Acceptable Indoor Air Quality*.

(2) An adequate supply of outdoor air must be provided to the workplace in accordance with Table 2 of *ASHRAE Standard 62-1989*.

(3) For a building ventilation system installed prior to 1989, an adequate supply of outdoor air must be provided in accordance with the ASHRAE standard in place at the time the ventilation system was designed.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Building modifications

4.73 The owner of a building must permit an employer to install a ventilation system when required by this Part, provided that all such work is subject to the approval of the owner, acting reasonably.

Distribution

4.74 Outdoor air must be effectively distributed throughout the workplace.

Balancing

4.75 The ventilation system must be balanced to

(a) ensure that each space within the building receives an adequate allotment of outdoor air, and

(b) accommodate the actual or the normally anticipated occupancy of each space.

Ventilation openings

4.76 (1) A ventilation system must not be obstructed by material or equipment placed in front of the ventilation air intakes or discharge points.

(2) Outdoor air intakes must be located so that outdoor air entering the ventilation system does not contain any contaminant in a concentration greater than normal outdoor ambient air in that locality.

Discharged air

4.77 A ventilation system that discharges air from the work area must be designed to minimize the likelihood of exposing any worker at a workplace, including an adjacent workplace

(a) to an air contaminant in a concentration which exceeds either 10% of its applicable exposure limit in Part 5 (Chemical Agents and Biological Agents), or an acceptable ambient air quality standard established by an authority having jurisdiction over environmental air standards, whichever is greater, and

(b) where practicable, to an objectionable odour.

Preventive maintenance

4.78 (1) To maintain acceptable air quality, the employer or, if the employer is not responsible for maintenance of the ventilation system, the owner of the ventilation system, must establish an effective preventive maintenance program for the ventilation system.

(2) Preventive maintenance must include

(a) regular inspections

(i) of all critical components of the ventilation system, such as dampers, fans, belts, baffles, ductwork, diffusers and control systems, and

(ii) for conditions which would promote the growth of micro-organisms, such as water leaks or stagnant water pools,

(b) correction of any deficiencies found during the inspections carried out under paragraph (a),

(c) repair or replacement of malfunctioning and consumable components, such as filters and belts, and the cleaning of air distribution systems, ducts and dampers when necessary to correct an indoor air quality deficiency,

(d) adequate treatment of open water systems associated with ventilation equipment such as cooling towers and humidifiers, to control biological growth, and

(e) maintenance of combustion sources, such as furnaces, space heaters and water heaters to assure proper burning and exhausting of waste gases so that recirculation of gases to the workplace will not occur.

[am. B.C. Reg. 185/99, s. 24.]

Investigation

4.79 (1) The employer must ensure that the indoor air quality is investigated when

(a) complaints are reported,

(b) occupancy in the space changes substantially, or

(c) renovations involving significant changes to the ventilation system occur.

(2) An air quality investigation must include

(a) assessment of the ventilation rate, unless the indoor carbon dioxide level is less than 650 ppm above ambient outdoor levels,

(b) inspection of the ventilation system as required in section 4.78 (2),

(c) sampling for airborne contaminants suspected to be present in concentrations associated with the reported complaints, and

(d) a record of the complaint, the findings of the investigation, and any actions taken.

Temperature and humidity

4.80 The employer must ensure that temperature and humidity levels within the indoor work environment are maintained within acceptable comfort ranges, as far as is practicable.

Environmental Tobacco Smoke and E-Cigarette Vapour

Definitions

4.80.1 In sections 4.81 and 4.82, **"activated e-cigarette"**, **"e-cigarette"** and **"tobacco"** have the same meaning as in the *Tobacco and Vapour Products Control Act*.

[en. B.C. Reg. 9/2017, App. C, s. 2.]

Controlling exposure

4.81 Subject to section 2.41 of the *Tobacco and Vapour Products Control Act* and section 4.23 (2) (c) of the Tobacco and Vapour Products Control Regulation, an employer must control the exposure of workers to environmental tobacco smoke and e-cigarette vapour at a workplace by doing all of the following:

(a) prohibiting the following activities in the workplace:

(i) smoking tobacco;

(ii) holding lighted tobacco;

(iii) using an e-cigarette;

(iv) holding an activated e-cigarette;

(b) subject to section 4.22 (3) of the Tobacco and Vapour Products Control Regulation, restricting the activities referred to in paragraph (a) of this section to a safe outdoor location that is a minimum of 6 m from a doorway, window or air intake of an indoor workplace;

(c) except as permitted under section 4.82 of this regulation, prohibiting working in an indoor area where the activities referred to in paragraph (a) of this section are allowed under section 4.23 (2) (a) or (b) of the Tobacco and Vapour Products Control Regulation.

[en. B.C. Reg. 9/2017, App. C, s. 3.]

Exceptions

4.82 (1) An employer must ensure that a worker does not work in an indoor area where the activities referred to in section 4.81 (a) are permitted under section 4.23 (2) (a) or (b) of the Tobacco and Vapour Products Control Regulation unless

(a) the worker must enter the area to respond to an emergency endangering life, health or property,

(b) the worker must enter the area to investigate for illegal activity, or

(c) the tobacco smoke or e-cigarette vapour has been effectively removed.

(2) If necessary to prevent tobacco smoke or e-cigarette vapour from entering a workplace, a room where the activities referred to in section 4.81 (a) are permitted under section 4.23 (2) (a) of the Tobacco and Vapour Products Control Regulation must be provided with a separate, non-recirculating exhaust ventilation system that

(a) is designed in accordance with expected occupancy rates,

(b) maintains adequate air flows from areas in which smoking tobacco or using activated e-cigarettes is prohibited to areas in which smoking tobacco or using activated e-cigarettes is permitted,

(c) discharges directly to the outdoors, and

(d) meets all other requirements, specified in the *American Society of Heating, Refrigerating and Air-conditioning Engineers Standard 62-1989, Ventilation for Acceptable Indoor Air Quality*, for a lounge in which smoking tobacco or using activated e-cigarettes is permitted.

[en. B.C. Reg. 9/2017, App. C, s. 3.]

4.83 Repealed. [B.C. Reg. 258/2008, App. B, s. 2.]

Occupational Environment Requirements

Eating areas

4.84 (1) Workers must not keep or consume food in an area of a workplace where it could become unwholesome because of workplace contaminants.

(2) The employer must ensure that an area suitable for the storage and consumption of food is provided for workers if

(a) there is a risk that food stored or consumed at a workplace may become unwholesome because of workplace contaminants, or

(b) food storage or consumption is restricted or prohibited at the workplace.

[en. B.C. Reg. 421/2004.]

Washroom facilities

4.85 (1) Except as provided by subsection (2), the employer must ensure that a sufficient number of plumbed washroom facilities are readily available for workers.

(2) If plumbed washroom facilities cannot be provided because of the nature of the workplace or the nature of the work in which the worker is involved, the employer must

(a) provide access to portable washroom and hand-washing facilities, or

(b) make such other reasonable arrangements to accommodate workers as the circumstances allow, if access to portable washroom and hand-washing facilities cannot be provided.

(3) If washroom facilities are provided they must be

(a) maintained in proper working order,

(b) kept clean and sanitary, and

(c) provided with the supplies necessary for their use.

[en. B.C. Reg. 421/2004.]

Change areas

4.86 If the employer requires the worker to change into protective work clothing at the workplace, the employer must ensure that adequate change areas are provided.

[en. B.C. Reg. 421/2004.]

Unsafe water

4.87 The employer must display at every plumbed non-potable water source from which a person might reasonably believe that the person can safely drink, a notice that the water is unfit for human consumption.

[en. B.C. Reg. 421/2004; am. B.C. Reg. 116/2022, App. B, s. 5.]

4.88 to **4.106** Repealed. [B.C. Reg. 421/2004.]

SCHEDULE 4-A

[en. B.C. Reg. 312/2010, App. E, s. 3.]

(section 4.58 [specifications for guards and guardrails])

WORKSAFEBC STANDARD – GUARDRAILS USING ROPE OR OTHER NON-RIGID MATERIAL

Scope

1 This standard sets out the minimum requirements for the design and use of a guardrail system temporarily installed in a workplace and made using a rope rail for part or all of the top rail or midrail of the guardrail system.

Definitions

2 In this standard:

"fall protection system" has the same meaning as in section 11.1 of this Regulation;

"guardrail" has the same meaning as in section 4.54 of this Regulation;

"rope rail" means a rail made of fibre rope, wire rope, chain or other non-rigid material.

Performance and material requirements

3 (1) A rope rail must be able to withstand a load of 550 N (125 lb.) applied in any direction at any point on the rope rail.

(2) A guardrail system using a rope rail must be installed with sufficient setback from the outer face of the parapet, the floor opening or the open edge of the floor or work surface, as the case may be, or from any other hazard, such that when the rope rail is subjected to a horizontal load of 550 N (125 lb.) applied at any point, the rope rail will not deflect

(a) past the outer face of the parapet,

(b) past the edge of the floor opening,

(c) past the open edge of the floor or work surface, or

(d) into the hazard.

(3) A rope rail must be made of a material that will remain stable and functional, having regard to the following:

(a) climatic conditions;

(b) exposure to

(i) high temperature sources, or

(ii) by-products of high temperature processes such as welding or cutting;

(c) chemical exposures that may occur due to

(i) the location of the workplace where the guardrail system is to be installed, or

(ii) the work that will be taking place around or near the guardrail system.

(4) A rope rail must not be made of natural fibre rope or other material relying on natural fibre for tensile strength.

Engineering requirements

4 (1) A rope rail must be installed and used in accordance with written instructions from a professional engineer.

(2) The written instructions required by subsection (1) must include the following:

(a) the seal and signature of the professional engineer providing the written instructions;

(b) the address of and location in the workplace where the guardrail system is to be used;

(c) the name of each employer, prime contractor or owner for whom the written instructions were prepared;

(d) a description of the guardrail system or an illustration for its configuration;

(e) details for the connection of the rope rail to supports and anchors;

(f) details on the size and grade of rope and all required rigging hardware to be used;

(g) details for corner posts and points where rope terminations occur;

(h) the maximum span permitted between supports;

(i) the tension required in the rope and the means to achieve it;

(j) the means for testing rope tension during inspections of the system.

(3) The written instructions for a guardrail system intended for use at a number of workplaces of similar design and construction must include the following:

(a) the seal and signature of the professional engineer providing the written instructions;

(b) a description of the type of structure where the guardrail system may be used;

(c) the name of each employer, prime contractor or owner for whom the written instructions were prepared;

(d) a description of the guardrail system or an illustration for its configuration;

(e) details for the connection of the rope rail to supports and anchors;

(f) details on the size and grade of rope and all required rigging hardware to be used;

(g) details for corner posts and points where rope terminations occur;

(h) the maximum span permitted between supports;

(i) the tension required in the rope and the means to achieve it;

(j) the means for testing rope tension during inspections of the system.

(4) The written instructions must be available at the workplace when the guardrail system is being installed and while the rope rail is in place.

Installation and use requirements

5 (1) A worker involved in the installation, maintenance or removal of a guardrail system described in section 1 *[scope]* must use a fall protection system if required by Part 11 *[Fall Protection]* of this regulation.

(2) A rope rail meeting this standard is intended for use only as a guardrail and must not be used as a horizontal lifeline unless a professional engineer specifically authorizes such use and provides written instructions for such use.

(3) If the lack of visibility of a rope rail is a hazard, high visibility coloured markers or flagging must be installed on the top rail of the guardrail system at intervals not exceeding 2 m (6.5 ft.).

(4) Once installation of a guardrail system described in section 1 *[scope]* is complete and before the system is relied on as the fall protection system for the work area, the employer must ensure the following:

(a) the rope rail and the guardrail system is inspected by a qualified person;

(b) the qualified person is satisfied that the installation conforms to the written instructions of the professional engineer required by section 4 of this Schedule;

(c) the qualified person provides the employer with a written record of the inspection that states that the guardrail system is properly installed;

(d) a copy of the record referred to in paragraph (c) is available at the workplace where the guardrail system is installed.

(5) In addition to the inspection required by subsection (4), the employer must ensure that the rope rail and the guardrail system is inspected by a qualified person at the start of each work shift to verify that

(a) the rope rail meets the tension requirements of section 3 (1) and (2) of this Schedule, and

(b) the guardrail system conforms to the written instructions referred to in subsection (4) (b) of this section.

(6) If, on inspection under subsection (5) or at any other time, the qualified person or any other person finds that

(a) the rope rail does not meet the tension requirements referred to in subsection (5), or

(b) the guardrail system does not conform to the written instructions referred to in subsection (4) (b),

no work is to take place in the affected area until the deficiency is corrected or the workers in the area are protected by an alternative fall protection system meeting the requirements of Part 11 *[Fall Protection]* of this Regulation.

PART 5 – CHEMICAL AGENTS AND BIOLOGICAL AGENTS

Definitions

5.1 In this Part:

"8-hour TWA limit" means the time weighted average (TWA) concentration of a substance in air which may not be exceeded over a normal 8 hour work period;

"ACGIH" means

(a) the American Conference of Governmental Industrial Hygienists publication entitled *Threshold Limit Values and Biological Exposure Indices*, dated 2002, as amended from time to time, or

(b) the American Conference of Governmental Industrial Hygienists publication entitled *Documentation of the Threshold Limit Values and Biological Exposure Indices*, as amended from time to time;

"adverse health effect" means an acute or chronic injury, acute or chronic disease, or death;

"approved storage area" means a storage area which meets the requirements of article 4.2.7.5 of the *BC Fire Code*;

"approved storage cabinet" means a flammable liquids storage cabinet which bears a UL or ULC approval label for this purpose or which otherwise meets the requirements of subsection 4.2.10 of the *BC Fire Code*;

"approved storage room" means a room for container storage which meets the requirements of section 4.2.9 of the *BC Fire Code*;

"as low as reasonably achievable" or **"ALARA"** means, in reference to a substance, that measures must be taken to keep a worker's exposure to a level as low as is reasonably achievable;

"bulk shipment" means a shipment of a hazardous product that is contained in any of the following, without intermediate containment or intermediate packaging:

(a) a vessel that has a water capacity equal to or greater than 450 litres;

(b) a freight container, road vehicle, railway vehicle or portable tank;

(c) the hold of a ship;

(d) a pipeline;

"carcinogen" means a substance or a mixture of substances which is identified as a carcinogen in section 5.57 (1), or

(a) causes an increased incidence of benign or malignant neoplasms, or

(b) substantially decreases the latency period between exposure and onset of neoplasms in humans, or

(c) results in the induction of tumors at a site other than the site of administration in one or more experimental mammalian species as a result of any oral, respiratory, or dermal exposure, or any other exposure, or

(d) is metabolized into one or more potential occupational carcinogens by mammals;

"CAS registry number" means the identification number assigned to a chemical by the Chemical Abstracts Service, a division of the American Chemical Society;

"ceiling limit" means the concentration of a substance in air which may not be exceeded at any time during the work period;

"compressed gas" means a substance that meets the criteria for Physical Hazard Class – Gases Under Pressure, Part 7, Subpart 5 of the HPR;

"container" includes a bag, barrel, bottle, box, can, cylinder, drum or similar package or receptacle, but does not include a storage tank;

"continuous flow emergency shower facility" means a facility capable of delivering water with a spray pattern designed to effectively flush affected areas of the skin;

"continuous flow eyewash facility" means a plumbed or portable facility capable of delivering a minimum of 1.5 litres of water per minute (0.33 imp gal per min) with a water pressure not exceeding 175 kPa (25 psi) and with a spray pattern designed to effectively flush both eyes;

"drench hose" means a flexible hose connected to a water supply and capable of delivering a minimum of 11.4 litres of water per minute (2.5 imp gal per min), for use to flush the eyes and/or skin;

"flammable gas" means a substance that meets the criteria for Physical Hazard Class – Flammable Gases, Part 7, Subpart 2 of the HPR;

"fugitive emission" means a gas, liquid, solid, vapour, fume, mist, fog or dust that escapes from process equipment, emission control equipment or from a product where workers may be readily exposed;

"hazard information" means information on the proper and safe use, storage and handling of a hazardous product and includes information related to its health and physical hazards;

"*Hazardous Materials Information Review Act*" or **"HMIRA"** means the *Hazardous Materials Information Review Act* (Canada);

"*Hazardous Products Act*" or **"HPA"** means the *Hazardous Products Act* (Canada);

"Hazardous Products Regulations" or **"HPR"** means the Hazardous Products Regulations (Canada);

"hazardous waste" means a hazardous product that is acquired or generated for recycling or recovery or is intended for disposal;

"hazardous waste profile sheet" means a written description of the hazardous waste which identifies its hazardous characteristics, hazardous ingredients, and prescribes safe work procedures for handling, storing, using and disposing of the waste;

"IARC" means the International Agency for Research on Cancer publication *Monographs on the Evaluation of Carcinogenic Risks to Humans*, as amended from time to time;

"label" means a group of written, printed or graphic information elements that relate to a hazardous product, which group is designed to be affixed to, printed on or attached to the hazardous product or the container in which the hazardous product is packaged;

"laboratory sample" means a sample of a hazardous product that is packaged in a container that contains less than 10 kg of the hazardous product and is intended solely to be tested in a laboratory, but does not include a sample that is to be used

(a) by the laboratory for testing other products, mixtures, materials or substances, or

(b) for educational or demonstration purposes;

"manufactured article" means an article that is formed to a specific shape or design during manufacture, the intended use of which, when in that form, is dependent in whole or in part on its shape or design and that, under normal conditions of use, will not release or otherwise cause an individual to be exposed to a hazardous product;

"personal eyewash unit" means an eyewash that supplements an emergency eyewash facility by delivering immediate flushing for less than 15 minutes;

"portable tank" means a closed container that is designed to be movable while containing liquid, which is equipped with skids, mountings or accessories to facilitate handling of the tank by mechanical means and is not permanently attached to a transporting vehicle, as defined in the *BC Fire Code*;

"product identifier" means, in respect of a hazardous product, the brand name, chemical name, common name, generic name or trade name;

"readily available" means, when used in connection with an SDS, present in an appropriate place and in the form of either

(a) a physical copy that can be handled, or

(b) an electronic copy,

that is accessible to a worker at all times;

"short-term exposure limit" or **"STEL"** means the time weighted average (TWA) concentration of a substance in air which may not be exceeded over any 15 minute period, limited to no more than 4 such periods in an 8 hour work shift with at least one hour between any 2 successive 15 minute excursion periods;

"significant new data" means new data regarding the hazard presented by a hazardous product that change its classification in a category or subcategory of a hazard class, or result in its classification in another hazard class, or change the ways to protect against the hazard presented by the hazardous product;

"storage tank" means a closed container that has a capacity of more than 250 litres (55 imp gal) and is designed to be installed in a fixed location, as defined in the *BC Fire Code*;

"supplementary eyewash facility" means a personal eyewash unit or a drench hose;

"supplier label" means a label provided by a supplier that contains the information elements required by the *Hazardous Products Act*;

"tempered" means maintained at temperatures from 15°C to 30°C (60°F to 85°F);

"temporary" means non-routine work, and does not refer to routine work of short duration;

"workplace label" means a label that discloses

(a) a product identifier that is identical to that found on the SDS of the corresponding hazardous product,

(b) information for the safe handling of the hazardous product that is conveyed in a manner appropriate to the workplace, and

(c) that an SDS, if supplied or produced, is available.

[am. B.C. Regs. 185/99, s. 32; 315/2003, App. A, s. 3; 319/2007, App. A, s. 2; 258/2008, App. C, s. 1; 30/2015, s. 3.]

Designation as hazardous substances

5.1.1 For the purposes of sections 5.2 and 6.33 to 6.40 and Part 30, the following biological agents are designated as hazardous substances:

(a) a liquid or solid material that is contaminated with a prion, virus, bacterium, fungus or other biological agent that has a classification given by the Public Health Agency of Canada as a Risk Group 2, 3 or 4 human pathogen that causes an adverse health effect;

(b) a biological toxin that causes an adverse health effect.

[en. B.C. Reg. 319/2007, App. A, s. 3; am. B.C. Reg. 312/2010, App. N, s. 1.]

General information requirement

5.2 If a worker is or may be exposed to a chemical agent, or biological agent designated as a hazardous substance in section 5.1.1, which could cause an adverse health effect, the employer must ensure that

(a) the identity of the chemical agent or biological agent, its possible effects on worker health and safety and any precautions required to protect the health and safety of the worker are clearly indicated by labels, SDSs, or other similar means,

(b) the information required by paragraph (a) is clearly communicated to the worker,

(c) written procedures are prepared and implemented to eliminate or minimize a risk of exposure to a chemical agent or biological agent by any route that could cause an adverse health effect, and to address emergency and cleanup

procedures in the event of a spill or release of a chemical agent or biological agent, and

(d) the supervisor and the worker are trained in and follow the measures required in this Part and Part 6 of this Regulation for the safe handling, use, storage and disposal of the chemical agent or biological agent, including emergency and spill cleanup procedures.

[am. B.C. Regs. 319/2007, App. A, s. 4; 30/2015, s. 4.]

Workplace Hazardous Materials Information System (WHMIS)

Application

5.3 (1) Subject to subsections (2) to (4), sections 5.4 to 5.18 (the WHMIS Requirements) apply to employers and workers with respect to hazardous products used, stored or handled at a workplace.

(2) The provisions concerning a supplier label and SDS do not apply if the hazardous product is

(a) an explosive as defined in section 2 of the *Explosives Act* (Canada),

(b) a drug, food or cosmetic device within the meaning of the *Food and Drugs Act* (Canada),

(c) a pest control product as defined in section 2 (1) of the *Pest Control Products Act* (Canada),

(d) a nuclear substance as defined in section 2 of the *Nuclear Safety and Control Act* (Canada), that is radioactive, or

(e) a consumer product as defined in section 2 of the *Canada Consumer Product Safety Act*.

(3) The provisions do not apply if the hazardous product is

(a) wood or a product made of wood,

(b) tobacco or a tobacco product as defined in section 2 of the *Tobacco Act* (Canada),

(c) a manufactured article, or

(d) being transported or handled pursuant to the requirements of the *Transportation of Dangerous Goods Act, 1992* (Canada) or the *Transport of Dangerous Goods Act*.

(4) The provisions do not apply to a hazardous waste, except that the employer must ensure the safe storage and handling of a hazardous waste generated at the workplace through the combination of worker training and the information required by this Regulation.

[am. B.C. Regs. 199/2014, App. C, s. 1; 30/2015, s. 5.]

Prohibition

5.4 (1) Subject to subsection (2), an employer must ensure that a hazardous product is not used, stored or handled in a workplace unless all the applicable WHMIS Requirements concerning labels, product identifiers, SDSs and worker education and training are complied with.

(2) An employer may store a hazardous product in a workplace while actively seeking information required by subsection (1).

[am. B.C. Reg. 30/2015, s. 6.]

WHMIS program

5.5 If hazardous products are used in the workplace the employer, in consultation with the joint committee or health and safety representative, as applicable, must establish and maintain an effective WHMIS program, as part of the overall workplace health and safety program, which

(a) addresses applicable WHMIS Requirements including education and training,

(b) is reviewed at least annually, or more frequently if required by a change in work conditions or available hazard information, and

(c) provides for the periodic evaluation of the knowledge of workers using suitable means such as written tests and practical demonstrations.

[am. B.C. Reg. 30/2015, s. 7.]

Worker education

5.6 (1) An employer must ensure that general WHMIS education, as it pertains to the workplace, is provided to workers on the

(a) elements of the WHMIS program,

(b) major hazards of the hazardous products in use in the workplace,

(c) rights and responsibilities of employers and workers, and

(d) content required on labels and SDSs, and the significance of this information.

(2) The employer must ensure that a worker who works with a hazardous product or may be exposed to a hazardous product in the course of the worker's work activities is informed about all hazard information received from the supplier concerning that hazardous product as well as any further hazard information of which the employer is aware or reasonably ought to be aware concerning the use, storage and handling of that hazardous product.

(3) If a hazardous product is produced in a workplace, the employer must ensure that a worker who works with or in proximity to the hazardous product or may be exposed to the hazardous product in the course of the worker's work activities has access to all hazard information of which the employer is aware or reasonably

ought to be aware concerning the use, storage and handling of that hazardous product.

[am. B.C. Regs. 30/2015, s. 8; 116/2022, App. B, s. 6.]

Worker training

5.7 (1) An employer must ensure that a worker who works with a hazardous product or may be exposed to a hazardous product in the course of the worker's work activities is trained in the following:

(a) the content required on a supplier label and workplace label, and the purpose and significance of the information contained on those labels;

(b) the content required on an SDS and the purpose and significance of the information contained on the SDS;

(c) procedures for the safe use, storage, handling and disposal of the hazardous product;

(d) procedures for the safe use, handling and disposal of the hazardous product contained or transferred in

(i) a pipe or a piping system including valves,

(ii) a process or reaction vessel, or

(iii) a tank car, tank truck, ore car, conveyor belt or similar conveyance;

(e) procedures to be followed where fugitive emissions are present if workers may be exposed to those fugitive emissions;

(f) procedures to be followed in case of an emergency involving the hazardous product.

(2) Instruction required by subsection (1) must be specific to the workplace and cover the safe work procedures and emergency response procedures to be used in the workplace.

[am. B.C. Regs. 30/2015, s. 9; 116/2022, App. B, s. 6.]

Supplier label

5.8 (1) Subject to any exemptions from labelling requirements in the Hazardous Products Regulations and this Part, an employer must ensure that a hazardous product or the container of a hazardous product received at a workplace is attached or printed with a supplier label.

(2) Subject to any exemptions from labelling requirements in the Hazardous Products Regulations and this Part, an employer must not remove, deface, modify or alter the supplier label, as long as any amount of a hazardous product remains in a workplace in the container in which it was received from the supplier.

(3) Subject to any exemptions from labelling requirements in the Hazardous Products Regulations and this Part, an employer must replace the label with either a supplier label or a workplace label if a supplier label applied to a hazardous

product or a container of a hazardous product becomes illegible or is accidentally removed from the hazardous product or the container.

(4) If an employer imports and receives a hazardous product under the Hazardous Products Regulations at the workplace, without a supplier label or with a supplier label that does not comply with the Hazardous Products Regulations, the employer must affix a workplace label that meets the requirements of the Hazardous Products Regulations.

(5) The employer must update the labels or the information on containers as soon as significant new data is provided to the employer by the supplier.

(6) An employer who has received an unpackaged hazardous product or a hazardous product transported as a bulk shipment, to which, under the exemption in the Hazardous Products Regulations, a supplier label has not been affixed or attached, must apply a label having the information required of a supplier label to the container of the hazardous product or to the hazardous product in the workplace.

(7) Subsections (2) and (3) do not apply if a label is removed under normal conditions of use of a hazardous product that is in a container that has a capacity of 3 ml or less and the label interferes with the normal use of the product.

[en. B.C. Reg. 30/2015, s. 10.]

Workplace label for employer-produced products

5.9 (1) If an employer produces a hazardous product at a workplace, the employer must ensure that a workplace label is applied to the hazardous product or the container of the hazardous product.

(2) For purposes of subsection (1), **"produces"** does not include the escape of a hazardous product from equipment or from another product.

(3) Subsection (1) does not apply if the hazardous product is in a container that is intended to contain the hazardous product for sale or disposition and the container is or is about to be appropriately labelled.

(4) The employer must update the workplace label for a hazardous product produced by the employer as soon as significant new data are available to the employer.

[am. B.C. Reg. 30/2015, s. 11.]

Workplace label for decanted products

5.10 (1) If a hazardous product in a workplace is in a container other than the container in which it was received from a supplier, the employer must ensure that the container has a workplace label applied to it.

(2) Subsection (1) does not apply to a portable container that is filled directly from a container that has a supplier label or workplace label applied to it

(a) if the hazardous product

(i) is under the control of and is used exclusively by the worker who filled the portable container,

(ii) is used only during the shift in which the portable container was filled, and

(iii) the content of the container is clearly identified, or

(b) if all of the hazardous product is required for immediate use.

[am. B.C. Reg. 30/2015, s. 12.]

Piping systems and vessels

5.11 If a hazardous product in a workplace is contained or transferred in

(a) a pipe, or piping system including valves,

(b) a process or reaction vessel, or

(c) a tank car, tank truck, ore car, conveyor belt or similar conveyance,

the employer must ensure the safe use, storage and handling of the hazardous product through worker training and the use of labels, placards, or colour coding or any other mode of identification.

[am. B.C. Reg. 30/2015, s. 13.]

Placard identifiers

5.12 If the hazardous product is not in a container or is in a container in a form intended for export, the employer may fulfill the labelling requirements under sections 5.8 to 5.10 by posting a placard which

(a) discloses the information required for a workplace label, and

(b) is of a size and in locations so that the information is conspicuous and clearly legible to workers.

[am. B.C. Reg. 30/2015, s. 14.]

Laboratory label

5.13 (1) If a laboratory sample of a hazardous product is the subject of a labelling exemption under the Hazardous Products Regulations, a label provided by the supplier and affixed to, printed on or attached to the container of the product received at the workplace that discloses the following information in place of the information required under the Hazardous Products Regulations complies with the requirements of section 5.8 of this Part with respect to a supplier label:

(a) the chemical name or generic chemical name of any material or substance in the hazardous product that, individually, is classified, pursuant to the *Hazardous Products Act* and the Hazardous Products Regulations, in any category or subcategory of a health hazard class and is present above the relevant concentration limit, or is present at a concentration that results in the mixture being classified in a category or subcategory of any health hazard class, if known by the supplier;

(b) the statement "Hazardous Laboratory Sample. For hazard information or in an emergency, call / Échantillon pour laboratoire de produit dangereux. Pour obtenir des renseignements sur les dangers ou en cas d'urgence, composez" followed by an emergency telephone number for the purpose of obtaining information that must be provided on the SDS of the hazardous product.

(2) If a hazardous product is in a container other than the container in which it was received from a supplier, or is produced in the workplace, the employer is exempt from the requirement set out in section 5.10 if the hazardous product

(a) is a laboratory sample,

(b) is intended by the employer solely for use, analysis, testing or evaluation in a laboratory, and

(c) is clearly identified through a combination of

(i) a mode of identification visible to workers at the workplace, and

(ii) worker education and training required by this Part.

(3) The employer must ensure that the mode of identification and worker education and training referred to in subsection (2) (c) enable the worker to readily identify and obtain either the information required on an SDS, if one has been produced, or a label or document disclosing the information referred to in subsection (1) (a) and (b) with respect to the hazardous product or the laboratory sample.

[en. B.C. Reg. 30/2015, s. 15.]

Supplier SDS

5.14 (1) Subject to subsection (6), an employer who acquires a hazardous product for use, handling or storage at a workplace must obtain a supplier SDS in respect of that hazardous product that complies with the requirements of the Hazardous Products Regulations.

(2) When a supplier SDS obtained under subsection (1) for a hazardous product is 3 years old, the employer must obtain from the supplier an up-to-date supplier SDS in respect of any of that hazardous product in the workplace at that time.

(3) Subsection (2) does not apply if

(a) the employer has obtained written confirmation from the supplier that

(i) the SDS has not changed, or

(ii) the up-to-date supplier SDS does not apply to the hazardous product, or

(b) it is not practicable for the employer to obtain the up-to-date SDS or written confirmation under paragraph (a).

(4) If the employer is unable to obtain an SDS as required by subsection (2), the employer must add to the existing supplier SDS any significant new data or new hazard information applicable to that hazardous product that the employer is

aware of, or ought reasonably to be aware of, on the basis of the ingredients disclosed in that document.

(5) The employer may provide at a workplace an SDS in a format different from the format provided by the supplier or containing additional hazard information if the SDS provided by the employer

(a) subject to section 5.18, contains no less content than the supplier SDS, and

(b) the supplier SDS is available at the workplace and the employer-provided SDS indicates that fact.

(6) If a supplier is exempted by the Hazardous Products Regulations from the requirement to provide an SDS for a hazardous product, the employer is exempt from the requirement to obtain and provide an SDS for that hazardous product.

[en. B.C. Reg. 30/2015, s. 16.]

Employer SDS

5.15 (1) If an employer produces a hazardous product in the workplace, the employer must prepare an SDS in respect of that product that discloses, subject to section 5.18, the information required under the Hazardous Products Regulations.

(2) For the purpose of subsection (1), **"produces"** does not include the escape of a hazardous product from equipment or from another product nor does it include intermediate products undergoing reaction within a reaction or process vessel.

(3) The employer must update the SDS referred to in subsection (1) as soon as practicable after significant new data or new hazard information becomes available to the employer.

[am. B.C. Reg. 30/2015, s. 17.]

Availability of an SDS

5.16 (1) An employer must ensure that a copy of an SDS required by sections 5.14 or 5.15 is made readily available

(a) at the workplace to workers who may be exposed to the hazardous product, and

(b) to the joint committee or to the worker health and safety representative, as applicable.

(2) If an employer is required by subsection (1) to make an SDS readily available, the joint committee or worker health and safety representative, as applicable, must be consulted on the means on how best to achieve SDS accessibility in the workplace.

[am. B.C. Regs. 185/99, s. 33; 30/2015, s. 18.]

Availability of toxicological data

5.16.1 Subject to section 5.18, if an employer manufactures a hazardous product in a workplace, the employer must disclose as quickly as practicable the source of any

toxicological data used in preparing the SDS required by section 5.15 (1), at the request of

(a) any concerned worker at the workplace, the joint committee or the worker health and safety representative,

(b) the representative of the workers at the workplace, in the absence of a joint committee or worker health and safety representative, or

(c) the Board.

[en. B.C. Reg. 30/2015, s. 19.]

Deletions from an SDS

5.17 If an employer claims an exemption under section 5.18, the employer may delete the information that is the subject of the claim from the SDS required by sections 5.14 and 5.15 for the time period in section 5.18 (8), but may not delete hazard information.

[am. B.C. Reg. 30/2015, s. 20.]

Confidential business information and claims for exemption under the HMIRA

5.18 (1) An employer who is required, under this Regulation, to disclose any of the following information on a label or SDS may, if the employer considers it to be confidential business information, claim an exemption from the requirement to disclose the information:

(a) in the case of a material or substance that is a hazardous product,

(i) the chemical name of the material or substance,

(ii) the CAS registry number, or any other unique identifier, of the material or substance, and

(iii) the chemical name of any impurity, stabilizing solvent or stabilizing additive that is present in the material or substance, that is classified in a category or subcategory of a health hazard class under the *Hazardous Products Act* and that contributes to the classification of the material or substance in the health hazard class under that Act;

(b) in the case of an ingredient that is in a mixture that is a hazardous product,

(i) the chemical name of the ingredient,

(ii) the CAS registry number, or any other unique identifier, of the ingredient, and

(iii) the concentration or concentration range of the ingredient;

(c) in the case of a material, substance or mixture that is a hazardous product, the name of any toxicological study that identifies the material or substance or any ingredient in the mixture;

(d) the product identifier of a hazardous product, being its chemical name, common name, generic name, trade name or brand name;

(e) information about a hazardous product, other than the product identifier, that constitutes a means of identification;

(f) information that could be used to identify a supplier of a hazardous product.

(2) A claim under subsection (1) must be made under the *Hazardous Materials Information Review Act* and must be filed in accordance with the procedures established under that Act and the regulations made under it.

(3) An employer is deemed to comply with section 5.15 of this Regulation if the employer produces a hazardous product in the workplace and files a claim for exemption under section 11 (2) (a) or (b) (i) or (ii) of the *Hazardous Materials Information Review Act*, and the employer prepares an SDS in respect of that hazardous product that discloses the following in place of the information elements listed in section 3 (1) (a), (b), (c) and (d) or 3 (2) (a), (b) and (c) of Schedule 1 of the Hazardous Products Regulations:

(a) in the case of a hazardous product that is a material or substance, the generic chemical name of the material or substance;

(b) in the case of a hazardous product that is a mixture, the generic chemical name of each material or substance in the mixture that, individually, is classified in any category or subcategory of a health hazard class and is present above the applicable concentration limit or is present at a concentration that results in the mixture being classified in a category or subcategory of any health hazard class.

(4) An employer is deemed to comply with section 5.15 of this Regulation if the employer produces a hazardous product in the workplace and files a claim for exemption under section 11 (2) (b) (iii) of the *Hazardous Materials Information Review Act*, and the employer prepares an SDS in respect of that hazardous product that does not disclose the information element listed in section 3 (2) (d) of Schedule 1 of the Hazardous Products Regulations.

(5) An employer is deemed to comply with section 5.15 of this Regulation if the employer produces a hazardous product in the workplace and files a claim for exemption under section 11 (2) (d) of the *Hazardous Materials Information Review Act*, and the employer prepares an SDS in respect of that hazardous product that discloses, in place of the product identifier, a code name or code number for the product.

(6) An employer who files a claim for exemption from a requirement to disclose information in respect of a hazardous product on an SDS or on a label must disclose on the SDS and, where applicable, on the label of the hazardous product or the container of the hazardous product,

(a) the date that the claim for exemption was filed, and

(b) the registry number assigned to the claim under the *Hazardous Materials Information Review Act*.

(7) The requirements referred to in subsection (6) apply until

(a) in the case of an order that was issued by a screening officer under the *Hazardous Materials Information Review Act*, the end of the period that

begins on the final disposition of the proceedings under that Act in relation to the claim for exemption and does not exceed the period specified in the order, or

(b) in any other case, the end of the period not exceeding 30 days after the final disposition of the proceedings in relation to the claim for exemption.

(8) Information that an employer considers to be confidential business information is exempt from disclosure from the time a claim is filed under subsection (2) until the final disposition of the proceedings under the *Hazardous Materials Information Review Act* in relation to the claim and for a period of 3 years after that if the claim is found to be valid.

(9) An employer who receives notice of a decision made under the *Hazardous Materials Information Review Act* that the employer's claim or a portion of the employer's claim for exemption from a requirement to provide information in respect of a hazardous product on an SDS or a label is valid must, during the period beginning no later than the end of the applicable period specified in subsection (7) of this section and on compliance with any order issued under section 16 (1) or 17 (1) of the *Hazardous Materials Information Review Act*, if applicable, and ending on the last day of the exemption period, in respect of the sale or importation of the hazardous product, disclose on the SDS and, if applicable, on the label of the hazardous product or container in which the hazardous product is packaged, the following information:

(a) a statement that an exemption has been granted;

(b) the date of the decision granting the exemption;

(c) the registry number assigned to the claim under the *Hazardous Materials Information Review Act*.

(10) An employer who makes a claim under subsection (1) must abide by the decisions and orders issued under the *Hazardous Materials Information Review Act*.

(11) An appeal from a decision or order referred to in subsection (10) may be made under and in accordance with the *Hazardous Materials Information Review Act* and any regulations made under that Act.

[en. B.C. Reg. 30/2015, s. 21.]

5.19 Repealed. [B.C. Reg. 30/2015, s. 22.]

Containers and Storage

Condition of containers

5.20 The container of a hazardous substance must be designed, constructed and maintained in good condition to securely contain the substance.

[am. B.C. Reg. 185/99, s. 37.]

Material integrity

5.21 Any material used to contain, transfer or convey a hazardous substance must be reasonably resistant to the substance and to any other substance to which it may be exposed.

[am. B.C. Reg. 185/99, s. 37.]

Covers

5.22 If an open container of a hazardous substance could pose a hazard, the container must be kept sealed or covered when not in use.

[am. B.C. Reg. 185/99, s. 37.]

Permitted quantities

5.23 (1) The amount of a hazardous substance in a work area must not exceed the quantity reasonably needed for work in progress, normally in one work shift.

(2) Bulk or reserve quantities must be stored in a designated area separate from the work area.

Incompatible substances

5.24 Substances which are incompatible must not be stored in a manner that would allow them to mix in the event of container leakage, breakage or other such circumstance.

Storage practices

5.25 A hazardous substance must be stored in a designated area, in a manner which ensures that it will not readily fall, become dislodged, suffer damage, or be exposed to conditions of extreme temperature.

Storage area

5.26 The designated storage area for a hazardous substance must be

(a) designed and constructed to provide for the safe containment of the contents,

(b) clearly identified by signs, placards or similar means,

(c) designed and maintained to allow the safe movement of workers, equipment and material,

(d) provided with adequate ventilation and lighting, and

(e) in a location not normally occupied by workers, and not in a location such as a lunchroom, eating area, change room, clothing storage locker or passenger compartment of a vehicle.

Flammable and Combustible Substances

Ignition sources

5.27 (0.1) Repealed. [B.C. Reg. 9/2017, App. D, s. 2 (a).]

(1) When a combustible liquid normally used as fuel, a flammable gas or a flammable liquid is handled, used or stored, all sources of ignition must be eliminated or adequately controlled.

(2) For the purposes of subsection (1) sources of ignition include open flame, spark-producing mechanical equipment, welding and cutting processes, smoking, static discharge and any electrical equipment or installation that is not permitted under the B.C. Electrical Code for use in hazardous locations.

(3) If the work involves more than one employer, the prime contractor or, if there is no prime contractor, the owner must ensure that sources of ignition resulting from the work of one employer are eliminated or adequately controlled in any work area where a combustible liquid normally used as fuel, a flammable gas or a flammable liquid is handled, used or stored by any other employer.

[am. B.C. Regs. 199/2014, App. C, s. 2; 9/2017, App. D, s. 2; 14/2019, App. G, s. 1; 222/2021, App. A, s. 2.]

Bonding or grounding of containers

5.28 If a metallic or other conductive container is used to transfer a combustible liquid normally used as fuel, a flammable liquid or a flammable gas to another metallic or other conductive container, the containers must be electrically bonded to each other or electrically grounded while the liquid or gas is being transferred.

[en. B.C. Reg. 222/2021, App. A, s. 3.]

Electrostatic charge

5.29 If glass, plastic or other non-conductive container with a capacity of 23 litres (5 imp gal) or more is used to transfer a flammable liquid, the accumulation of electrostatic charge near the surface of the liquid must be eliminated or controlled by

(a) limiting the flow velocity of the liquid to less than 1 m/s (200 fpm),

(b) using a grounded lance or nozzle extending to the bottom of the container,

(c) limiting free fall,

(d) using anti-static additives, or

(e) other effective means.

Dispensing

5.30 If a flammable liquid is dispensed or transferred inside a flammable liquids storage room,

(a) the storage room must be mechanically ventilated at a rate of at least 18 m^3/hr per square metre of floor area (1 cfm/sq ft), but not less than 250 m^3/hr (150 cfm),

(b) exhaust air must be discharged to the outdoors, and makeup air provided,

(c) any makeup air duct passing through a fire separation must be equipped with an approved fire damper, and

(d) doors must be self-closing.

Flammable gas or vapour

5.31 If it is not practicable to maintain the airborne concentration of a flammable gas or vapour below the applicable exposure limit, for example, in a temporary situation or an emergency,

(a) only the minimum number of workers necessary for the work may be exposed,

(b) every worker exposed must be adequately trained and equipped to safely perform the required duties,

(c) the concentration of the flammable gas or vapour must not exceed 20% of the lower explosive limit (LEL), and

(d) in a life-threatening emergency only, exposure of emergency response workers is permitted above 20% of the LEL, provided that only those qualified and properly trained and equipped workers necessary to correct the unsafe condition are exposed to the hazard and every possible effort is made to control the hazard while this is being done.

Manual cleaning

5.32 A flammable liquid must not be used as a manual cleaning solvent unless

(a) a thorough review of alternative solvents by the employer indicates that a suitable non-flammable substitute is not available,

(b) appropriate written safe work procedures are implemented to effectively control flammability and health hazards,

(c) the quantity of liquid used is minimized, and

(d) the worker is instructed and trained in the safe work procedures.

(e) Repealed. [B.C. Reg. 222/2021, App. A, s. 4.]

[am. B.C. Reg. 222/2021, App. A, s. 4.]

Permitted quantities

5.33 Except for the quantity reasonably needed for immediate use, or that is present for display or sale in public areas of a mercantile facility, the quantity of combustible and flammable liquids stored outside an approved storage cabinet, storage room or storage area in any fire compartment (2 hour fire separation) of a building must not exceed

(a) in closed containers, 600 litres (132 imp gal) of liquids having a flash point below 93.3°C (200°F) of which not more than 100 litres (22 imp gal) may be liquids having a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F), and

(b) in storage tanks or portable tanks, 5 000 litres (1 100 imp gal) of liquids having a flash point below 93.3°C (200°F) and a boiling point at or above 37.8°C (100°F).

Combustible materials

5.34 Except for packaging used to contain flammable or combustible liquids, combustible shelves, racks and other materials are not permitted inside a flammable or combustible liquids storage room or storage cabinet unless required as part of a fire separation.

Cabinet vent

5.35 If a flammable liquids storage cabinet is vented, the vent must be a steel pipe at least 5 cm (2 in) in diameter which is connected directly to the outdoors.

Substances Under Pressure

Containers

5.36 (1) A tank, cylinder, bottle or other vessel containing a substance under pressure, together with any associated pressure or flow regulator and piping or conveyance system, must be

(a) protected from sparks, flames, excessive heat, physical damage, electrical contact or corrosion, and

(b) equipped with suitable pressure relief mechanisms installed so that no worker will be endangered in the event of discharge.

(c) Repealed. [B.C. Reg. 312/2003, App. B, s. 3 (c).]

(2) Hand-held aerosol spray cans are exempt from the requirements of subsection (1) (b).

[am. B.C. Reg. 312/2003, App. B, s. 3.]

Pressure testing

5.37 A compressed gas container which requires pressure testing must bear a valid and current indication that it has been pressure tested.

Handling and securing cylinders

5.38 (1) A compressed gas cylinder must not be hoisted by a sling or magnet, dropped, subjected to impact, handled by the regulator or used as a roller or work support.

(2) A compressed gas cylinder must be secured to prevent falling or rolling during storage, transportation and use, and where practicable, must be kept in the upright position.

Cylinder markings

5.39 A compressed gas cylinder must be marked to indicate its rated pressure and the type of gas it contains.

Cylinder valves

5.40 (1) The valve on a compressed gas cylinder must be kept closed when the cylinder is empty or not in use.

(2) A worker must not stand directly in front of a regulator attached to a compressed gas cylinder when the cylinder valve is being opened.

(3) Any valve, regulator or fitting connected to a compressed gas cylinder must be a standard fitting, designed and manufactured for the type of cylinder and compressed gas for which it will be used, and must include provisions for flashback arresters where necessary.

(4) Unless a compressed gas cylinder is equipped with an integral valve guard, the valve cover must be in position when the cylinder is not connected for use.

Fittings

5.41 Only standard fittings designed for the specific compressed gas service may be used with a compressed gas system.

5.42 Repealed. [B.C. Reg. 312/2003, App. B, s. 4.]

Empty cylinders

5.43 An empty compressed gas cylinder must be identified as being empty and must be stored separately from other compressed gas cylinders.

Acetylene cylinders

5.44 (1) A compressed gas cylinder containing acetylene must be used only in the upright position.

(2) If the cylinder has been stored or transported in a horizontal position, it must be placed in the upright position for at least 1 hour before it is used.

(3) A suitable device for closing the valve on an acetylene cylinder must be immediately available when the cylinder is connected for use.

Restriction on use of copper

5.45 A fitting or tube made of copper or any alloy containing more than 67% copper must not be used in a system carrying acetylene gas, except for copper torch tips and lengths of copper tubing 30 cm (1 ft) or less in length which are open to the atmosphere.

Restriction on use of oxygen

5.46 (1) Oxygen gas must not be used in any circumstance where it can contact a substance that oxidizes readily, such as a petroleum product, natural fibre or metal powder.

(2) Oxygen gas must not be used to

(a) operate a pneumatic tool,

(b) start an internal combustion engine,

(c) clean equipment or clothing,

(d) create pressure in a container, or

(e) ventilate a workplace.

Cleanliness

5.47 A worker must not permit oil or grease to contact an oxygen cylinder valve, regulator, or fitting.

Controlling Exposure

Exposure limits

5.48 Except as otherwise determined by the Board, the employer must ensure that no worker is exposed to a substance that exceeds the ceiling limit, short-term exposure limit, or 8-hour TWA limit prescribed by ACGIH.

[en. B.C. Reg. 315/2003, App. A, s. 4.]

Excursion limits

5.49 If a substance referred to under section 5.48 is provided only with an 8-hour TWA limit, the employer must, in addition to the requirement of section 5.48, ensure that a worker's exposure to the substance does not exceed

(a) three times the 8-hour TWA limit for more than a total of 30 minutes during the work period, and

(b) five times the 8-hour TWA limit at any time.

[en. B.C. Reg. 315/2003, App. A, s. 5; am. B.C. Reg. 243/2006, s. 2.]

Extended work periods

5.50 (1) If the work period is more than 8 hours in a 24 hour day, the 8-hour TWA limit must be reduced by multiplying the TWA limit by the following factors:

Factor	Length of work period (in hours)
0.7	more than 8, but not more than 10
0.5	more than 10, but not more than 12
0.25	more than 12, but not more than 16
0.1	more than 16

(2) Repealed. [B.C. Reg. 188/2011, App. L, s. 1.]

[am. B.C. Regs. 315/2003, App. A, s. 6; 188/2011, App. L, s. 1.]

Additive effects

5.51 If there is exposure to a mixture of 2 or more substances with established exposure limits which exhibit similar toxicological effects, the effects of such exposure must be considered additive unless it is known otherwise, and the additive exposure must not exceed 100% when calculated as follows:

$$AE = \%EL_1 + \%EL_2 + ...\%EL_n$$

where

(a) AE is the calculated additive exposure to the mixture,

(b) % EL_1 is the measured exposure to component 1 of the mixture expressed as a percentage of its exposure limit,

(c) %EL_2 is the measured exposure to component 2 of the mixture expressed as a percentage of its exposure limit, and

(d) %EL_n is the measured exposure to any additional components of the mixture expressed as a percentage of their respective exposure limits.

[en. B.C. Reg. 315/2003, App. A, s. 7.]

Skin designation

5.52 If skin absorption may contribute to the overall exposure, effective measures must be taken to limit exposure by this route.

Workplace monitoring

5.53 (1) If a worker is or may be exposed to a hazardous substance, the employer must ensure that

(a) a walkthrough survey is conducted to assess the potential for overexposure taking into account all routes of exposure, including inhalation, ingestion, and skin contact, and

(b) reassessment is conducted when there is a change in work conditions which may increase the exposure, such as a change in production rate, process or equipment.

(2) If the walkthrough survey required by subsection (1) reveals that a worker may be at risk of overexposure to an airborne contaminant, the employer must ensure that air sampling is conducted to assess the potential for overexposure.

(3) Additional workplace monitoring to reliably determine worker exposure is required if

(a) the assessment under subsection (2) reveals that a worker may be exposed to an air contaminant in excess of 50% of its exposure limit, or

(b) measurement is not possible at 50% of the applicable exposure limit.

(4) Workplace exposure monitoring and assessment must be conducted using occupational hygiene methods acceptable to the Board.

(5) The results of workplace exposure monitoring and assessment, or a summary of the results, must be provided to workers at their request without undue delay.

[am. B.C. Reg. 185/99, s. 38.]

Exposure control plan

5.54 (1) An exposure control plan must be implemented when

(a) exposure monitoring under section 5.53 (3) indicates that a worker is or may be exposed to an air contaminant in excess of 50% of its exposure limit,

(b) measurement is not possible at 50% of the applicable exposure limit, or

(c) otherwise required by this Regulation.

(2) The exposure control plan must incorporate the following elements:

(a) a statement of purpose and responsibilities;

(b) risk identification, assessment and control;

(c) education and training;

(d) written work procedures, when required;

(e) hygiene facilities and decontamination procedures, when required;

(f) health monitoring, when required;

(g) documentation, when required.

(3) The plan must be reviewed at least annually and updated as necessary by the employer, in consultation with the joint committee or the worker health and safety representative, as applicable.

[am. B.C. Reg. 185/99, s. 39.]

Type of controls

5.55 (1) If there is a risk to a worker from exposure to a hazardous substance by any route of exposure, the employer must eliminate the exposure, or otherwise control it below harmful levels and below the applicable exposure limit established under section 5.48 by

(a) substitution,

(b) engineering control,

(c) administrative control, or

(d) personal protective equipment.

(2) When selecting a suitable substitute, the employer must ensure that the hazards of the substitute are known, and that the risk to workers is reduced by its use.

(3) The use of personal protective equipment as the primary means to control exposure is permitted only when

(a) substitution, or engineering or administrative controls are not practicable, or

(b) additional protection is required because engineering or administrative controls are insufficient to reduce exposure below the applicable exposure limits, or

(c) the exposure results from temporary or emergency conditions only.

[am. B.C. Regs. 185/99, s. 38; 315/2003, App. A, s. 8.]

Oxygen deficiency

5.56 The airborne concentration of any gas or vapour must be controlled so that a worker is not exposed to an oxygen deficient atmosphere, and there is no other hazard, such as fire or explosion.

Designated substances

5.57 (1) If a substance identified as any of the following is present in the workplace, the employer must replace it, if practicable, with a material which reduces the risk to workers:

(a) ACGIH A1 or A2, or IARC 1, 2A or 2B carcinogen;

(b) ACGIH reproductive toxin;

(c) ACGIH sensitizer;

(d) ACGIH L endnote.

(2) If it is not practicable to substitute a material which reduces the risk to workers, in accordance with subsection (1), the employer must implement an exposure control plan to maintain workers' exposure as low as reasonably achievable below the exposure limit established under section 5.48.

(3) The exposure control plan must meet the requirements of section 5.54.

[en. B.C. Reg. 315/2003, App. A, s. 9; am. B.C. Reg. 258/2008, App. C, s. 2.]

Protective policy

5.58 (1) At any worksite where a worker is exposed to a substance which is identified in section 5.57 (1) as an ACGIH reproductive toxin or an ACGIH sensitizer, the employer must develop policy and procedures appropriate to the risk, which may include protective reassignment.

(2) The policy and procedures required by subsection (1) must

(a) inform workers about the reproductive toxin and identify ways to minimize exposure to the toxin for a worker who has advised the employer of pregnancy or intent to conceive a child, and

(b) identify ways to eliminate or minimize exposure to a sensitizer for a worker who is or may be sensitized to that substance.

[am. B.C. Regs. 315/2003, App. A, s. 10; 258/2008, App. C, s. 3.]

Investigating symptoms

5.59 (1) If a worker exhibits signs or reports symptoms of overexposure to a hazardous substance present in the workplace, the employer must investigate and assess the potential for exposure.

(2) If the assessment demonstrates that the signs or symptoms can be caused by exposure to a hazardous substance that is present in the workplace, further investigation must be conducted, in consultation with the joint committee or the

worker health and safety representative, as applicable, to address and resolve the worker's concern.

(3) Records of the investigation required under subsection (2) must be made available to workers, and maintained by the employer for a minimum of 10 years.

[am. B.C. Reg. 185/99, s. 40.]

Ventilation

Application

5.60 Sections 5.61 to 5.71 apply to ventilation used for the control of air contaminants in the workplace, except for heating, ventilation and air conditioning (HVAC) systems in buildings, which are subject to requirements on indoor air quality in Part 4 (General Conditions).

Engineering principles

5.61 A ventilation system for controlling airborne contaminants in the workplace must be designed, installed and maintained using established engineering principles.

Submitting plans

5.62 The employer or the employer's agent must submit to the Board drawings and specifications for an existing or proposed ventilation system if requested by the Board.

Building modifications

5.63 The owner of a building must permit an employer to install an exhaust ventilation and makeup air system to meet the requirements of this Part for controlling harmful air contaminants in the workplace, provided that all such work is subject to the approval of the owner acting reasonably.

Controlling air contaminants

5.64 (1) If ventilation is used as an engineering control, an air contaminant must be controlled at the source by an effective local exhaust ventilation system.

(2) If local exhaust ventilation is not practicable, general (dilution) ventilation, or a combination of general and local exhaust ventilation must be used.

Worker location

5.65 A local exhaust ventilation system must be designed so that under normal work procedures a worker's breathing zone is not located between the source of contamination and the exhaust uptake.

Ventilation openings

5.66 A ventilation system must not be obstructed by material or equipment placed in front of the ventilation openings.

Effectiveness

5.67 (1) An exhaust ventilation system used to control air contaminants in the workplace must remain in operation until the work process is completed and the air contaminants generated have been removed so as not to be a hazard to workers.

(2) An exhaust ventilation system used to control air contaminants in the workplace must be regularly inspected and monitored to ensure that it remains effective.

Failure warning

5.68 If failure of an exhaust ventilation system would result in a hazard that is not readily apparent to affected workers, the system must be equipped with a device or other means to warn those workers in the event of system failure.

Makeup air

5.69 (1) An adequate supply of makeup air must be provided as necessary to

(a) maintain the effectiveness of an exhaust ventilation system, or

(b) prevent an air contaminant being drawn into the work space from another work area.

(2) A makeup air supply must not expose a worker to uncomfortable temperatures or drafts.

Discharged air

5.70 (1) The use of a ventilation system designed to recirculate contaminants into the work area is restricted by the provisions of Table 5-1.

(2) A ventilation system that discharges air from the work area must be designed to minimize the likelihood of exposing any worker at a workplace, including an adjacent workplace,

(a) to an air contaminant in a concentration which exceeds either 10% of its applicable exposure limit in this Part or an acceptable ambient air quality standard established by an authority having jurisdiction over environmental air standards, whichever is greater, and

(b) if practicable, to an objectionable odour.

Table 5-1: Recirculation of discharged air

Recirculation permitted without written approval	A nuisance particulate with an 8-hour TWA limit of at least 10 mg/m^3, provided that its concentration in the discharged air is less than 10% of the TWA limit. Asbestos fibre or other particulate, except a biological contaminant, provided that it is exhausted from a portable vacuum cleaner or bench-top containment unit, fitted with an effective HEPA filter. A welding fume, (including its components identified under section 5.57 (1)) exhausted from a portable welding fume extractor fitted with an air cleaner, provided that its concentration in the discharged air is less than 10% of the applicable exposure limit. A biological contaminant discharged from a biological safety cabinet that is installed and operated in accordance with the requirements in Part 30 (Laboratories). Non-allergenic softwood dust, provided that its concentration in the discharged air is less than 10% of the 8-hour TWA limit.
Recirculation only with written approval by the Board	Allergenic wood dust. Non-allergenic hardwood dust. Any contaminant not otherwise listed in this Table.
No recirculation permitted	A substance identified under section 5.57 (1), unless otherwise identified in this Table.

[am. B.C. Reg. 315/2003, App. A, s. 11.]

Flammable air contaminants

5.71 (1) If an operation or work process produces a combustible or flammable air contaminant in concentrations that may present a risk of fire or explosion, the employer must provide a separate exhaust ventilation system for the operation or work process.

(2) If electrical equipment used in an exhaust ventilation system required by subsection (1) contacts the air stream, the employer must ensure that the electrical equipment is permitted under the B.C. Electrical Code

(a) for use in that location, and

(b) for the specific air contaminants that are or may be present.

(3) A dust collector having an internal volume greater than 0.6 m^3 (20 ft^3) and being used to control combustible dusts must be located and constructed so that no worker will be endangered in the event of an explosion inside the collector.

[am. B.C. Regs. 312/2003, App. A, s. 6; 9/2017, App. D, s. 3.]

Internal Combustion Engines

Venting outdoors

5.72 Whenever possible, exhaust from any internal combustion engine operated indoors must be vented to the outdoors.

Indoor operation

5.73 If mobile equipment powered by an internal combustion engine is operated indoors or in an enclosed work area

(a) the engine must be adequately serviced and maintained to minimize the concentration of air contaminants in the exhaust, and

(b) the work area must be assessed to determine the potential for exposure of workers to harmful levels of exhaust components.

Emission controls

5.74 If a worker is or may be exposed to an exhaust gas component in concentrations exceeding the applicable exposure limits, exhaust gas scrubbers, catalytic converters, or other engineering controls must be installed.

Mobile equipment emission controls

5.75 Mobile equipment manufactured after January 1, 1999 that is regularly operated indoors must be

(a) equipped with an emission control system that includes a feedback control for air/fuel ratio, and a three-way catalytic converter if the mobile equipment is powered by gasoline, propane or natural gas, or other measures acceptable to the Board, or

(b) equipped with a scrubber or other emission control system that reduces particulate emissions by at least 70% when tested according to the procedures of the Mine Safety and Health Administration, US Department of Labour, or must meet another standard acceptable to the Board, if the mobile equipment is powered by diesel fuel.

[am. B.C. Reg. 381/2004, s. 1.]

Hazardous Wastes and Emissions

Label

5.76 If an employer produces, stores, handles or disposes of a hazardous waste at a workplace, the employer must, except as provided in section 5.79, ensure that a workplace label is applied to each container of hazardous waste, or the information mandated by the Hazardous Products Regulations is provided, if applicable.

[am. B.C. Reg. 30/2015, s. 23.]

Placard

5.77 (1) An employer may identify a hazardous waste which is not in a container by posting a placard in a workplace which

(a) discloses the information required for a workplace label, and

(b) is of a size and in locations so that the information is conspicuous and clearly legible to workers.

(2) If a fugitive emission that contains a hazardous product is produced or disposed of, the employer must post a placard which complies with subsection (1), or ensure equivalent information is provided to workers through identification and training.

[am. B.C. Reg. 30/2015, s. 24.]

SDS

5.78 If a hazardous waste or a fugitive emission that contains a hazardous product is produced, stored, handled or disposed of in the workplace, the employer must prepare an SDS for the hazardous waste or fugitive emission unless a hazardous waste profile sheet or its equivalent which addresses composition, hazards and safe measures for the waste or fugitive emission is readily available.

[am. B.C. Reg. 30/2015, s. 25.]

Sale or disposal

5.79 An employer must not sell or dispose of a hazardous waste intended for use, handling, storage or disposal in a workplace unless

(a) the hazardous waste or container in which the waste is packaged has a label or placard which complies with sections 5.76 and 5.77, and

(b) at the time of sale or disposal the employer transmits to the receiver an SDS for the hazardous products in the hazardous waste or a hazardous waste profile sheet which addresses the composition, hazards and safe measures for the hazardous waste.

[am. B.C. Reg. 30/2015, s. 26.]

Sharp-edged waste

5.80 Broken glass, metal or similar rigid, sharp-edged waste must be disposed of in separate, puncture proof waste containers and the contents of the containers must be clearly identified.

Combustible dust

5.81 If combustible dust collects in a building or structure or on machinery or equipment, it must be safely removed before accumulation of the dust could cause a fire or explosion.

Personal Hygiene

Employer's responsibility

5.82 (1) If a work process may result in harm to a worker from contamination of the worker's skin or clothing by a hazardous substance, the employer must

(a) supply appropriate protective clothing,

(b) launder or dispose of the protective clothing on a regular basis, according to the hazard,

(c) provide adequate wash facilities, and

(d) allow time for washing before each work break.

(2) If work processes involving substances such as lead, mercury, asbestos, silica or pesticides are high hazard, the employer must also ensure that workers are provided with

(a) clothing lockers in separate rooms for street clothing and work clothing,

(b) heated shower facilities between the rooms, and

(c) time for showering and clothing change before the end of the work shift.

(3) In a remote location where provision of change rooms and shower facilities is not practicable, separate clothing storage and adequate washing facilities must be provided.

Worker's responsibility

5.83 A worker engaged in a work process described in section 5.82 must

(a) wear the supplied protective clothing,

(b) wash effectively before each work break and the end of the work shift, and

(c) shower at the end of the work shift, if required by the hazard.

Prohibition

5.84 Eating, drinking, smoking, applying cosmetics or storing food is prohibited in any work area where a work process described in section 5.82 takes place.

Emergency Washing Facilities

Where required

5.85 The employer must ensure that appropriate emergency washing facilities are provided within a work area where a worker's eyes or skin may be exposed to harmful or corrosive materials or other materials which may burn or irritate.

Water supply

5.86 (1) For a plumbed emergency eyewash facility, the employer must ensure that only a potable water supply is used.

(2) For a portable (non-plumbed) eyewash unit, the employer must ensure that only potable water or an isotonic saline flushing solution is used.

Access

5.87 The employer must ensure that access to emergency eyewash and shower facilities is not blocked by material or equipment.

Risk assessment

5.88 The employer must ensure that the selection of emergency washing facilities is based upon an assessment of the risks present in the workplace, according to Table 5-2.

Equipment required

5.89 (1) The employer must ensure, except where it is not practicable to provide a permanent water supply, such as at a remote or transient worksite, that emergency eyewash and shower facilities are provided and located as specified in Table 5-3.

(2) Requirements for tempered water in Table 5-3 do not apply if the advice of a medical professional indicates that tempered washing would increase the risk of injury in a particular application.

Transient worksites

5.90 (1) The employer must ensure that portable self-contained units are provided, where it is not practicable to provide a permanent water supply at transient worksites such as construction sites.

(2) The employer must ensure that portable self-contained units at these transient worksites are capable of delivering a minimum flush duration of 15 minutes (or more if required by the nature of the material) if there is a high or a moderate risk of injury to the eyes or skin.

Remote worksites

5.91 The employer must ensure that effective means to flush the eyes or skin, based upon an assessment of the risk, is reasonably available at a remote worksite if it is not practicable to provide a portable self-contained unit.

Signs

5.92 The employer must ensure that emergency eyewash and shower facilities are clearly identified by signs which indicate their location and provide clear directions for their use.

Testing

5.93 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 5 (b).]

(2) The employer must ensure that a plumbed emergency eyewash or shower facility is full flow tested at least once per month, for a sufficient length of time to completely flush the branch of the water line supplying the eyewash.

(3) Repealed. [B.C. Reg. 312/2003, App. B, s. 5 (b).]

[am. B.C. Reg. 312/2003, App. B, s. 5.]

Training

5.94 The employer must ensure that workers who are required to use emergency eyewash and shower facilities are adequately trained in their location and proper use.

Protection from freezing

5.95 The employer must ensure that an emergency eyewash or shower facility and the piping from the supply are protected against freezing.

Table 5-2: Risk assessment

Risk Level	Description of the workplace	Examples
High risk	Workplaces at which corrosive chemicals or other materials are used in a manner, concentration and quantity which present a risk of irreversible tissue damage to the eyes or skin, or of serious illness resulting from rapid absorption of a toxic substance through the eyes or skin, or where the work activity presents a risk of ignition of the clothing.	Maintenance of ammonia refrigeration equipment or chlorine bleaching or disinfection equipment, handling corrosive materials such as corrosive cleaning products or chemical reagents where there is a high risk of skin or eye contact, filling chemical storage batteries. The following Health Hazard Classes and Categories in the HPR are included: (a) skin corrosion (1A), (1B), (1C); (b) serious eye damage (1).
Moderate risk	Workplaces at which chemicals or other materials are used in a manner, concentration and quantity which present a risk of irritation or other reversible harm to the eyes or skin, or of illness resulting from absorption of a toxic substance through the eyes or skin.	Spraying automotive paints and finishes, operating solvent degreasing equipment, handling irritant materials such as cleaning products or chemical reagents where there is a moderate risk of skin or eye contact, handling dry-cleaning solvents and spotting agents. The following Health Hazard Classes and Categories in the HPR are included: (a) eye irritation (2A), (2B); (b) skin irritation (2).
Low risk	Workplaces at which chemicals or other materials are used in a manner and quantity which present a risk of mild eye or skin irritation.	Using detergents, silicone-based mold-release agents, some hair-dressing solutions, rosin-cored solders, welding and grinding, working in dusty areas.

[am. B.C. Reg. 30/2015, s. 27.]

Table 5-3: Provision and location of emergency washing equipment

	High risk	Moderate risk	Low risk
Eye			
Equipment	Tempered, continuous flow eyewash facility with a minimum duration of 15 minutes (or more if required by the nature of the material).	Tempered, continuous flow eyewash facility with a minimum duration of 15 minutes.	Effective means to flush the eyes.
Location	Within 5 seconds walking distance of the hazard area, but no further than 6 m (20 ft). For high risk corrosive gases such as ammonia or chlorine, the facilities must not be located in the gas storage or use area, but rather, adjacent to it.	Within 10 seconds walking distance of the hazard area, but no further than 30 m (100 ft). May be located further than 30 m, provided that (a) a supplementary eyewash facility such as a personal eyewash unit or a non-tempered drench hose is located within 10 seconds walking distance of the hazard area but no further than 30 m, and (b) first aid services are maintained to start treatment of an affected worker within 5 minutes of the contact.	Within 10 seconds walking distance of the hazard area but no further than 30 m (100 ft).
Skin			
Equipment	Tempered, continuous flow emergency shower facility with a minimum duration of 15 minutes (or more if required by the nature of the material).	Tempered, continuous flow emergency shower facility with a minimum duration of 15 minutes.	Emergency flushing equipment, such as a non-tempered drench hose.
Location	Same location criteria as for high risk eyewash facility except that the shower may be located further than 6 m if (a) a supplementary emergency washing facility such as a non-tempered drench hose is located within 5 seconds walking distance of the hazard area but no further than 6 m, and (b) a tempered shower facility is available within the building to start emergency washing within 5 minutes of the contact.	Same location criteria as for moderate risk eyewash facility except that the supplementary emergency washing facility for locations beyond 30 m must be a unit such as non-tempered drench hose.	Same location criteria as for low risk eyewash facility.

Valve operation

5.96 The employer must ensure that a valve which activates an emergency eyewash or shower facility is designed so that, once activated, the flow of water or flushing solution will continue without requiring the use of the operator's hands.

Emergency Procedures

Emergency plan

5.97 (1) A workplace must have a written emergency plan, appropriate to the hazards of the workplace, that addresses the requirements of sections 5.98 to 5.102.

(2) The plan must address emergency conditions which may arise from within the workplace and from adjacent workplaces.

(3) The plan must be developed, implemented and annually reviewed in consultation with the joint committee or the worker health and safety representative, as applicable.

[am. B.C. Reg. 185/99, s. 41.]

Inventory

5.98 (1) An inventory must be maintained which identifies all hazardous substances at the workplace in quantities that may endanger workers in an emergency including hazardous products covered by WHMIS, explosives, pesticides, radioactive materials, hazardous wastes, and consumer products.

(2) The inventory must identify the nature, location, and approximate quantity of all such substances, and the location of SDSs.

[am. B.C. Reg. 30/2015, s. 28.]

Risk assessment

5.99 An employer must ensure that an assessment is conducted of the risks posed by hazardous substances from accidental release, fire or other such emergency.

Procedures for evacuation

5.100 (1) Written evacuation procedures appropriate to the risk must be developed and implemented to

(a) notify workers, including the first aid attendant, of the nature and location of the emergency,

(b) evacuate workers safely,

(c) check and confirm the safe evacuation of all workers,

(d) notify the fire department or other emergency responders, and

(e) notify adjacent workplaces or residences which may be affected if the risk of exposure to a substance extends beyond the workplace.

(2) Notification of the public must be in conformity with the requirements of other jurisdictions, including provincial and municipal agencies.

Procedures for spill cleanup and re-entry

5.101 If workers are required to control a release of a hazardous substance, to perform cleanup of a spill, or to carry out testing before re-entry, the employer must provide

(a) adequate written safe work procedures,

(b) appropriate personal protective equipment which is readily available to workers and is adequately maintained, and

(c) material or equipment necessary for the control and disposal of the hazardous substance.

Training and drills

5.102 The employer must

(a) provide training in the appropriate emergency procedures to all workers who may be affected, and

(b) conduct drills to test the adequacy of procedures and to ensure that workers and supervisors are familiar with their roles and responsibilities.

Table 5-4

Repealed. [B.C. Reg. 315/2003, App. A, s. 12.]

PART 6 – SUBSTANCE SPECIFIC REQUIREMENTS

Asbestos

Definitions

6.1 In this section and sections 6.2 to 6.32:

"asbestos-containing material" means the following:

(a) a manufactured article or other material, other than vermiculite insulation, that would be determined to contain at least 0.5% asbestos if tested in accordance with one of the following methods:

(i) Asbestos, Chrysotile by XRD, Method 9000 (Issue 2, dated August 15, 1994) in the NIOSH Manual of Analytical Methods, published by the United States National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention;

(ii) Asbestos (bulk) by PLM, Method 9002 (Issue 2, dated August 15, 1994) in the NIOSH Manual of Analytical Methods, published by the United States National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention;

(iii) Test Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116, dated July 1993) published by the United States Environmental Protection Agency;

(b) vermiculite insulation that would be determined to contain any asbestos if tested in accordance with the Research Method for Sampling and Analysis of Fibrous Amphibole in Vermiculite Attic Insulation (EPA/600/R-04/004, dated January 2004) published by the United States Environmental Protection Agency;

"clean room" means a room in a high risk decontamination facility which is used by workers to change from street clothes into protective work clothing and equipment prior to entering the designated work area;

"clearance air sampling" means sampling to determine if the air inside a containment of a high risk work activity is sufficiently free of asbestos fibre to permit the dismantling of the containment;

"containment" means an isolation system designed to effectively contain asbestos fibre within a designated work area where asbestos-containing material is handled, removed, encapsulated or enclosed, and includes a glove bag;

"decontamination facility" means a series of rooms constructed so as to allow a person to enter and leave a containment without spreading asbestos fibre or waste material beyond the designated work area;

"designated work area" means an area for work with asbestos-containing material which is restricted to access by authorized persons by warning signs and by

barricades, enclosures or other means of isolation, with due regard for the level of risk;

"encapsulation" means treatment of an asbestos-containing material or surface with a sealant which penetrates the material and binds the fibres together;

"enclosure" means isolation of asbestos-containing material from adjacent occupied areas in a building by physical barriers such as gyproc, plywood, or metal sheeting, to prevent the release of airborne asbestos fibres into these areas;

"friable asbestos-containing material" means asbestos-containing material that is crumbled or powdered or can be crumbled or powdered by hand pressure;

"high risk work activity" means a work activity that involves working with or in proximity to asbestos-containing material if a high level of control is necessary in respect of that activity to prevent exposure of a worker to airborne asbestos fibre;

"low risk work activity" means a work activity that involves working with or in proximity to asbestos-containing material if, at the time the work activity is being carried out, both of the following apply:

(a) the asbestos-containing material is not being

(i) cut, sanded, drilled, broken, ground down or otherwise fragmented, or

(ii) disturbed such that the asbestos-containing material may release airborne asbestos fibre;

(b) it is not necessary to use personal protective equipment or engineering controls in respect of that activity to prevent exposure of a worker to airborne asbestos fibre;

"moderate risk work activity" means a work activity, other than a high risk work activity, that involves working with or in proximity to asbestos-containing material if, at the time the work activity is being carried out, one or both of the following apply:

(a) the asbestos-containing material is being

(i) cut, sanded, drilled, broken, ground down or otherwise fragmented, or

(ii) disturbed such that the asbestos-containing material may release airborne asbestos fibre;

(b) it is necessary to use personal protective equipment or engineering controls, or both, in respect of that activity to prevent exposure of a worker to airborne asbestos fibre;

"qualified person" means a person who

(a) has knowledge of the management and control of asbestos hazards through education and training, and

(b) has experience in the management and control of asbestos hazards.

[am. B.C. Regs. 312/2003, App. A, s. 7; 19/2006, s. 2; 188/2011, App. B, s. 1.]

Application

6.2 Sections 6.3 to 6.32 apply to a workplace where a worker is or may be exposed to potentially harmful levels of asbestos fibre, including a workplace where asbestos-containing material is present.

[en. B.C. Reg. 188/2011, App. B, s. 2.]

General Requirements

Exposure control plan

6.3 (1) If a worker is or may be exposed to potentially harmful levels of asbestos, the employer must develop and implement an exposure control plan meeting the requirements of section 5.54.

(2) To ensure adequate coordination of the overall plan, the employer must ensure that it is administered by a properly trained person.

Inventory

6.4 (1) The employer and the owner must ensure that a qualified person

(a) collects representative samples of the materials in the workplace that the qualified person suspects contain asbestos,

(b) determines whether each of the samples is asbestos-containing material in accordance with,

(i) in the case of a sample that is not vermiculite insulation, one of the methods set out in paragraph (a) (i) to (iii) of the definition of "asbestos-containing material" in section 6.1, and

(ii) in the case of a sample that is vermiculite insulation, the method set out in paragraph (b) of the definition of "asbestos-containing material" in section 6.1, and

(c) prepares an inventory of all asbestos-containing materials in the workplace that includes the following information:

(i) with respect to each representative sample collected under paragraph (a),

(A) the specific location of the sample,

(B) a description of the sample,

(C) whether the sample is asbestos-containing material as determined under paragraph (b),

(D) the method, set out in paragraph (a) (i) to (iii) or (b) of the definition of "asbestos-containing material" in section 6.1, used to determine if the sample is asbestos-containing material, and

(E) if the sample is determined to be asbestos-containing material, the type of asbestos, as determined under paragraph (b), and the percentage of the sample that is comprised of that asbestos;

(ii) with respect to each material that, under subsection (2), is treated under this Part as asbestos-containing material because it is inaccessible or not practicable to sample,

(A) the specific location of the material or, if the specific location is not known, the presumed location of the material,

(B) a description of the material, and

(C) how it is determined that the material is inaccessible or not practicable to sample;

(iii) the location of each of the asbestos-containing materials, including by using drawings, plans or specifications.

(2) If a qualified person suspects that a material in the workplace contains asbestos but determines that the material is inaccessible or not practicable to sample, the material must be treated under this Part as asbestos-containing material unless a qualified person, in accordance with subsection (1), determines that the material is not asbestos-containing material.

(3) The employer or the owner satisfies the employer's or owner's obligations under subsection (1) if the employer or the owner ensures that an existing inventory of all asbestos-containing materials in the workplace meets the requirements of subsection (1).

(4) The employer and the owner must

(a) keep the inventory current, and

(b) make a record of any changes made to the inventory.

(5) The employer and the owner must provide each other with a copy of the inventory and record referred to in subsection (4) if the other does not already have a copy.

(6) The employer must ensure that a copy of the current version of the inventory is readily available at the workplace.

(7) The employer and the owner must retain

(a) the current version of the inventory until all the asbestos-containing materials are removed from the workplace, and

(b) the record referred to in subsection (4) (b).

[en. B.C. Reg. 188/2011, App. B, s. 3; am. B.C. Regs. 9/2017, App. E, s. 1; 116/2022, App. B, s. 7.]

Identification

6.5 The employer and the owner must ensure that all asbestos-containing materials present in the workplace are identified by signs, labels or, when these are not practicable, other effective means.

[am. B.C. Reg. 9/2017, App. E, s. 2.]

Assessment and classification

6.6 (1) The employer must ensure that a risk assessment is conducted by a qualified person on asbestos-containing material identified in the inventory referred to in section 6.4 (1) (c) or (3), as applicable, with due regard for the condition of the material, its friability, accessibility and likelihood of damage, and the potential for fibre release and exposure of workers.

(2) The employer must ensure that a risk assessment has been conducted by a qualified person before any demolition, alteration, or repair of machinery, equipment, or structures where asbestos-containing material may be disturbed.

(3) Before a work activity that involves working with or in proximity to asbestos-containing material begins the employer must ensure that a qualified person assesses the work activity and classifies it as a low risk work activity, a moderate risk work activity or a high risk work activity.

(4) Repealed. [B.C. Reg. 188/2011, App. B, s. 4 (d).]

[am. B.C. Regs. 188/2011, App. B, s. 4; 9/2017, App. E, s. 3.]

Control of asbestos fibre

6.7 (1) The employer must ensure that all friable asbestos-containing materials in the workplace are controlled by removal, enclosure or encapsulation so as to prevent the release of airborne asbestos fibre.

(2) The employer must not allow any work that would disturb asbestos-containing material unless necessary precautions have been taken to protect workers.

[am. B.C. Reg. 188/2011, App. B, s. 5.]

Procedures

6.8 (1) The employer must ensure that procedures for handling or using asbestos-containing material prevent or minimize the release of airborne asbestos fibres.

(2) The employer must ensure that the procedures for control, handling or use of asbestos are in accordance with procedures acceptable to the Board.

(3) The procedures must address

(a) containment of asbestos operations where applicable,

(b) control of the release of asbestos fibre,

(c) provision, use and maintenance of appropriate personal protective equipment and clothing,

(d) means for the decontamination of workers, and

(e) removal of asbestos waste and cleanup of asbestos waste material.

(4) The procedures must provide a worker with task-specific work direction that addresses both hazards and necessary controls.

Prohibitions

6.9 (1) Except for waste intended for disposal, the employer must ensure crocidolite asbestos or material containing crocidolite asbestos is not brought into or used in a workplace.

(2) The spraying of asbestos or asbestos-containing material is not permitted.

(3) Pressure spraying equipment of any type must not be used to remove asbestos insulation or other asbestos-containing material from buildings or structures.

(4) The employer must not permit the use of compressed air to clean up or remove asbestos dust or debris, or dry sweeping or dry mopping of asbestos waste.

[am. B.C. Reg. 188/2011, App. B, s. 6.]

Substitution

6.10 (1) The employer must substitute material less hazardous than asbestos-containing material when practicable.

(2) If such substitution is not practicable, the employer must document the reasons why less hazardous material cannot be substituted for asbestos-containing material, and make this documentation available to workers and to the joint committee or the worker health and safety representative, as applicable.

[am. B.C. Regs. 185/99, s. 43; 188/2011, App. B, s. 7.]

Instruction and training

6.11 The employer must ensure that a worker who is at risk of exposure to asbestos is adequately instructed and trained in

(a) the hazards of asbestos,

(b) the means of identifying asbestos-containing material at the worksite,

(c) the work procedures to be followed,

(d) the correct use of the required personal protective equipment, and operation of the required engineering controls, and

(e) the purpose and significance of any required health monitoring.

Monitoring

6.12 (1) Repealed. [B.C. Reg. 312/2003, App. D, s. 4 (a).]

(2) During a high risk work activity, except where glove bags are used as the containment, the employer must sample for airborne asbestos fibre in

(a) areas outside of the containment but in its vicinity, at least daily if there are unprotected workers in the area,

(b) the clean room, at least daily during removal and cleanup operations, and

(c) contaminated areas inside the containment, as necessary during removal and cleanup to ensure that workers are adequately protected.

(3) The employer must make the results of all air samples taken during a high risk work activity available to the workers involved, within 24 hours of completing the collection of the samples.

(4) Except where glove bags are used as the containment, prior to dismantling a containment used in a high risk work activity and after all asbestos waste has been cleaned up, removed or otherwise controlled, the employer must ensure that

(a) clearance air sampling is conducted in previously contaminated areas inside the containment, and

(b) the airborne asbestos fibre levels in these areas do not exceed 0.02 f/ml.

[am. B.C. Regs. 312/2003, App. D, s. 4; 188/2011, App. B, s. 8.]

Designated Work Areas and Containments

Designated area

6.13 (1) Before starting work with asbestos-containing material, the employer must, with due regard for the level of risk,

(a) identify and mark the boundary of the designated work area by barricades, fences, or similar means,

(b) ensure that the immediate work area is cleared of objects, materials and equipment other than that required to do the work, and

(c) ensure that windows, doorways and all other openings are adequately secured to prevent the release of asbestos fibre into other work areas.

(2) The employer must post signs at the boundaries of the designated work area indicating asbestos work is in progress, the hazards, and the precautions required for entering the work area.

(3) The employer must restrict entry into the designated work area to authorized persons who are adequately protected against the level of risk within the designated work area.

Permanent enclosure design

6.14 When asbestos-containing material in the workplace is controlled by a permanent enclosure, the employer must ensure that the enclosure is airtight, and if practicable, that electrical, plumbing, ventilation and similar services are located outside the enclosure.

Glove bags

6.15 The employer must ensure that when a prefabricated glove bag is used for the removal of asbestos insulation from pipes, ducts and similar structures

(a) the glove bag is sealed to prevent the release of asbestos fibres into the work area outside the bag,

(b) waste materials on surfaces are washed to the bottom of the glove bag and all exposed asbestos insulation is encapsulated while inside the glove bag enclosure,

(c) all glove bags are evacuated through a HEPA vacuum to remove the air inside the bag, prior to removal of the bag, and

(d) after removing the glove bag, all exposed surfaces are cleaned again.

[am. B.C. Reg. 312/2003, App. B, s. 6.]

High risk work

6.16 (1) For high risk work activity the employer must provide and maintain a containment and a decontamination facility, except that a decontamination facility is not required if the containment is a glove bag.

(2) The employer must inspect a containment and a decontamination facility used for high risk work activity at least daily to ensure their effectiveness is maintained.

(3) The employer must ensure that the design of the decontamination facility includes

(a) a physical connection to the containment,

(b) a shower facility, and

(c) provision for the safe entry and exit of workers.

(4) If the high risk work activity involves encapsulation of asbestos-containing material, the employer must ensure that the encapsulant penetrates the material and effectively binds the asbestos fibres together, and has not disturbed the bonding of the material to the supporting surface.

(5) At the completion of a high risk work activity and before dismantling the containment, the employer must

(a) visually inspect the area inside the containment to ensure that an effective cleanup has been completed, and

(b) treat all exposed surfaces inside the containment with a sealant to bind any remaining asbestos fibres and prevent them from becoming airborne.

[am. B.C. Reg. 188/2011, App. B, s. 8.]

Ventilation

Containment ventilation

6.17 The employer must, with the exception of a glove bag, ventilate a containment to ensure that

(a) air flows only from clean outside areas into the contaminated area,

(b) exhaust air from the containment ventilation system is directed to the outdoors through an effective HEPA filter, and

(c) there is an inward airflow through the decontamination facility into the containment.

Local exhaust ventilation

6.18 The employer must provide local exhaust ventilation with exhaust air discharged through a HEPA filter for all dust-producing operations outside a containment where asbestos-containing material is handled or used.

[am. B.C. Reg. 188/2011, App. B, s. 9.]

Filter testing

6.19 (1) The employer must assess the effectiveness of HEPA filters by DOP (dioctyl phthalate) testing or similar means at least annually, after a HEPA filter is replaced in a vacuum cleaner or ventilation system, and before use in high risk work activity.

(2) Repealed. [B.C. Reg. 312/2003, App. B, s. 7.]

[am. B.C. Reg. 312/2003, App. B, s. 7.]

Other Means of Controlling Exposure to Asbestos

Protecting work surfaces

6.20 (1) Before starting work where exposed friable asbestos-containing material is present or asbestos-containing material has been handled, the employer must remove all asbestos dust from contaminated work surfaces with a damp cloth or similar material, or with a vacuum cleaner equipped with a HEPA-filtered exhaust.

(2) Work surfaces in the work area must be kept as free as practicable from accumulations of asbestos dust.

(3) Work surfaces in a designated work area must, with due regard for the level of risk, be covered with plastic sheets, tarpaulins or similar materials to help control the spread of asbestos-containing material.

[am. B.C. Reg. 188/2011, App. B, s. 10.]

Preventing spread

6.21 The employer must prevent the spread of asbestos dust and debris to other work areas during the work.

Wetting material

6.22 Asbestos-containing material that is to be removed or disturbed must be effectively wetted before and during the work, whenever practicable.

Repairing damaged material

6.23 When damaged asbestos-containing material is repaired, the employer must ensure that

(a) the repair methods will seal all exposed, friable ends or edges, and

(b) the methods used disturb the least amount of asbestos-containing material necessary to complete the repair.

Friction materials

6.24 If automotive service procedures may involve friction material that is asbestos-containing material or dust arising from such material, the employer must ensure that the following control measures are implemented:

(a) dry removal of friction material dust from automotive assemblies using compressed air, brushes, or other similar means is prohibited;

(b) service work areas where friction material is handled are posted with signs to advise workers of the hazards and required precautions;

(c) suitable work procedures are followed to minimize the generation of airborne dust;

(d) a worker handling equipment or assemblies contaminated with dust from friction material, outside of a HEPA-filtered vacuum enclosure system, wears suitable personal protective equipment, including disposable coveralls and at least a HEPA-filtered dual cartridge half face respirator;

(e) waste material that may be contaminated with asbestos is promptly collected and disposed of in accordance with applicable requirements;

(f) contaminated tools, equipment and work surfaces are cleaned after work is completed.

[am. B.C. Reg. 188/2011, App. B, s. 11.]

Waste Handling and Disposal

Sealed containers

6.25 The employer must ensure that all asbestos waste and other waste contaminated with asbestos, including disposable protective clothing and cleanup equipment, is placed into sealed containers which are labelled as containing asbestos.

Cleaning containers and equipment

6.26 (1) The employer must ensure that the exterior of a container of asbestos waste is cleaned with a damp cloth or a vacuum cleaner equipped with a HEPA-filtered exhaust before being removed from a designated work area.

(2) Reusable tools and equipment contaminated with asbestos must be cleaned after work is completed.

Waste removal

6.27 (1) Before any work involving asbestos takes place, the employer must ensure that procedures for the safe removal of asbestos dust and debris from the work area are set out in writing by a qualified person.

(2) The written procedures must

(a) comply with the requirements set out in section 6.8,

(b) provide for removal of asbestos dust and debris from the work area

(i) while work is in progress, at intervals necessary to eliminate or minimize the risk of exposure,

(ii) at the end of each work shift, and

(iii) at the completion of work involving asbestos, and

(c) consider the nature of the asbestos dust and debris to be removed and provide specific direction regarding which of the following removal methods, or combination of the following removal methods, is most appropriate for safe removal of that asbestos dust and debris in relation to each of the times set out in paragraph (b) (i), (ii) and (iii):

(i) using a vacuum cleaner, or similar device, that is equipped with a HEPA-filtered exhaust;

(ii) wiping surfaces with a damp cloth or sponge to remove residual amounts of asbestos dust and debris;

(iii) wet sweeping or wet mopping to remove larger amounts of asbestos dust and debris;

(iv) using a shovel or similar device to place larger amounts of dampened asbestos debris into the sealed container required by section 6.25;

(v) using another method that is acceptable to the Board.

(3) The employer must ensure that

(a) every worker who is engaged in asbestos dust and debris removal at the work area is adequately instructed and trained in the written procedures of the qualified person under this section, and

(b) the written procedures of the qualified person are followed.

[en. B.C. Reg. 188/2011, App. M, s. 1.]

Waste disposal

6.28 The employer must dispose of containers of asbestos waste promptly to prevent the accumulation of large amounts of asbestos waste.

Personal Protective Clothing and Equipment

Respiratory protection

6.29 (1) The employer must supply, and ensure that workers within a designated work area wear, respirators which are adequate for the anticipated level of exposure.

(2) The employer must ensure that a single use respirator is not used for protection against asbestos.

[am. B.C. Reg. 312/2010, App. G, s. 2.]

Protective clothing

6.30 (1) The employer must ensure that all persons within a designated work area wear protective clothing which is made of material resistant to penetration by asbestos fibres, fits snugly at the neck, wrists and ankles, and as necessary to protect against the risk, covers the head and feet as well as the body.

(2) The employer must replace or repair any torn or damaged protective clothing immediately.

(3) Before a worker removes protective clothing and equipment, the employer must ensure that the worker cleans this gear with a damp cloth or a vacuum cleaner equipped with a HEPA-filtered exhaust.

(4) The employer must ensure that a worker removes protective clothing and equipment before leaving the designated work area.

(5) The employer must ensure that protective clothing contaminated with asbestos is, before reuse, cleaned with a vacuum cleaner equipped with a HEPA-filtered exhaust, and placed in a water-soluble plastic bag, which is sealed and labelled before being sent to an acceptable laundry facility.

Information to laundry workers

6.31 The employer must ensure that workers who launder clothing contaminated with asbestos are informed of the hazards of asbestos and the precautions required for handling the clothing.

Documentation

Retention of records

6.32 The employer must maintain, for at least 10 years, the following records respecting asbestos-containing materials:

(a) risk assessments;

(b) inspections;

(c) air monitoring results;

(d) instruction and training of workers;

(e) incident investigation reports.

[en. B.C. Reg. 9/2017, App. E, s. 4.]

Biological Agents

Definitions

6.33 In sections 6.33 to 6.40:

"medical sharp" means a needle device, scalpel, lancet or any other medical device that can reasonably be expected to make parenteral contact;

"occupational exposure" means reasonably anticipated contact with a biological agent, that is designated as a hazardous substance in section 5.1.1, resulting from the performance of a worker's duties;

"parenteral contact" means piercing of mucous membranes or the skin;

"precautionary principle" means adopting provisional precautions covering all routes of transmission, based on a higher level of protection, when the identity, aetiology or routes of transmission of the biological agent designated as a hazardous substance in section 5.1.1 have not been established;

"route of transmission" means any route by which a biological agent designated as a hazardous substance in section 5.1.1 may be transmitted including contact, droplet or airborne transmission;

"safety-engineered medical sharp" means a medical sharp with a built-in safety feature or mechanism that eliminates or minimizes the risk of accidental parenteral contact while or after the sharp is used;

"safety-engineered needle" includes a self-sheathing needle device and a retractable needle system;

"standard or routine infection control precautions" means safe work practices as defined by the *Practical Guidelines for Infection Control in Health Care Facilities* issued by the World Health Organization, as amended from time to time, and the *Infectious Diseases, Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care* guidelines issued by Health Canada, as amended from time to time;

"transmission-based precautions" means safe work practices based on the route of transmission as defined by the *Practical Guidelines for Infection Control in Health Care Facilities* issued by the World Health Organization, as amended from time to time, and the *Infectious Diseases, Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care* guidelines issued by Health Canada, as amended from time to time.

[am. B.C. Regs. 241/2006, s. 1; 106/2007, s. 1; 319/2007, App. A, s. 6.]

Exposure control plan

6.34 (1) If a worker has or may have occupational exposure, the employer must develop and implement an exposure control plan, based on the precautionary principle, that meets the requirements of section 5.54 and that includes the following:

(a) a risk assessment conducted by a qualified person to determine if there is a potential for occupational exposure by any route of transmission;

(b) a list of all work activities for which there is a potential for occupational exposure;

(c) engineering controls and administrative controls to eliminate or minimize the potential for occupational exposure;

(d) standard or routine infection control precautions and transmission-based precautions for all work activities that have been identified as having a potential for occupational exposure, including

(i) housekeeping practices designed to keep the workplace clean and free from spills, splashes or other accidental contamination,

(ii) work procedures to ensure that contaminated laundry is isolated, bagged and handled as little as possible, and

(iii) work procedures to ensure that laboratory or other samples containing a biological agent designated as a hazardous substance in section 5.1.1 are handled in accordance with the *Laboratory Biosafety Guidelines 3rd edition, 2004*, issued by the Public Health Agency of Canada;

(e) a description of personal protective equipment designed to eliminate or minimize occupational exposure;

(f) a program to inform workers about the contents of the exposure control plan and to provide them with adequate education, training and supervision to work safely with, and in proximity to, a biological agent designated as a hazardous substance in section 5.1.1;

(g) a record of all training and education provided to workers in the program described in paragraph (f);

(h) a record of all workers who have been exposed, while performing work activities, to a biological agent designated as a hazardous substance in section 5.1.1.

[en. B.C. Reg. 319/2007, App. A, s. 7; am. B.C. Reg. 312/2010, App. N, s. 2.]

6.35 Repealed. [B.C. Reg. 319/2007, App. A, s. 8.]

Controls

6.36 (1) Repealed. [B.C. Reg. 319/2007, App. A, s. 9.]

(1.1) On and after January 1, 2008, a needleless device or safety-engineered hollow bore needle must be used for the following procedures performed to care for or treat a person:

(a) withdrawal of body fluids;

(b) accessing a vein or artery;

(c) administration of medications or fluids;

(d) any other procedure involving the potential for an exposure to accidental parenteral contact for which a needleless system or safety-engineered hollow bore needle system is available.

(1.2) On and after October 1, 2008, any medical sharp used to care for or treat a person must be a safety-engineered medical sharp.

(1.3) Subsections (1.1) and (1.2) do not apply if

(a) use of the required device, needle or sharp is not clinically appropriate in the particular circumstances, or

(b) the required device, needle or sharp is not available in commercial markets.

(1.4) If more than one type of safety-engineered hollow bore needle or safety-engineered medical sharp is available in commercial markets, the needle or sharp that provides the highest level of protection from accidental parenteral contact must be used.

(1.5) For purposes of subsection (1.4), an employer must make a determination of the highest level of protection available based on information provided by manufacturers, independent testing agencies, objective product evaluation, or other reliable sources.

(1.6) Safe work procedures and practices relating to the use of safety-engineered hollow bore needles and safety-engineered medical sharps must be developed and implemented before use of these devices.

(2) to (4) Repealed. [B.C. Reg. 319/2007, App. A, s. 9.]

(5) Repealed. [B.C. Reg. 312/2003, App. E, s. 3.]

(6) Repealed. [B.C. Reg. 319/2007, App. A, s. 9.]

[am. B.C. Regs. 312/2003, App. E, s. 3; 241/2006, s. 2; 106/2007, ss. 2 and 3; 319/2007, App. A, s. 9.]

Labels and identification

6.37 (1) A container holding a known or suspected biological agent designated as a hazardous substance in section 5.1.1 must be clearly identified by the biohazard symbol as described in the Hazardous Products Regulations (Canada) or by other means that indicates the presence of a biological agent.

(2) A laboratory sample of a known or suspected biological agent designated as a hazardous substance in section 5.1.1 must be transported only in accordance with the federal *Transportation of Dangerous Goods Act, 1992* (Canada).

[en. B.C. Reg. 319/2007, App. A, s. 10; am. B.C. Reg. 30/2015, s. 29.]

6.38 Repealed. [B.C. Reg. 319/2007, App. A, s. 11.]

Vaccination

6.39 (1) An employer must offer vaccination against the hepatitis B virus to all workers who are at risk of occupational exposure to that virus.

(2) If the *Communicable Disease Control Immunization Program Manual* issued by the BC Centre for Disease Control, as amended from time to time, lists a vaccine that protects against infection by a biological agent that is designated as a hazardous substance in section 5.1.1, the employer must offer the vaccination to all workers who are at risk of occupational exposure to that biological agent.

(3) Vaccinations offered under subsections (1) and (2) must be provided without cost to workers.

[en. B.C. Reg. 319/2007, App. A, s. 12.]

Medical evaluation

6.40 If a worker may have been exposed to the human immunodeficiency virus (HIV), hepatitis B virus or any other biological agent designated as a hazardous substance in section 5.1.1, the employer must advise the worker to seek immediate medical evaluation.

[en. B.C. Reg. 319/2007, App. A, s. 13.]

6.41 Repealed. [B.C. Reg. 319/2007, App. A, s. 14.]

Cytotoxic Drugs

Definition

6.42 In sections 6.43 to 6.58:

"cytotoxic drug" means an agent that possesses a specific destructive action on certain cells or that may be genotoxic, oncogenic, mutagenic, teratogenic, or hazardous to cells in any way and includes most anti-cancer drugs.

Exposure control plan

6.43 If a worker is or may be occupationally exposed to a cytotoxic drug, the employer must develop and implement an exposure control plan meeting the requirements of section 5.54.

Information

6.44 If a cytotoxic drug is received, prepared, administered, stored or disposed of at a workplace, the employer must maintain and make readily available to workers information on its

(a) acute and chronic toxicity, including any potential reproductive hazard,

(b) acute exposure treatment, and

(c) safe handling.

[am. B.C. Reg. 21/2006, s. 1.]

Labels

6.45 A container of a cytotoxic drug and a shelf or bin where a cytotoxic drug is regularly stored must be appropriately labelled.

Signs

6.46 Warning signs which are clearly visible and clearly state the identified hazards must be posted in all areas where cytotoxic drugs are stored or mixed.

List

6.47 Storage and preparation areas for cytotoxic drugs must be posted with a list of all cytotoxic drugs present in the workplace.

Procedures

6.48 (1) When a cytotoxic drug is received, prepared, administered, stored or disposed of, written safe work procedures must be developed and implemented for applicable aspects of receiving, storage, preparation, administration and waste handling.

(2) The work procedures required by subsection (1) must be readily available for reference by workers and where practicable, summaries of relevant procedures must be posted in the appropriate work areas.

[am. B.C. Reg. 21/2006, s. 2.]

Reproductive toxins

6.49 (1) At any worksite where a worker is occupationally exposed to a cytotoxic drug that is a reproductive toxin, the employer must develop policy and procedures appropriate to the risk, which may include protective reassignment.

(2) The policy and procedures must inform workers about the reproductive toxin and identify ways to minimize exposure to the reproductive toxin for a worker who has advised the employer of pregnancy or intent to conceive a child.

Instruction

6.50 (1) A worker involved in any aspect of handling a cytotoxic drug must receive pre-job education and on-the-job training on the handling of this substance.

(2) The instruction required by subsection (1) must address the

(a) known health risks, including any potential reproductive hazards,

(b) relevant techniques and procedures for safe handling,

(c) proper use of protective equipment and materials, and

(d) spill and waste disposal procedures.

(3) The adequacy of instruction must be assessed when required by a change in the substance used, information available on the substance or a change in work procedures, and retraining provided where necessary.

Supervision

6.51 A worker involved in any aspect of cytotoxic drug handling must be effectively supervised.

Records

6.52 (1) The employer must maintain a record of all workers who prepare or administer cytotoxic drugs, including the name of the drugs handled, and when practicable, the number of preparations or administrations per week.

(2) Exposure records must be maintained for the duration of employment plus 10 years, and training records for 3 years from the date that the training occurred.

Drug preparation and administration

6.53 (1) All mixing, preparation and priming of administration sets with a cytotoxic drug must be performed in one centralized area in a specially designated Class II Type B biological safety cabinet that

(a) is exhausted to the outside atmosphere in a manner that prevents recirculation into any work area,

(b) has exhaust and ventilation systems that remain in operation for a sufficient period of time to ensure that no contaminants escape from the biological safety cabinet into the workplace, and

(c) is equipped with a continuous monitoring device to permit confirmation of adequate airflow and cabinet performance.

(2) The administration of cytotoxic drugs must be done by following safe work procedures.

[am. B.C. Reg. 21/2006, s. 3.]

Disconnects

6.54 Syringes and intravenous sets used for cytotoxic drugs must have appropriate fittings, such as Luer locking fittings, which prevent accidental disconnection.

[am. B.C. Reg. 21/2006, s. 4.]

Personal protective equipment

6.55 (1) Adequate personal protective equipment must be provided and worn whenever there is a risk of contact with a cytotoxic drug.

(2) For the purposes of subsection (1) personal protective equipment includes

(a) medical gloves that are manufactured and designed for use when handling cytotoxic drugs,

(b) a moisture resistant, long-sleeved gown with cuffs,

(c) if there is a risk of contact with aerosols, an approved respirator, and

(d) if there is a risk of eye contact, eye and face protection.

(3) Used gowns and gloves must not be worn outside the preparation, administration or storage area and must be handled as hazardous waste or contaminated linen.

(4) All other non-disposable personal protective equipment must be cleaned immediately after use.

[am. B.C. Reg. 21/2006, s. 5.]

Personal hygiene

6.56 Eating, drinking, smoking, application of cosmetics or storage of food is prohibited in any area where a cytotoxic drug is mixed, administered or stored.

Waste disposal

6.57 (1) Adequate, leak-proof waste disposal containers, including sharps and solids containers, and distinctive plastic waste bags must be available in every area where cytotoxic drugs are prepared, administered or stored, and all cytotoxic drug-related waste must be placed into these containers or bags.

(2) Any excreta from a patient being treated with cytotoxic drugs that is handled by a worker must be treated as cytotoxic drug-related waste.

[am. B.C. Reg. 21/2006, s. 6.]

Spills

6.58 (1) Written emergency procedures to address spills of a cytotoxic drug must be developed and implemented which address requirements for small spill cleanup, both inside and outside the biological safety cabinet, large spill cleanup, and personal decontamination.

(2) Spill kits, clearly labelled, must be kept in or near cytotoxic drug preparation, administration and storage areas and a sign detailing spill procedures must be posted in all such areas.

[am. B.C. Reg. 21/2006, s. 7.]

Lead

Definitions

6.58.1 In this section and in sections 6.59 to 6.69:

"coating" means paint or any similar material that

(a) contains lead, and

(b) forms a film when dry;

"exposure limit" means the applicable exposure limit as referred to in section 5.48;

"exposure monitoring" means

(a) air and surface monitoring conducted in accordance with section 5.53 (4), and

(b) air monitoring conducted in accordance with section 6.61;

"health monitoring" means that part of a health protection program that monitors and assesses individual workers through clinical medical examinations, by measuring and determining lead amounts in capillary or venous blood, and by other tests, for the purpose of identifying changes in the worker's health status due to occupational exposure to lead;

"inorganic lead" means elemental lead, inorganic compounds of lead and lead chromate, but does not include organic compounds of lead;

"lead process" means the following work activities and processes, as well as any other work activity or process, involving the manufacturing, processing or

handling of lead, or of materials, products or coatings containing lead that may expose a worker to lead dust, fumes or mist:

(a) abrasive blasting;

(b) applying electric arc, oxy-acetylene, oxy gas, plasma arc or a flame for the purpose of welding, cutting or cleaning the surface of any structure;

(c) demolishing, removing or encapsulating materials;

(d) dry sanding or scraping, grinding, cutting or buffing;

(e) using lead in fire assay;

(f) cleaning up contamination;

(g) hot cutting in demolition, dismantling or salvage operations;

(h) manufacturing, assembling, handling or repairing lead-acid storage batteries, and sorting, packing and handling plates or other lead-containing parts that are removed or recovered from lead-acid storage batteries;

(i) manufacturing, assembling, handling, testing or firing of lead-containing weapons, detonators or other explosives;

(j) mixing and blending lead in plastics, coatings, moulding powders and stabilizers;

(k) mixing and melting processes in the glass industry;

(l) constructing, installing, altering, repairing or renovating structures, substrates, mechanical or engineered systems, or parts of any of these;

(m) smelting, refining, alloying, melting and casting;

(n) spray painting;

(o) repairing radiators;

(p) recycling or scrap-processing;

(q) transporting, disposing, storing or containing lead or materials containing lead;

(r) using a power tool, high pressure water jets or other mechanical means to cut, sand, buff or remove a surface coating;

"medical removal" means the temporary removal of a worker from a work activity involving a lead process if health monitoring, conducted under the supervision of a physician, indicates that the worker is at risk of suffering adverse health effects from continued exposure to lead;

"risk assessment" means a risk assessment conducted under section 6.59.1.

[en. B.C. Reg. 9/2017, App. F, s. 1.]

Application

6.59 Sections 6.59.1 to 6.69 apply to a workplace where a worker is or may be

(a) engaged in a lead process, or

(b) exposed to potentially harmful levels of inorganic lead dust, fumes or mist.

[en. B.C. Reg. 9/2017, App. F, s. 2.]

Risk assessment

6.59.1 (1) In this section, **"existing monitoring data"** means data

(a) gathered under section 5.53 or 6.61, or

(b) as described in section 6.61.1 (2) (b).

(2) An employer must not permit workers to engage in a work activity or lead process that may expose workers to lead dust, fumes or mist unless a risk assessment has first been completed by a qualified person.

(3) The risk assessment must include consideration of all of the following:

(a) the hazards of lead, including the exposure limit;

(b) any information contained on a label or in a safety data sheet provided by a supplier, manufacturer or employer in respect of

(i) the lead content in the materials, coatings or products to be used in the lead process, and

(ii) the health effects of lead exposure;

(c) the scope, circumstances and nature of the work activity or lead process, including

(i) whether section 5.50 applies, given the length of a shift,

(ii) any changes between shifts in the scope, circumstances or nature of the work activity or lead process,

(iii) whether the work activity involves welding, soldering, brazing, cutting or other hot work processes,

(iv) the potential routes of exposure to lead dust, fumes or mist during the work activity or while engaging in the lead process, including by inhalation or ingestion,

(v) the potential level and duration of the exposure referred to in subparagraph (iv), and

(vi) the results of any relevant health monitoring, if applicable, conducted

(A) in relation to an exposure control plan under section 5.54 (2) (f), or

(B) as part of a health protection program under section 6.67;

(d) the effectiveness of existing and planned control measures, as determined through exposure monitoring, to prevent or minimize worker exposure to lead dust, fumes or mist, including with respect to access to the workplace by unprotected workers;

(e) any additional information the employer needs to complete the risk assessment.

(4) A qualified person may rely on existing monitoring data for the purpose of assessing control measures under subsection (3) (d) only if it is reasonable to do so based on both of the following:

(a) the relevance of the existing monitoring data and whether additional exposure monitoring may be needed to reassess the effectiveness of existing and planned control measures because of changes in personnel or to the scope, circumstances or nature of the work activity or lead process;

(b) if applicable and available, the results of any health monitoring conducted on workers since the existing monitoring data was gathered.

(5) An employer must ensure that a risk assessment is reviewed by a qualified person if any of the following occur:

(a) there is reason to believe the risk assessment is no longer valid;

(b) there has been a significant change in the scope, circumstances or nature of the work activity or lead process to which the risk assessment relates;

(c) the results of any exposure monitoring or health monitoring show it to be necessary.

(6) If changes to the risk assessment are necessary as a result of the review under subsection (5), the employer must ensure that the risk assessment is changed accordingly.

[en. B.C. Reg. 9/2017, App. F, s. 3.]

Exposure control plan

6.60 (1) If a risk assessment indicates that a worker is or may be exposed to lead dust, fumes or mist, the employer must

(a) ensure that a qualified person develops an exposure control plan meeting the requirements of sections 5.54 and 5.57 (2), and of subsection (3) of this section, and

(b) implement the exposure control plan.

(2) If a risk assessment is changed under section 6.59.1 (6), the employer must ensure that

(a) the exposure control plan is amended to address the changes to the risk assessment, and

(b) the amendments to the exposure control plan are implemented.

(3) For the purposes of section 5.54 (2) (d), the written work procedures within an exposure control plan must address at least the following:

(a) the containment of lead processes through the use of enclosures, barriers or encapsulation, if used as a control measure;

(b) the effective control of worker exposure to lead dust, fumes or mist, including worker decontamination and personal hygiene;

(c) safe work practices and procedures;

(d) the correct selection, use, care and maintenance of any required personal protective equipment and clothing;

(e) emergency procedures;

(f) the removal, cleanup and disposal of lead dust and debris, including the measures that will be used for the purposes of meeting the requirements of section 6.64.

[en. B.C. Reg. 9/2017, App. F, s. 4.]

Elimination or control of exposure

6.60.1 (1) An employer must, to the extent it is practicable,

(a) avoid the use of materials, products or coatings containing lead that may expose a worker to lead dust, fumes or mist, and

(b) replace materials, products and coatings referred to in paragraph (a) with substances or processes that, under normal conditions of use, eliminate the risk of worker exposure to lead dust, fumes or mist.

(2) If it is not practicable to eliminate the risk of worker exposure to lead dust, fumes or mist, the employer must control the risk below the applicable exposure limit under section 5.48 by applying control measures that

(a) are appropriate to the work activity,

(b) are consistent with the risk assessment and with sections 5.55 and 5.57, and

(c) include, in order of priority,

(i) the design and use of engineering controls, including appropriate lead dust, fumes or mist reduction systems, containment of lead processes, and the provision and use of suitable work equipment and materials,

(ii) the control of exposure to lead dust, fumes or mist through administrative controls, including work practice controls, and

(iii) if the control measures set out in paragraphs (i) and (ii) are not adequate to control exposure, the provision and use of suitable personal protective equipment in addition to those control measures.

[en. B.C. Reg. 9/2017, App. F, s. 5.]

Air monitoring for lead

6.61 (1) If there is a potential for hazardous exposure to airborne lead dust, fumes or mist in a work activity or lead process, the employer must

(a) ensure that air monitoring is conducted using a sampling and analytical method referred to in subsection (2)

(i) during the first shift of the work activity or lead process, and

(ii) as necessary throughout the work activity or lead process to ensure that control measures are effective to prevent or minimize worker exposure to lead dust, fumes or mist, and

(b) keep, for at least 10 years, records of the results of air monitoring conducted under this section.

(2) Acceptable sampling and analytical methods for the purpose of subsection (1) are as follows:

(a) a method detailed in a standard occupational hygiene reference published by

(i) the National Institute for Occupational Safety and Health, or

(ii) the Occupational Safety and Health Administration;

(b) another method acceptable to the Board.

[en. B.C. Reg. 9/2017, App. F, s. 6.]

Exceptions to air monitoring requirement

6.61.1 (1) In this section, **"equivalent work operations"** means work operations closely matching the lead processes, types of materials, products or coatings, work practices, control measures and environmental conditions prevailing in the employer's current work operations.

(2) Despite section 6.61, an employer is not required to monitor the concentration of airborne lead if a qualified person determines that

(a) existing control measures are effective in keeping worker exposure as low as reasonably achievable below the exposure limit, and

(b) the employer

(i) has previously monitored for airborne concentrations of lead during equivalent work operations and there is no reason to believe that the results of the previous monitoring would not continue to apply, or

(ii) has objective air monitoring data that was collected during equivalent work operations through industry surveys or peer-reviewed or scientific studies that use sampling and analytical methods referred to in section 6.61 (2).

(3) An employer must keep, for at least 10 years, a record documenting the following, as applicable:

(a) the previous monitoring data used for the purpose of subsection (2) (b) (i);

(b) the source of the objective air monitoring data, and the data itself, referred to in subsection (2) (b) (ii).

[en. B.C. Reg. 9/2017, App. F, s. 7.]

Warning signs

6.62 Warning signs describing the hazards and health consequences of lead exposure and prohibiting the entry of unauthorized workers must be posted at the boundary of any work area where hazardous lead exposures could occur.

[en. B.C. Reg. 9/2017, App. F, s. 8.]

Personal hygiene

6.63 If exposure to lead dust, fumes or mist or lead compounds results in the contamination of exposed skin or work clothing, the requirements for personal hygiene in sections 5.82 to 5.84 must be met.

[am. B.C. Reg. 9/2017, App. F, s. 9.]

Housekeeping

6.64 An employer must ensure

(a) that all surfaces in the work area are kept as free as practicable from accumulations of lead dust, and

(b) that, if vacuuming methods are selected as a control measure, vacuums must be

(i) designed, maintained, tested and used in accordance with

(A) the manufacturer's specifications, or

(B) the instructions of a professional engineer, and

(ii) equipped with an effective HEPA filter on the exhaust.

[en. B.C. Reg. 9/2017, App. F, s. 10.]

Prohibited cleaning methods

6.65 A person must not use blowers, compressed air, compressed gas or dry sweeping cleaning methods in areas where lead processes are conducted.

[en. B.C. Reg. 9/2017, App. F, s. 10.]

Instruction and training

6.66 An employer must ensure that a worker who is or may be exposed to lead dust, fumes or mist receives adequate instruction and training in all of the following:

(a) the hazards and health effects of exposure to lead dust, fumes and mist;

(b) the specific nature of the work activity or lead process and the potential routes of lead exposure that may result;

(c) safe work practices and procedures;

(d) the correct operation and use of any required equipment and engineering controls;

(e) the purpose and limitations of personal protective equipment, and the correct selection, fitting, use, care and maintenance of that equipment;

(f) personal hygiene and decontamination procedures;

(g) the purpose and significance of health monitoring;

(h) housekeeping practices as described in section 6.64.

[en. B.C. Reg. 9/2017, App. F, s. 10.]

Health protection

6.67 The employer must develop and implement an effective health protection program, in a manner acceptable to the Board, if a worker is exposed to potentially hazardous levels of lead.

Records

6.68 The employer must

(a) maintain records of risk assessments, worker exposures and worker training, and

(b) ensure that health monitoring records are maintained in a manner acceptable to the Board.

Primary lead smelters

6.69 An employer engaged in primary lead smelting is exempt from the requirement to maintain airborne lead concentrations at or below the exposure limit in lead processing areas, provided that in these areas the employer

(a) maintains the airborne lead concentrations as low as is reasonably achievable using the best available technology,

(b) establishes and maintains an acceptable health protection plan including the elements in section 5.54, to ensure that workers' blood lead levels are minimized,

(c) establishes provisions acceptable to the Board for the medical removal of workers, and

(d) submits a summary of the annual review to the Board.

Pesticides

Definitions

6.70 (1) In sections 6.70 to 6.109:

"antisapstain" in reference to a pesticide, means any substance which is applied to freshly cut wood to control fungal growth;

"closed system" means a device and procedure for transferring a pesticide from one container to another in a manner that does not expose the operator to the pesticide;

"field" means any area, excluding a body of water, on or in which one or more crops are grown and includes but is not limited to a field of row crops, an orchard, a mushroom farm, a greenhouse, a nursery, a turf farm, a silviculture area and any similar area;

"fumigant" means a pesticide applied in the form of a gas or vapour to kill pests and which is typically applied in an enclosed space;

"label" has the same meaning as in the *Pest Control Products Act* (Canada);

"pest" means an injurious, noxious or troublesome insect, fungus, weed, rodent, parasite or other organism;

"pesticide" means a micro-organism or material that is represented, sold, used or intended to be used to prevent, destroy, repel or mitigate a pest and includes

(a) a plant growth regulator, plant defoliator or plant desiccant, and

(b) a control product, other than a device, under the *Pest Control Products Act* (Canada);

"restricted entry interval" means the length of time representing a period of precaution that must elapse after the application of a pesticide, before an unprotected worker may be authorized to enter the treated area;

"toxic", in reference to a pesticide, means a formulation or a pesticide containing active ingredients that, by oral or dermal routes of entry, have acute mammalian toxicities expressed as the Lethal Dose 50% (LD_{50}), and, for this purpose, a pesticide is considered to be

(a) very toxic, if the LD_{50} is less than 500 mg/kg,

(b) moderately toxic, if the LD_{50} is 500 mg/kg or more but less than or equal to 1 000 mg/kg, and

(c) slightly toxic, if the LD_{50} is more than 1 000 mg/kg but less than or equal to 2 000 mg/kg;

"treated area" means that portion of a field, building, structure or area in which a pesticide has been applied.

(2) For the purposes of the definition of "toxic" in subsection (1), if the LD_{50} of a pesticide is reported as a range, the lowest reported LD_{50} must be used to determine the class of the pesticide as very toxic, moderately toxic or slightly toxic.

[am. B.C. Reg. 139/2021, App. A, s. 1.]

Application

6.71 Sections 6.72 to 6.109 apply to any workplace where pesticides are used, stored or handled, except for disinfectants, germicidal products, cleaners, antifouling paints and first aid treatments which are issued Pest Control Product numbers.

General Requirements

Pesticide labels

6.72 The employer must ensure that a pesticide for use in the workplace has been registered and labelled by the manufacturer in accordance with the *Pest Control Products Act* (Canada).

[en. B.C. Reg. 185/99, s. 44.]

Placards or signs for treated materials

6.73 If pesticide residues on treated seedlots, plants and similar materials supplied for planting may pose a hazard to workers, the employer must ensure placards or signs are provided with the treated materials stating

(a) the names and types of pesticides applied,

(b) the date of last application, and

(c) the hazards and precautions required for handling these materials.

[am. B.C. Reg. 139/2021, App. A, s. 2.]

Pesticide use

6.74 The employer must ensure that a pesticide for use in the workplace is used in accordance with the requirements stated on the label and with good application practice.

[en. B.C. Reg. 185/99, s. 46.]

SDS

6.75 The employer must make readily available to workers an SDS or its written equivalent for all pesticides used at the workplace.

[am. B.C. Regs. 185/99, s. 45; 30/2015, s. 30.]

Informing workers

6.76 An employer must ensure that workers occupying, or who may access, that portion of a field, building, structure or area in which pesticides are to be applied are informed of

(a) the intent to use pesticides,

(b) the names and types of pesticides to be applied,

(c) the hazards associated with the use of those pesticides, and

(d) the precautions required during the operations.

[en. B.C. Reg. 139/2021, App. A, s. 3.]

Mixing, Loading and Applying Pesticides

Qualifications

6.77 (1) The employer must ensure that a worker or applicator who mixes, loads or applies a moderately or very toxic pesticide for use in a workplace or who cleans or maintains equipment used in the operations

(a) is 16 years of age or over, and

(b) holds a valid pesticide applicator certificate issued under the *Integrated Pest Management Act*.

(2) Subsection (1) (b) does not apply to any of the following:

(a) the use of biocides or slimicides in pulp and paper operations;

(b) antisapstain materials;

(c) the use of a pesticide by an assistant applicator within the meaning of, and in accordance with, the *Integrated Pest Management Act* and the regulations made under it.

(3) Workers involved in training for the purposes of obtaining a valid pesticide applicator certificate who are directly supervised by a qualified person are exempt from the requirement of subsection (1) (b) during the training period.

[am. B.C. Regs. 188/2011, App. C, s. 1; 139/2021, App. A, s. 4.]

Procedures

6.78 The employer must develop and implement written safe work procedures for the

(a) handling, mixing, storage and application of pesticides,

(b) cleanup and disposal of spilled pesticides, and

(c) summoning of first aid and medical assistance for workers overexposed to pesticides.

Health protection

6.79 Where, in the opinion of the Board, it is necessary to provide health monitoring for workers exposed to pesticides, employers and workers must participate as required by the Board, and records must be maintained in a manner acceptable to the Board.

Rescue

6.80 If a worker applies a moderately or very toxic pesticide in a greenhouse or similar enclosed space and the worker may be incapacitated during the application, the work must be done in such a manner that a rescue can be effected by another worker equipped and able to do so.

Equipment

General requirements

6.81 The employer must ensure that equipment used to mix, load or apply pesticides is

(a) constructed of materials which are chemically compatible with the pesticide in use if contact with the pesticide is likely to occur,

(b) operated only by trained persons,

(c) used in accordance with instructions from the pesticide supplier,

(d) maintained in a safe operating condition,

(e) cleaned, repaired and maintained by workers who have been adequately instructed in safe work procedures, and

(f) in a safe condition before maintenance or repair work is carried out, including welding operations.

[am. B.C. Reg. 312/2003, App. F, s. 1.]

Fixed stations

6.82 A fixed pesticide mixing, loading or application station must have

(a) openings on tanks secured as necessary to prevent accidental worker entry,

(b) shut-off devices at the discharge end of hoses and pipes leading from mixing tanks, and

(c) when required by the Board, a closed system for the mixing, loading or transferring of pesticides.

Mobile equipment

6.83 A tank, with a capacity of 200 litres (44 imp gal) or more, on mobile pesticide application equipment must have

(a) a device which indicates the fluid level, for equipment sold for first use after January 1, 1999,

(b) the openings secured to prevent spillage while the equipment is in use, and

(c) shut-off devices at the discharge end of hoses and pipes leading from the mixing tanks.

Pesticide Application

Safe application practice

6.84 (1) The employer must ensure that a pesticide is applied in a manner that controls the risk of adverse health effect or injury to any person.

(2) Before a pesticide is applied, the employer must ensure that all workers in the area that is to be treated and who are not required for the application of pesticides are moved to a safe location.

(3) If practicable, the employer must schedule a pesticide application in a building for a time when the building is unoccupied.

Posting warning signs

6.85 Before a moderately or very toxic pesticide or a fumigant is applied the employer must ensure that

(a) warning signs acceptable to the Board are conspicuously posted at normal points of worker entry to the area to be treated, and

(b) if a pesticide is applied in an enclosed space all entrances to the space are secured to prevent unauthorized persons from entering.

Design of warning signs

6.86 Warning signs must be of a design, construction and durability to be clearly identifiable for the prescribed posting period, and must provide information in a manner that can be readily understood by workers.

Warning signs for non-fumigants

6.87 Warning signs for the application of moderately and very toxic pesticides, other than fumigants in enclosed spaces, must display

(a) a skull and crossbones symbol,

(b) the word WARNING in a language that can be readily understood by the workers and in letters large enough to be read at a distance of 8 m (25 ft),

(c) the name of the pesticide and the date of application,

(d) the expiry date of the restricted entry interval as determined in section 6.89, and

(e) instructions to obtain permission to enter before the expiry date of the restricted entry interval.

Warning signs for fumigants

6.88 The warning sign for the application of a fumigant in an enclosed space must display

(a) a skull and crossbones symbol,

(b) the words DANGER, DEADLY FUMIGANT GAS, KEEP OUT in a language that can be readily understood by the workers and in letters large enough to be read at a distance of 8 m (25 ft),

(c) the name of the fumigant,

(d) the name of the applicator, and

(e) emergency telephone numbers for both day and night.

Restricted entry intervals

6.89 (1) Except as permitted under section 6.90, an employer must ensure that a person does not enter a treated area until the restricted entry interval has expired.

(2) The length of the restricted entry interval required by subsection (1) is as follows:

(a) if the label of the applied pesticide states a single restricted entry interval, the time period stated on the label;

(b) if the label of the applied pesticide states different restricted entry intervals for different activities, the time period stated on the label for the activity most closely resembling the activity being conducted;

(c) if more than one pesticide is applied and the labels of each state different restricted entry intervals, the longest time period stated;

(d) if the label of the applied pesticide does not state a restricted entry interval,

(i) 24 hours if the pesticide is classified as slightly toxic, or

(ii) 48 hours if the pesticide is classified as moderately or very toxic or is part of a mixture in which a moderately or very toxic pesticide is present;

(e) if more than one pesticide is applied and the label of at least one pesticide does not state a restricted entry interval, the longer of

(i) the longest time period stated on any label of the other pesticides, and

(ii) the time period required by paragraph (d) (i) or (ii), as applicable.

(3) An employer must ensure that, in addition to not entering a treated area until the applicable restricted entry interval has expired, workers comply with all safety information, including user directions and safety precautions, stated on any label of the pesticides being applied.

[en. B.C. Reg. 139/2021, App. A, s. 5.]

Authorization to enter before restricted entry interval expires

6.90 (1) In this section:

"emergency" means any sudden occurrence or set of circumstances

(a) that an employer could not have anticipated,

(b) over which an employer has no control, and

(c) that requires a worker to enter a treated area during a restricted entry interval because no alternative practices would prevent or mitigate

(i) injury to persons, or

(ii) substantial damage to crops or property;

"hand labour activity"

(a) subject to paragraph (b), means an activity or task performed by hand or using hand tools that causes a worker to have substantial dermal contact with plants or parts of plants, soil or a surface that may contain pesticide residues, and

(b) does not include operating, moving or repairing

(i) irrigation or watering equipment, except hand-set irrigation, or

(ii) other equipment that is not directly used to apply pesticides.

(2) If an employer authorizes a worker to enter a treated area before the restricted entry interval expires, the employer must ensure all of the following:

(a) that the worker

(i) does not enter the treated area earlier than 4 hours after the pesticide application is completed,

(ii) is not in the treated area for more than one hour in a 24 hour period, and

(iii) does not perform a hand labour activity until the expiry of the restricted entry interval;

(b) that hazards to the worker have been assessed by a qualified person;

(c) that the treated area is effectively ventilated using either natural or mechanical means, and

(i) the atmosphere has been tested, if practicable, or

(ii) evaluated by a qualified person and declared safe to enter;

(d) that the worker is provided with, wears and uses correctly personal protective clothing and equipment appropriate to the hazards assessed under paragraph (b);

(e) that the worker follows safe work procedures;

(f) that, if the worker may be incapacitated after entry, provision has been made for rescue in a manner that meets the requirements of section 6.80.

(3) If an employer authorizes a worker to enter a treated area during an emergency before the restricted entry interval expires, the employer must ensure all of the following:

(a) that the requirements of subsection (2) (b) to (f) are met;

(b) that emergency washing facilities as required under section 5.85 are available.

[en. B.C. Reg. 139/2021, App. A, s. 5.]

Record of entry before restricted entry interval expires

6.90.1 (1) In addition to the record that must be kept under section 6.94, an employer must ensure that a record of all of the following is completed within 24 hours of a worker entering a treated area before the restricted entry interval expires:

(a) if entry was during an emergency,

(i) the date and location of the emergency,

(ii) the time the emergency started and ended, and

(iii) a description of the emergency, including an estimate of the type of injury or the amount of crop or property damage that would have occurred without early entry to the treated area;

(b) the restricted entry interval that applies under section 6.89 (2);

(c) the name of the worker who entered the treated area, and the times at which the worker entered and exited the treated area.

(2) The record referred to in subsection (1) must be kept for at least 10 years.

[en. B.C. Reg. 139/2021, App. A, s. 5.]

Exemptions

6.91 (1) In this section, **"structural pesticide application"** means the use of any method or device, or the application of any substance, that includes a pesticide to prevent, control or exterminate a pest in, on, under or near a structure, except in relation to the prevention, control or extermination of pests that affect plants.

(2) An employer is exempt from the requirements of sections 6.85 to 6.90.1 with respect to structural pesticide applications as follows:

(a) the application, by means of spot treatment or crack and crevice treatment, of small quantities of slightly toxic pesticides if

(i) the methods used minimize the release of aerosols and residues on work surfaces, and

(ii) a qualified person determines that workers are not at risk of exposure;

(b) the application, in circumstances of restricted exposure including spot treatment and crack and crevice treatment, of small quantities of moderately toxic pesticides if

(i) the methods used minimize the release of aerosols and residues in the treated area,

(ii) the treated area is clearly identified,

(iii) during application, no hazardous accidental release of pesticide occurs, and

(iv) a qualified person

(A) determines, before application, that persons occupying the treated area are not at risk of exposure,

(B) notifies persons occupying the treated area, before application, of any entry precautions applicable to the application, and

(C) inspects the treated area after application to confirm compliance with this subsection.

(3) An employer is exempt from the requirements of sections 6.85 to 6.90.1 with respect to the handling and application of biocides and slimicides if all of the following conditions are met:

(a) the method of handling and distributing the biocide or slimicide minimizes the release of aerosols and residues on work surfaces;

(b) areas where the biocide or slimicide is handled or distributed are clearly identified, and entry into these areas is restricted to authorized workers.

[en. B.C. Reg. 139/2021, App. A, s. 5.]

Cleanup of residues

6.92 The employer must ensure that surfaces used for food preparation and eating, and work surfaces likely to come in contact with workers' unprotected skin are cleaned and free of pesticide residues.

Pesticide drift

6.93 (1) An employer must ensure that all reasonable precautions are taken to prevent the drift or spread of a pesticide from a workplace under the employer's control.

(2) If a pesticide under the control of an employer has drifted or spread to a workplace occupied or used by another employer, the first employer must notify the second of the identity of the pesticide, the nature of its harmful characteristics and the precautions required for the safety of workers.

(3) The employer to whose property a pesticide has drifted or spread must take all reasonable steps to

(a) identify the pesticide and advise any persons who may be exposed to it of the nature of the pesticide, its harmful characteristics and the precautions required for safety, and

(b) ensure that any hazards to persons from exposure to the pesticide are eliminated or controlled.

Records

6.94 The employer must maintain a record of pesticide applications which includes, for each application,

(a) the pesticide used and location of application,

(b) the date and time at which the application was completed,

(c) the date on which workers were allowed to re-enter, and

(d) if applicable, the type of crop treated, rate of application and the number of acres or hectares treated.

Personal Hygiene

Wash and shower facilities

6.95 (1) The employer must supply and maintain adequate wash facilities and, if there is the risk of body contamination, shower facilities as required by section 5.82, to all workers when

(a) mixing, loading or applying pesticides, or handling concentrates or wet-treated lumber,

(b) cleaning, maintaining or handling equipment, materials or surfaces contaminated with pesticide residues, or

(c) entering fields where pesticides have been applied and where contact with pesticide residues may contaminate protective clothing and body areas.

(2) The wash and shower facilities required by subsection (1) must be in close proximity to the places where pesticides are used or handled, but must be separate from food preparation, lunchrooms and eating areas.

Worker cleanup

6.96 A worker must immediately cleanse any body area contaminated with pesticide.

Personal protective clothing and equipment

6.97 If a worker mixes, loads or applies pesticides or if a worker cleans, maintains or handles equipment, materials or surfaces contaminated with pesticide residues, the employer must ensure that

(a) the worker is provided with and wears suitable protective clothing and equipment,

(b) contaminated protective clothing and equipment is stored in a secure place and not used until it is laundered or otherwise cleaned,

(c) if required, adequate facilities or services to launder contaminated protective clothing are available,

(d) at least one change of outer protective clothing for each worker is available at the work site, and

(e) a change room or sheltered place is provided where workers can change clothes and store personal clothing while wearing protective clothing.

Avicides, Predicides, Rodenticides and Insecticidal Baits

Exemption

6.98 Sections 6.80 and 6.85 to 6.91 do not apply where an avicide, predicide, rodenticide or insecticidal bait is used or applied in solid or liquid form, unless the pesticide label specifies otherwise.

Preventive measures

6.99 For a pesticide exempted in section 6.98 the employer must ensure that

(a) adequate measures are taken for the protection of the applicator including the use of safe work procedures, the provision and use of personal protective equipment and the provision of adequate hand washing facilities,

(b) the pesticide is applied, where practicable, in areas not readily accessible to unauthorized persons, and away from areas of normal work activity, and

(c) a worker who is required to enter the area or location where the pesticide has been applied is notified of the location of the pesticide application, the physical description of the pesticide and the device, if any, in which it is placed, and the precautions that must be observed.

Storage

Location

6.100 The employer must ensure that pesticides are not stored in areas where food preparation occurs, in lunchrooms, or in food storage areas.

Storage facilities

6.101 (1) The employer must supply a pesticide storage facility that meets the design criteria stated in the manual Standard Practices for Pesticide Applicators, published by the Workers' Compensation Board of BC, for the storage of bulk or reserve quantities of pesticides.

(2) Factors that must be considered in the facility design include

(a) maintenance of minimal quantities,

(b) compatibility of pesticides,

(c) strength of shelving materials, and

(d) containment of spills.

Retail displays

6.102 The employer must ensure that shelving and retail displays for pesticides are designed to provide safe storage and to minimize the possibility of spills.

Antisapstain Applications

Substitution

6.103 An employer must investigate antisapstain materials and, whenever practicable, substitute an alternate material for a material in use, if

(a) the hazards of the substitute are known, and

(b) the risk to workers is reduced.

Ventilation

6.104 (1) The employer must install and maintain an effective local exhaust ventilation system on all spray box application equipment to contain overspray and control worker exposure to the chemicals.

(2) The employer must ensure that the ventilation system for a spray box provides an inward air flow across the hood face at least equal to the velocity of the lumber on the outfeed conveyor.

Cleaning equipment

6.105 The employer must clean a metal surface of antisapstain material before any welding, burning or cutting operation is done on it.

Excess chemical

6.106 The employer must control the flooding of wood being treated by the use of

(a) mist eliminators,

(b) curtains on the spray box enclosure openings,

(c) regulation of the spray flows, or

(d) other acceptable measures.

Protective clothing

6.107 A worker handling wet treated lumber must remove protective equipment before leaving the restricted work area.

Records

6.108 The employer must keep records and SDSs on all previously used antisapstain materials if a change of chemical has occurred and the equipment or work areas have not been adequately decontaminated, and this information must be readily available to workers.

[am. B.C. Reg. 30/2015, s. 31.]

Exemption

6.109 (1) The requirements of sections 6.85 to 6.91 with respect to warning signs and restricted entry intervals do not apply to the application of antisapstain materials, unless the pesticide label specifies otherwise.

(2) Areas of antisapstain application must be clearly identified to workers.

(3) Entry into work areas where antisapstain materials are handled or applied must be restricted to authorized personnel.

Respirable Crystalline Silica and Rock Dust

Definitions

6.110 (1) In this section and sections 6.111 to 6.112.7:

"abrasive blasting" means the cleaning, smoothing, roughening or removing of a surface or part of a surface by the use of an abrasive that is

(a) comprised of a jet of sand, metal shot, grit, or another material, and

(b) propelled by compressed air or steam, or by a wheel;

"blasting enclosure" means a chamber, barrel, cabinet or a purpose-built structure in which abrasive blasting occurs;

"cleaning of castings" means, in connection with making metal castings,

(a) the freeing of metal castings from adherent sand or another substance containing silica, other than the freeing of metal castings from scale formed during annealing or heat treatment,

(b) the removal of cores from metal castings, and

(c) the smoothing of metal castings where freeing is done;

"control measures" include the measures set out in section 6.112.2;

"dust reduction system" means the following, alone or in combination:

(a) the use of a process or material that prevents the creation of RCS dust;

(b) the use of an enclosure, including a blasting enclosure, to

(i) contain RCS dust, or

(ii) physically separate a worker from a source of RCS dust;

(c) the use of local exhaust ventilation, being a system of ventilation designed to capture and remove process emissions or RCS dust before the emissions or dust escapes into the workplace environment;

(d) the use of wet systems, being

(i) the use of water or another liquid to increase moisture content in material to prevent RCS dust from becoming airborne, or

(ii) the addition of moisture to the air to capture RCS dust particles that are already airborne;

"exposure limit" means the applicable exposure limit as referred to in section 5.48;

"exposure monitoring" means air monitoring conducted in accordance with section 5.53 (4) or 6.112.3;

"RCS dust" means any of the following that can be deposited in the lower gas exchange regions of the lung when inhaled:

(a) respirable crystalline silica;

(b) respirable α-quartz;

(c) respirable cristobalite;

"risk assessment" means a written risk assessment conducted in accordance with section 6.112;

"sandblasting" means an abrasive blasting process that uses silica sand as an abrasive;

"silica flour" means the fine powder produced by the crushing, grinding or ball milling of a siliceous substance;

"silica process" means the following processes, as well as any other process that may result in the release of RCS dust in concentrations likely to exceed the exposure limit:

(a) sandblasting;

(b) cleaning of castings;

(c) abrasive blasting, grinding, sanding or dressing of any surface that contains crystalline silica;

(d) blasting, cutting, crushing, drilling, grinding, milling, scaling, splitting or sieving, or other mechanical pulverizing or shattering, of rock, siliceous stone or gravel;

(e) concrete or asphalt milling, shotcreting, pneumatic drilling, tunnelling or other large-scale mechanical processes that may generate RCS dust;

(f) using heavy equipment or pneumatics to transfer sand, earth, aggregate or other material that contains silica, and associated transport, recycling and disposal operations;

(g) a process in which silica flour is used, including using it as an additive in product manufacturing;

(h) manufacturing, dismantling, demolishing or repairing of concrete, masonry or other material that contains silica;

(i) using power tools or equipment to abrade, cut, grind, core or drill concrete, masonry or other material that contains silica;

"siliceous" means any group of sedimentary rocks that consist largely or almost entirely of silicon dioxide (SiO_2), including diatomite.

(2) In this section, a reference to concrete, masonry or other material refers to a hard stone-like building material made

(a) of clay, or

(b) by mixing, with water or another liquid,

(i) cement, or

(ii) a combination of cement, sand, gravel, broken stone or another aggregate.

[en. B.C. Reg. 9/2017, App. G, s. 2.]

Application

6.111 Sections 6.112 to 6.112.7 apply to a workplace where a worker is or may be

(a) engaged in a silica process, or

(b) exposed to potentially harmful levels of RCS dust.

[en. B.C. Reg. 9/2017, App. G, s. 2.]

Risk assessment

6.112 (1) In this section, **"existing monitoring data"** means data

(a) gathered under section 5.53 or 6.112.3, or

(b) as described in section 6.112.4 (2) (b).

(2) An employer must not permit workers to engage in a work activity or a silica process that may expose workers to RCS dust unless a risk assessment has first been completed by a qualified person.

(3) The risk assessment must include consideration of all of the following:

(a) the hazards of RCS dust, including the exposure limit;

(b) any information contained on a label or in a safety data sheet provided by a supplier, manufacturer or employer in respect of

(i) the crystalline silica content in the materials to be used in the silica process, and

(ii) the health effects of RCS dust exposure;

(c) the scope, circumstances and nature of the work activity or silica process, including

(i) whether section 5.50 applies, given the length of a shift,

(ii) any changes between shifts in the scope, circumstances or nature of the work activity or silica process, and

(iii) the potential level and duration of exposure to RCS dust during the work activity or while engaging in the silica process;

(d) the effectiveness of existing and planned control measures, as determined through exposure monitoring, to prevent or minimize worker exposure to RCS dust, including with respect to access to the workplace by unprotected workers;

(e) any additional information the employer needs to complete the risk assessment.

(4) A qualified person may rely on existing monitoring data for the purpose of assessing control measures under subsection (3) (d) only if it is reasonable to do so based on

(a) the relevance of the existing monitoring data, and

(b) whether additional air monitoring may be needed to reassess the effectiveness of existing and planned control measures because of changes in personnel or to the scope, circumstances or nature of the work activity or silica process.

(5) An employer must ensure that the risk assessment is reviewed by a qualified person if any of the following occur:

(a) there is reason to believe the risk assessment is no longer valid;

(b) there has been a significant change in the scope, nature or circumstances of the work activity or silica process to which the risk assessment relates;

(c) the results of any exposure monitoring show it to be necessary.

(6) If changes to the risk assessment are necessary as a result of the review under subsection (5), the employer must ensure that the risk assessment is changed accordingly.

[en. B.C. Reg. 9/2017, App. G, s. 2.]

Exposure control plan

6.112.1 (1) If a risk assessment indicates that a worker is or may be exposed to RCS dust, the employer must

(a) ensure that a qualified person develops an exposure control plan meeting the requirements of sections 5.54 and 5.57 (2), and of subsection (3) of this section, and

(b) implement the exposure control plan.

(2) If a risk assessment is changed under section 6.112 (6), the employer must ensure that

(a) the exposure control plan is amended to address the changes to the risk assessment, and

(b) the amendments to the exposure control plan are implemented.

(3) For the purposes of section 5.54 (2) (d), the written work procedures within an exposure control plan must address at least the following:

(a) the containment of silica processes, if used as a control measure;

(b) the effective control of worker exposure to RCS dust using dust reduction systems;

(c) safe work practices and procedures;

(d) the correct selection, use, care and maintenance of any required personal protective equipment and clothing;

(e) emergency procedures;

(f) the removal, cleanup and disposal of RCS dust and debris, including the measures that will be used for the purposes of meeting the requirements of section 6.112.6.

[en. B.C. Reg. 9/2017, App. G, s. 2.]

Elimination or control of exposure

6.112.2 (1) An employer must, to the extent practicable, avoid the use of products or materials containing crystalline silica by replacing them with substances or processes that, under normal conditions of use, eliminate the risk of worker exposure to RCS dust.

(2) If it is not practicable to eliminate the risk of worker exposure to RCS dust, the employer must control the risk below the applicable exposure limit under section 5.48 by applying control measures that

(a) are appropriate to the work activity,

(b) are consistent with the risk assessment and with sections 5.55 and 5.57, and

(c) include, in order of priority,

(i) the design and use of engineering controls, including appropriate dust reduction systems, containment of silica processes, and the provision and use of suitable work equipment and materials,

(ii) the control of RCS dust exposure through administrative controls, including work practice controls, and

(iii) if the control measures set out in paragraphs (i) and (ii) are not adequate to control exposure, the provision and use of suitable personal protective equipment in addition to those control measures.

[en. B.C. Reg. 9/2017, App. G, s. 2.]

Air monitoring for RCS dust

6.112.3 (1) If there is a potential for hazardous exposure to RCS dust in a work activity or silica process, the employer must

(a) ensure that air monitoring is conducted using a sampling and analytical method referred to in subsection (2)

(i) during the first shift of the work activity or silica process, and

(ii) as necessary throughout the work activity or silica process to ensure that control measures are effective to prevent or minimize worker exposure to RCS dust, and

(b) keep, for at least 10 years, records of the results of air monitoring conducted under this section.

(2) Acceptable sampling and analytical methods for the purpose of subsection (1) are as follows:

(a) a method detailed in a standard occupational hygiene reference published by

(i) the National Institute for Occupational Safety and Health, or

(ii) the Occupational Safety and Health Administration;

(b) another method acceptable to the Board.

[en. B.C. Reg. 9/2017, App. G, s. 2.]

Exceptions to monitoring requirement

6.112.4 (1) In this section, **"equivalent work operations"** means work operations closely matching the silica processes, types of materials, work practices, control measures and environmental conditions prevailing in the employer's current work operations.

(2) Despite section 6.112.3, an employer is not required to monitor the exposure of workers to RCS dust if a qualified person determines that

(a) existing control measures are effective in keeping worker exposure as low as reasonably achievable below the exposure limit, and

(b) the employer

(i) has previously monitored for RCS dust exposure during equivalent work operations and there is no reason to believe that the results of the previous monitoring would not continue to apply, or

(ii) has objective air monitoring data that was collected during equivalent work operations through industry surveys or peer-reviewed or scientific studies that use sampling and analytical methods referred to in section 6.112.3 (2).

(3) An employer must keep, for at least 10 years, a record documenting the following, as applicable:

(a) the previous monitoring data used for the purpose of subsection (2) (b) (i);

(b) the source of the objective air monitoring data, and the data itself, referred to in subsection (2) (b) (ii).

[en. B.C. Reg. 9/2017, App. G, s. 2.]

Blasting enclosures

6.112.5 An employer must ensure that a blasting enclosure is used for the following activities only:

(a) abrasive blasting;

(b) maintenance of the blasting enclosure and all associated equipment, including ventilation and blasting equipment.

[en. B.C. Reg. 9/2017, App. G, s. 2.]

Housekeeping

6.112.6 (1) In addition to the requirements of section 5.82 (2), an employer must ensure that all of the following requirements are met:

(a) all workplaces and work-related areas and equipment where RCS dust may accumulate must be cleaned at the end of every shift, if practicable, using one or a combination of

(i) a vacuum or similar device,

(ii) wet cleanup methods, or

(iii) another method that is effective and in accordance with the safe work practices contained in the exposure control plan;

(b) if a vacuum or similar device is used, the vacuum or device must be

(i) designed, maintained, tested and used in accordance with

(A) the manufacturer's specifications, or

(B) the instructions of a professional engineer, and

(ii) equipped with an effective HEPA filter on the exhaust;

(c) if wet cleanup methods are used, any slurry generated by those methods must be removed when the work is completed in such as manner as to avoid a secondary RCS dust exposure hazard;

(d) waste material must be placed in sealable containers and promptly disposed of to prevent RCS dust from re-entering the workplace.

(2) An employer must not permit the use of blowers, compressed air, dry sweeping or dry mopping to clean up or remove RCS dust.

[en. B.C. Reg. 9/2017, App. G, s. 2.]

Instruction and training

6.112.7 An employer must ensure that a worker who is or may be exposed to RCS dust receives adequate instruction and training in all of the following:

(a) the hazards and health effects of inhaling RCS dust;

(b) safe work practices and procedures;

(c) the correct operation and use of any required equipment and engineering controls;

(d) the purpose and limitations of personal protective equipment, and the correct selection, fitting, use, care and maintenance of that equipment;

(e) housekeeping practices as described in section 6.112.6.

[en. B.C. Reg. 9/2017, App. G, s. 2.]

Rock drills

6.113 A rock drill, other than a manually-powered rock drill, must be equipped with a dust suppression system, acceptable to the Board, that

(a) uses water jet, spray, or other equally effective means to suppress drilling dust effectively, and

(b) operates whenever the drill is in use.

Crushing plants

6.114 Crushing plants must be equipped with the following dust controls:

(a) crushers, including jaw, roll, cone, or hammer-mills must have an effective mechanical exhaust system;

(b) screens releasing dust must be partially covered and have an effective mechanical exhaust system or an effective water spray system;

(c) the screen discharge hopper must be enclosed and if dust is released must have an effective mechanical exhaust system or an effective water spray system;

(d) material transfer points releasing dust must have an effective mechanical exhaust system or an effective water spray system;

(e) a suitable dust collector must be installed on a mechanical exhaust system;

(f) dust discharged from a mechanical exhaust ventilation system must not be recirculated into work areas;

(g) when practicable, the operator must be enclosed in a pressurized cab equipped with air filtration and noise suppression.

[am. B.C. Reg. 9/2017, App. G, s. 3.]

Asphalt mixing plants

6.115 Asphalt mixing plants must be equipped with the following dust controls:

(a) a dust-tight seal must be installed at the dryer discharge to the hot stone elevator;

(b) the screen enclosure must have a mechanical exhaust system that maintains a negative pressure within the screen enclosure and the elevator feed system;

(c) the mixing chamber must have a mechanical exhaust system that maintains a negative pressure on the bin discharge to the mixer or elevator feed system;

(d) on continuous-mix plants the conveyor feeding the mixing chamber must be enclosed and connected to the mechanical exhaust system;

(e) the screen overflow chutes and hoppers handling screen overflow must be enclosed, and the waste fines conveyor system must be enclosed at all material transfer and discharge points;

(f) the discharge of overflow or waste fines material must be to an enclosed container, which must be emptied in a manner that prevents contamination of the work area;

(g) material transfer points between sections of the asphalt mixing plant must be fitted with effective dust seals;

(h) conveyor and elevator cover seals must be dust-tight;

(i) on batch-mix plants, dust-tight seals must be installed on manual draw chute levers and on the weigh-hopper and bin;

(j) a suitable dust collector must be installed on the mechanical exhaust system, with the discharge from the dust collector located so as to prevent the recirculation of contaminated air to areas occupied by workers.

Application of RCS dust provisions

6.115.1 For greater certainty, in respect of a workplace described in section 6.111, the requirements set out in sections 6.113 to 6.115 are in addition to the requirements set out in sections 6.112 to 6.112.7.

[en. B.C. Reg. 9/2017, App. G, s. 4.]

Toxic Process Gases

Definitions

6.116 In sections 6.117 to 6.132:

"enclosure" means a room, cabinet or separation designed to contain equipment, machinery and vessels and to isolate accidental releases of toxic gas;

"toxic process gas" means a gas which

(a) meets the HPR Health Hazard Class – Acute Toxicity, Categories 1, 2 and 3 or the categories set out in the following table:

HPR Health Hazard Classes	Hazard Categories						
Skin corrosion / irritation		1A	1B	1C	2		
Serious eye damage / irritation	1					2A	2B
Respiratory or skin sensitization		1A	1B				
Mutagenicity		1A	1B		2		
Carcinogenicity		1A	1B		2		
Reproductive toxicity		1A	1B		2		
Specific organ toxicity (repeated exposure)	1				2		

, and

(b) is used for purposes of

(i) an industrial process in which a precursor is changed into a product,

(ii) refrigeration by means of a piped installation, or

(iii) treatment of materials, for example, in a disinfection system.

[am. B.C. Regs. 253/2001, s. 4; 30/2015, s. 32.]

Application

6.117 Sections 6.118 to 6.132 apply to operations in which a toxic process gas is used, but do not apply to the handling or storage of flammable fuel gases or vapours, toxic waste emissions or the use of toxic process gases in manufactured articles.

Risk assessment

6.118 The employer must ensure that a risk assessment is conducted for toxic process gases.

Exposure control plan

6.119 If there is a risk of adverse health effect to workers from exposure to a toxic process gas, based on the risk assessment, the employer must develop and implement an exposure control plan meeting the requirements of section 5.54.

Procedures

6.120 (1) The employer must ensure that written work procedures providing instructions for the safe handling of the toxic process gas are prepared for all hazardous tasks in accordance with the risk assessment results, critical technical information and operations manuals.

(2) The employer must ensure that emergency procedures designed for the safe evacuation and rescue of all workers are established and tested on a regular basis.

(3) The procedures required by subsections (1) and (2) must be readily available to the workers at the workplace.

Education and training

6.121 The employer must ensure that

(a) workers are capable of operating the equipment and machinery in a safe manner by providing effective education and training, and

(b) records of education and training are maintained.

(c) Repealed. [B.C. Reg. 312/2003, App. F, s. 2 (d).]

[am. B.C. Reg. 312/2003, App. F, s. 4.]

Enclosure

6.122 Where practicable, the employer must locate equipment and machinery such as tanks and compressors, handling toxic process gases in a separate enclosure that is

(a) designed, constructed and maintained to prevent fugitive emissions and accidental releases from entering occupied work areas,

(b) provided with exhaust ventilation to ensure an effective inward air flow into the enclosure at all times,

(c) provided with a safe means of entry and exit,

(d) designated as a restricted work area limited to entry by authorized personnel, and

(e) posted with signs which clearly identify the hazards and the precautions required for safe entry.

Testing

6.123 The employer must provide a safe means to check and test conditions inside an enclosure before entry by authorized workers.

Ventilation

6.124 The employer must

(a) ensure that ventilation systems are designed to exhaust toxic process gases directly to the outdoors in a safe manner,

(b) ensure that grilles providing makeup air from adjacent occupied areas are equipped with gas-rated, back-draft dampers,

(c) monitor critical parts of the ventilation systems, such as fan, motor and air flow, to ensure that workers are alerted to a malfunction of the system,

(d) ensure that ventilation ducting is vapour proof, dedicated and resistant to corrosion by the gas it carries, and

(e) where practicable, locate the fans on the outside of the building or structure to maintain the duct work within occupied work areas under a negative pressure differential.

Emergency ventilation

6.125 The employer must provide emergency ventilation that can be safely activated in emergency situations to ensure containment and control of an accidental release of a toxic process gas.

Shut-down device

6.126 (1) In the event of an emergency or accidental release, the employer must ensure that

(a) the gas supply can be shut down manually from a remote location or by the alarm system so as to isolate the reserve supply within the system and stop the generation or flow of the gas, or

(b) if the control measures required by paragraph (a) are not practicable, other effective measures, acceptable to the Board, are implemented to protect workers and other persons from exposure to the gas.

(2) When an automated or remote shut-down device is activated, the employer must ensure that operators are alerted to the emergency shut-down of the system.

[en. B.C. Reg. 381/2004, s. 2.]

Personal protective equipment

6.127 (1) The employer must provide appropriate personal protective equipment and ensure that workers wear it.

(2) A worker performing a hazardous work procedure on equipment or machinery where there is the risk of toxic process gas being released directly into the breathing zone, such as cylinder changing, system or line purging or draining, and leak detection and repair, must wear an appropriate respirator.

(3) A worker entering a restricted access enclosure must wear or carry an escape respirator.

[am. B.C. Reg. 312/2010, App. G, s. 4.]

Monitors and alarms

6.128 (1) Where practicable, the employer must install continuous monitoring systems that detect fugitive emissions and accidental releases and effectively determine work conditions within the restricted access area.

(2) Continuous monitors must be connected to alarm systems to adequately warn workers of hazardous conditions and, when practicable, must be designed to safely activate appropriate control measures when emergency situations are detected.

(3) Monitoring and alarm systems must be

(a) tested at least monthly for proper operation, and

(b) calibrated at least annually,

by authorized personnel using procedures set out in section 4.3 (2) or other procedures acceptable to the Board.

[am. B.C. Regs. 312/2003, App. B, s. 8; 188/2011, App. M, s. 2.]

Pressure relief alarm systems

6.129 (1) The employer must ensure that all pressure relief valves or similar safety-release devices direct relief gases to the outdoors in a safe manner.

(2) The employer must ensure that an alarm or any other reporting system designed to inform the operators of a malfunction or emergency activates if a pressure relief safety device is engaged.

Identification of controls

6.130 The employer must ensure that

(a) all critical components of equipment and machinery handling toxic process gases are clearly identified, and

(b) the function of every control device can be readily determined.

Piping systems

6.131 (1) The employer must ensure that a piping system is

(a) constructed of compatible materials resistant to corrosion by the gas it carries,

(b) constructed to withstand the system pressures to which it will be subjected, and

(c) safely routed, supported and protected from impact damage, shock and vibration.

(2) The employer must ensure that piping and valve systems are leak and pressure tested, as required, before the system is put into operation.

(3) The employer must ensure that piping systems are equipped with isolation, pressure venting or bleed valves designed to purge the lines safely of residual gases before maintenance or servicing procedures.

Maintenance

6.132 The employer must ensure that the servicing and maintenance of equipment and machinery addresses all critical components.

[am. B.C. Reg. 312/2003, App. B, s. 9.]

PART 7 – NOISE, VIBRATION, RADIATION AND TEMPERATURE

Division 1 – Noise Exposure

Definition

7.1 (1) In this Division, **"noise exposure limits"** means either of the noise exposure limits established under section 7.2.

(2) Noise terminology and measurements used or described in this Division have the same meaning that they have in

(a) *CSA Standard Z107.56-94, Procedures for the Measurement of Occupational Noise Exposure*, as amended from time to time, and

(b) *ANSI Standard S1.25-1991, Specification for Personal Noise Dosimeters*, as amended from time to time.

[en. B.C. Reg. 382/2004.]

Noise exposure limits

7.2 An employer must ensure that a worker is not exposed to noise levels above either of the following exposure limits:

(a) 85 dBA Lex daily noise exposure level;

(b) 140 dBC peak sound level.

[en. B.C. Reg. 382/2004.]

Noise measurement required

7.3 (1) If a worker is or may be exposed to potentially harmful levels of noise, or if information indicates that a worker may be exposed to a level exceeding 82 dBA Lex, the employer must measure the noise exposure.

(2) The noise exposure measurement must

(a) be performed in accordance with *CSA Standard Z107.56-94, Procedures for the Measurement of Occupational Noise Exposure*, as amended from time to time, except as otherwise determined by the Board, and

(b) be updated if a change in equipment or process affects the noise level or the duration of noise exposure.

(3) Except as otherwise determined by the Board, noise dosimeters and sound level meters used for measuring noise exposure must meet the requirements of *ANSI Standard S1.25-1991, Specification for Personal Noise Dosimeters*, as amended from time to time.

(4) The employer must inform affected workers of the results of any noise exposure measurement and the significance of the measurement to risk of hearing loss.

[en. B.C. Reg. 382/2004.]

Exemption

7.4 An employer is not required to measure the noise exposure of a worker if

(a) based on other information, the employer identifies the worker as being exposed to noise in excess of an exposure limit, and

(b) the employer establishes an effective noise control and hearing conservation program for that worker.

[en. B.C. Reg. 382/2004.]

Noise control and hearing conservation program

7.5 If noise in the workplace exceeds either of the noise exposure limits, the employer must develop and implement an effective noise control and hearing conservation program with the following elements:

(a) noise measurement;

(b) education and training;

(c) engineered noise control;

(d) hearing protection;

(e) posting of noise hazard areas;

(f) hearing tests;

(g) annual program review.

[en. B.C. Reg. 382/2004.]

Engineered noise control

7.6 If a worker is exposed to noise above a noise exposure limit, the employer must

(a) investigate options for engineered noise control, and

(b) when practicable, implement one or more of those options to reduce noise exposure of workers to or below the exposure limits.

[en. B.C. Reg. 382/2004.]

Hearing protection and warning signs

7.7 (1) If it is not practicable to reduce noise levels to or below noise exposure limits, the employer must

(a) reduce noise exposure to the lowest level practicable,

(b) post warning signs in the noise hazard areas,

(c) give to affected workers hearing protection that meets the requirements of *CSA Standard Z94.2-02, Hearing Protection Devices – Performance, Selection, Care, and Use*, as amended from time to time, except as otherwise determined by the Board, and maintain the hearing protection so that it continues to meet those standards, and

(d) ensure that hearing protection is worn effectively in noise hazard areas.

(2) Workers in a posted noise hazard area must wear hearing protection.

[en. B.C. Reg. 382/2004.]

Hearing tests

7.8 (1) The employer must give workers who are exposed to noise that exceeds noise exposure limits

(a) an initial hearing test as soon as practicable after employment starts, but not later than 6 months after the start of employment, and

(b) a test at least once every 12 months after the initial test.

(2) Hearing tests must be administered by a hearing tester authorized by the Board.

(3) The employer must ensure that the authorized hearing tester sends the test results to the Board.

[en. B.C. Reg. 382/2004.]

Records to be kept

7.9 The employer must keep records of

(a) the annual hearing test results for each worker, which must

(i) be kept as long as the worker is employed by the employer, and

(ii) be kept confidential and not released to anyone without the written permission of the worker, or as otherwise required by law,

(b) the education and training provided to workers, and

(c) the results of noise exposure measurements taken under section 7.3.

[en. B.C. Reg. 382/2004.]

Division 2 – Vibration Exposure

Definitions

7.10 In this Division:

"hand-arm vibration" means vibration that is transmitted from vibrating surfaces of objects, such as hand tools, through the hands and arms;

"vibration exposure limits" means the limits referred to in section 7.11;

"whole-body vibration" means vibration that is transmitted to a worker's body from vibrating surfaces on which a worker stands or sits.

[en. B.C. Reg. 382/2004.]

Vibration exposure limits

7.11 An employer must ensure, to the extent practicable, that workers are not exposed to vibration in excess of the limits specified in

(a) for hand-arm vibration, the *American Conference of Governmental Industrial Hygienists* publication entitled *Threshold Limit Values and Biological Exposure Indices*, dated 2003, as amended from time to time;

(b) for whole-body vibration, *ANSI Standard S3.18-2002/ISO 2631-1-1997, Mechanical Vibration and Shock – Evaluation of Human Exposure to*

Whole Body Vibration – Part 1: General Requirements, as amended from time to time;

except as otherwise determined by the Board.

[en. B.C. Reg. 382/2004.]

Evaluation of vibration

7.12 The evaluation of hand-arm vibration and whole-body vibration must be conducted by the employer in accordance with

(a) for hand-arm vibration, *ISO Standard 5349-1:2001, Mechanical Vibration – Measurement and Evaluation of Human Exposure to Hand-transmitted Vibration – Part 1: General Requirements and ISO Standard 5349-2:2001, Mechanical Vibration – Measurement and Evaluation of Human Exposure to Hand-transmitted Vibration – Part 2: Practical Guidance for Measurement at the Workplace*, as amended from time to time;

(b) for whole-body vibration, *ANSI Standard S3.18-2002/1SO 2631-1-1997, Mechanical Vibration and Shock – Evaluation of Human Exposure to the Whole Body Vibration – Part 1: General Requirements*, as amended from time to time;

except as otherwise determined by the Board.

[en. B.C. Reg. 382/2004.]

Vibration exposure control obligations

7.13 The employer must, if a worker is or may be exposed to vibration in excess of the vibration exposure limits, develop and implement an exposure control plan that meets the requirements of section 5.54 (2).

[en. B.C. Reg. 382/2004.]

Information about vibration hazards

7.14 The employer must, if a worker is exposed to levels of vibration above the vibration exposure limits, inform the worker of the nature of the hazard and possible adverse effects.

[en. B.C. Reg. 382/2004.]

Labels

7.15 If the manufacturer of equipment that produces levels of vibration in excess of the vibration exposure limits does not label the equipment to identify the hazard, the employer is responsible for doing so.

[en. B.C. Reg. 382/2004.]

Exposure to cold and hand-arm vibration

7.16 When a worker is exposed to hand-arm vibration, the employer, to the extent practicable, must ensure that the worker's hands or arms are not exposed to cold, either

(a) from the environment in which the worker is working or as a result of using equipment, or

(b) from coming into contact with cold objects.

[en. B.C. Reg. 382/2004.]

Division 3 – Radiation Exposure

Definitions

7.17 In this Division:

"action level, ionizing radiation" means an effective dose of 1 milliSievert (mSv) per year;

"action level, non-ionizing radiation" means the exposure limits for the general public referred to in section 7.19 (4) or, if no public limit is referred to, it means the maximum exposure limit for workers referred to in section 7.19 (4);

"effective dose" means the amount of ionizing radiation, measured in mSv, absorbed by the worker's whole body, adjusted for the energy level and type of radiation and the differing susceptibilities of the organs and tissues irradiated, and if only part of the body is exposed the effective dose is the sum of the weighted equivalent doses in all irradiated tissues and organs;

"equivalent dose" means the amount of ionizing radiation, measured in mSv, absorbed by a specific body part and adjusted for the energy level and type of radiation.

[en. B.C. Reg. 382/2004.]

Application

7.18 (1) This Division applies to all sources of ultrasonic energy, non-ionizing and ionizing radiation, including radiation sources governed by the *Nuclear Safety and Control Act* (Canada), except as otherwise determined by the Board.

(2) This Division does not apply to medical or dental radiation received by a patient, or to natural background radiation, except as specified by the Board.

[en. B.C. Reg. 382/2004.]

Exposure limits

7.19 (1) A worker's exposure to ionizing radiation must not exceed any of the following:

(a) an effective dose of 20 mSv over any period of 12 consecutive months;

(b) with respect to exposure to the lens of an eye,

(i) an equivalent dose of 50 mSv over any period of 12 consecutive months that starts on or after December 1, 2021, and

(ii) an equivalent dose of 100 mSv over any period of 60 consecutive months that starts on or after December 1, 2021;

(c) with respect to exposure to the skin, averaged over any 1 cm^2 area at a nominal depth of 7 mg/cm^2, regardless of the area exposed, an equivalent dose of 500 mSv over any period of 12 consecutive months;

(d) with respect to exposure to the hands and feet, an equivalent dose of 500 mSv over any period of 12 consecutive months.

(2) If a worker declares the worker's pregnancy to the employer, the worker's effective dose of ionizing radiation, for the remainder of the pregnancy, from external and internal sources, must be limited by the employer to the lesser of

(a) 4 mSv, or

(b) the dose limit specified for pregnant workers under the *Nuclear Safety and Control Act* (Canada).

(3) The employer must ensure that the exposure of workers to ionizing radiation is kept as low as reasonably achievable below the exposure limits.

(4) The employer must ensure that a worker's exposure to non-ionizing radiation does not exceed the exposure limits specified in

(a) for radiofrequency:

(i) *Health Canada Safety Code 25, Short-Wave Diathermy Guidelines for Limiting Radiofrequency Exposure*, 1983, as amended from time to time;

(ii) *Health Canada Safety Code 26, Guidelines on Exposure to Electromagnetic Fields from Magnetic Resonance Clinical Systems*, 1987, as amended from time to time;

(iii) *Health Canada Safety Code 6, Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz*, 1999, as amended from time to time, and

(b) for lasers:

(i) *ANSI Standard Z136.1-2000, Safe Use of Lasers*, as amended from time to time;

(ii) *ANSI Standard Z136.2-1997, Safe Use of Optical Fiber Communication Systems Utilizing Laser Diode and LED Sources*, as amended from time to time;

(iii) *ANSI Standard Z136.3-1996, Safe Use of Lasers in Health Care Facilities*, as amended from time to time;

(iv) *CSA Standard Z386-01, Laser Safety in Health Care Facilities*, as amended from time to time,

except as otherwise determined by the Board.

(5) A worker's exposure to ultraviolet radiation produced by equipment or industrial processes must not exceed the threshold limit values specified in the *American Conference of Governmental Industrial Hygienists* publication entitled *Threshold Limit Values and Biological Exposure Indices*, dated 2003, as amended from time to time.

[en. B.C. Reg. 382/2004; am. B.C. Regs. 222/2021, App. B; 116/2022, App. B, s. 8.]

Exposure control plan

7.20 (1) If a worker exceeds or may exceed an action level, ionizing radiation or action level, non-ionizing radiation, the employer must develop and implement an exposure control plan meeting the requirements of section 5.54 (2).

(2) The instructions to workers developed under subsection (1) must be posted or otherwise available in the work area or near the applicable equipment controls.

[en. B.C. Reg. 382/2004.]

Reproductive hazards

7.21 (1) The employer must ensure that every worker who exceeds, or may exceed, the action level, ionizing radiation is fully informed of any potential reproductive hazards associated with exposure to ionizing radiation.

(2) When requested by a pregnant worker or by a worker intending to conceive a child, the employer must make counselling available with respect to the reproductive hazards associated with exposure to ionizing radiation.

[en. B.C. Reg. 382/2004.]

Monitoring exposure

7.22 Unless exempted by the Board, if a worker exceeds or may exceed the action level, ionizing radiation, the employer must ensure that the worker is provided with and properly uses a personal dosimeter acceptable to the Board.

[en. B.C. Reg. 382/2004.]

Standards for use of equipment

7.23 Equipment producing ionizing or non-ionizing radiation or ultrasonic energy must be installed, operated and maintained in accordance with the following:

(a) for ionizing radiation:

(i) *Health Canada Safety Code 20A, X-Ray Equipment in Medical Diagnosis Part A: Recommended Safety Procedures for Installation and Use*, 1980, as amended from time to time;

(ii) *Health Canada Safety Code 27, Requirements for Industrial X-Ray Equipment Use and Installation*, 1987, as amended from time to time;

(iii) *Health Canada Safety Code 28, Radiation Protection in Veterinary Medicine – Recommended Safety Procedures for Installation and Use of Veterinary X-Ray Equipment*, 1991, as amended from time to time;

(iv) *Health Canada Safety Code 29, Requirements for the Safe Use of Baggage X-Ray Inspection Systems*, 1993, as amended from time to time;

(v) *Health Canada Safety Code 30, Radiation Protection in Dentistry – Recommended Safety Procedures for the Use of Dental X-Ray Equipment*, 1999, as amended from time to time;

(vi) *Health Canada Safety Code 31, Radiation Protection in Computed Tomography Installation*, 1994, as amended from time to time;

(vii) *Health Canada Safety Code 32, Safety Requirements and Guidance for Analytical X-Ray Equipment*, 1994, as amended from time to time;

(viii) *Health Canada Safety Code 33, Radiation Protection in Mammography*, 1995, as amended from time to time;

(b) for radiofrequency:

(i) *Health Canada Safety Code 25, Guidelines for Limiting Radiofrequency Exposure – Short-Wave Diathermy*, 1983, as amended from time to time;

(ii) *Health Canada Safety Code 26, Guidelines on Exposure to Electromagnetic Fields from Magnetic Resonance Clinical Systems*, 1987, as amended from time to time;

(iii) *Health Canada Safety Code 6, Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz*, 1999, as amended from time to time;

(c) for lasers:

(i) *ANSI Standard Z136.1-2000, Safe Use of Lasers*, as amended from time to time;

(ii) *ANSI Standard Z136.2-1997, Safe Use of Optical Fiber Communication Systems Utilizing Laser Diode and LED Sources*, as amended from time to time;

(iii) *ANSI Standard Z136.3-1996, Safe Use of Lasers in Health Care Facilities*, as amended from time to time;

(iv) *CSA Standard Z386-01, Laser Safety in Health Care Facilities*, as amended from time to time;

(d) for infrared and ultraviolet:

(i) *CSA Standard CAN/CSA-C22.2 No. 224-M89 (R1994), Radiant Heaters and Infrared and Ultraviolet Lamp Assemblies for Cosmetic or Hygienic Purposes in Nonmedical Applications*, as amended from time to time;

(e) for ultrasound:

(i) *Health Canada Guidelines for the Safe Use of Diagnostic Ultrasound*, 2001, as amended from time to time;

(ii) *Health Canada Safety Code 24, Guidelines for the Safe Use of Ultrasound: Part II – Industrial and Commercial Applications*, 1991, as amended from time to time,

except as otherwise determined by the Board.

[en. B.C. Reg. 382/2004.]

Radiation surveys

7.24 Except as otherwise determined by the Board, the employer must conduct a radiation survey for ionizing radiation in accordance with the standard practice specified under the applicable Safety Code listed in section 7.23 (a) or the regulations under the *Nuclear Safety and Control Act* (Canada),

(a) at the times required by the Safety Code or regulations, as the case requires,

(b) if equipment has been damaged or modified, or

(c) if there is an indication of an unusually high exposure of a worker to ionizing radiation.

[en. B.C. Reg. 382/2004.]

Records

7.25 The employer must

(a) maintain and make available to the Board,

(i) for at least 10 years, records of radiation surveys, and

(ii) for the period that the worker is employed plus 10 years, records of exposure monitoring and personal dosimetry data, and

(b) make the records available to workers.

[en. B.C. Reg. 382/2004.]

Division 4 – Thermal Exposure

Definitions

7.26 In this Division:

"ACGIH Standard" means the *American Conference of Governmental Industrial Hygienists* publication entitled *Threshold Limit Values and Biological Exposure Indices*, dated 2003, as amended from time to time, except as otherwise determined by the Board;

"unacclimatized worker" means a worker who is not accustomed to working in a hot environment or who has been out of a hot environment for seven consecutive days.

[en. B.C. Reg. 382/2004.]

Heat Exposure

Application

7.27 (1) Subject to subsection (2), sections 7.28 to 7.32 apply to a workplace if

(a) a worker is or may be exposed to thermal conditions which could cause heat stress,

(b) the thermal conditions could result in a worker's core body temperature exceeding 38°C (100°F), or

(c) the thermal conditions are in excess of the levels listed in the screening criteria for heat stress exposure in the heat stress and strain section of the ACGIH Standard for unacclimatized workers.

(2) Subsection (1) does not apply to firefighting if special provisions, satisfactory to the Board, are in place to ensure that the firefighter's core body temperature is maintained below 38°C (100°F).

[en. B.C. Reg. 382/2004.]

Exposure limits

7.28 (1) A worker must not be exposed to levels that exceed those listed in the screening criteria for heat stress exposure in the heat stress and strain section of the ACGIH Standard.

(2) Clothing corrections must be applied in accordance with the heat stress and strain section of the ACGIH Standard.

[en. B.C. Reg. 382/2004.]

Heat stress assessment and exposure control plan

7.29 (1) If a worker is or may be exposed to the conditions specified in section 7.27, the employer must

(a) conduct a heat stress assessment to determine the potential for hazardous exposure of workers, using measures and methods that are acceptable to the Board, and

(b) develop and implement a heat stress exposure control plan meeting the requirements of section 5.54 (2).

[en. B.C. Reg. 382/2004.]

Heat stress controls

7.30 (1) If a worker is or may be exposed to the conditions specified in section 7.27, the employer must implement engineering controls to reduce the exposure of workers to levels below those listed in the screening criteria for heat stress exposure in the heat stress and strain section of the ACGIH Standard.

(2) If the action described in subsection (1) is not practicable, the employer must reduce the exposure of workers to levels below those listed in the screening criteria for heat stress exposure in the heat stress and strain section of the ACGIH Standard by providing

(a) administrative controls, including a work-rest cycle, acceptable to the Board, or

(b) personal protective equipment, if the equipment provides protection equally effective as administrative controls.

[en. B.C. Reg. 382/2004.]

Provision of water

7.31 If a worker is or may be exposed to the conditions specified in section 7.27, the employer must provide and maintain an adequate supply of cool potable water close to the work area for the use of a heat exposed worker.

[en. B.C. Reg. 382/2004.]

Removal from and treatment for heat exposure

7.32 If a worker shows signs or reports symptoms of heat stress or strain, the worker must be removed from the hot environment and treated by an appropriate first aid attendant, if available, or by a physician.

[en. B.C. Reg. 382/2004.]

Cold Exposure

Application

7.33 Sections 7.34 to 7.38 apply to a workplace if a worker is or may be exposed to

(a) thermal conditions that could cause cold stress or injury,

(b) thermal conditions that could cause a worker's core body temperature to fall below 36°C (96.8°F), or

(c) thermal conditions that are below the levels classified as "little danger" to workers in the criteria for the cooling power of wind on exposed flesh in the cold stress section of the ACGIH Standard.

[en. B.C. Reg. 382/2004.]

Cold stress assessment and exposure control plan

7.34 If a worker is or may be exposed to the conditions specified in section 7.33, the employer must

(a) conduct a cold stress assessment to determine the potential for hazardous exposure of workers, using measures and methods that are acceptable to the Board, and

(b) develop and implement a cold exposure control plan meeting the requirements of section 5.54 (2).

[en. B.C. Reg. 382/2004.]

Cold stress controls

7.35 (1) If a worker is or may be exposed to the conditions specified in section 7.33, the employer must implement effective engineering controls to reduce the exposure hazard to levels above those classified as "little danger" to workers in the criteria for the cooling power of wind on exposed flesh in the cold stress section of the ACGIH Standard.

(2) If the action described in subsection (1) is not practicable, the employer must reduce the exposure hazard by providing

(a) effective administrative controls, or

(b) personal protective equipment, if the equipment provides protection equally effective as administrative controls.

[en. B.C. Reg. 382/2004.]

Heated shelters

7.36 If a worker is exposed to a thermal environment with an equivalent chill temperature less than -7°C (19°F), as determined using the criteria for the cooling power of wind on exposed flesh in the cold stress section of the ACGIH Standard, a nearby heated shelter must be available to the worker.

[en. B.C. Reg. 382/2004.]

Clothing and personal protective equipment

7.37 (1) A worker who is or may be exposed to the conditions referred to in section 7.33 must wear adequate insulating clothing and personal protective equipment.

(2) If work takes place outdoors in snow or ice covered terrain where excessive ultraviolet light, glare or blowing ice crystals present a risk of injury to the eyes, workers must wear eye protection appropriate to the hazards.

[en. B.C. Reg. 382/2004.]

Removal and treatment

7.38 If a worker exposed to cold shows signs or reports symptoms of cold stress or injury, the worker must be removed from further exposure and treated by an appropriate first aid attendant, if available, or a physician.

[en. B.C. Reg. 382/2004.]

PART 8 – PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

Definitions

8.1 (1) In this Part:

"flame resistant" in reference to clothing, means made of a material that, due to its inherent properties or as a result of treatment by a flame retardant, will slow, terminate or prevent flaming combustion;

"lifejacket" means a device that, when worn correctly, provides a specified buoyancy that will turn the wearer face-up on entering the water, and will keep the wearer in this position;

"personal flotation device (PFD)" means a device that, when worn correctly, provides a specified buoyancy to support a conscious person in an upright or backward leaning position, but is not designed to turn a person from a face-down to a face-up position in the water;

"specific location" means a yard, plant, or other clearly defined and limited area in which mobile equipment is operated, but does not include an entire municipality, district, transient forestry operation, construction site, pipeline or road right-of-way.

(2) In this Part, **"8-hour TWA limit"**, **"ACGIH"**, **"ceiling limit"** and **"short-term exposure limit"** have the same meaning as in section 5.1.

[am. B.C. Regs. 20/2006, s. 1; 312/2010, App. G, s. 5; 139/2021, App. D, s. 2.]

General Requirements

Responsibility to provide

8.2 (1) A worker is responsible for providing

(a) clothing needed for protection against the natural elements,

(b) general purpose work gloves and appropriate footwear including safety footwear, and

(c) safety headgear.

(2) An employer is responsible for providing, at no cost to the worker, all other items of personal protective equipment required by this Regulation.

(3) If the personal protective equipment provided by the employer causes allergenic or other adverse health effects, the employer must provide appropriate alternate equipment or safe measures.

(4) Nothing in this section precludes or alters an existing or future agreement between a worker or workers and an employer to the effect that the employer will be responsible for the provision, either at no cost or some cost to the worker, of any or all of the items described in subsection (1).

Selection, use and maintenance

8.3 (1) Personal protective equipment must

(a) be selected and used in accordance with the recognized standards, and provide effective protection,

(b) not in itself create a hazard to the wearer,

(c) be compatible, so that one item of personal protective equipment does not make another item ineffective, and

(d) be maintained in good working order and in a sanitary condition.

(2) If the use of personal protective equipment creates hazards equal to or greater than those its use is intended to prevent, alternative personal protective equipment must be used or other appropriate measures must be taken.

[am. B.C. Reg. 312/2003, App. B, s. 10.]

Workplace evaluation

8.4 If an evaluation of workplace conditions is required to determine appropriate personal protective equipment, the evaluation, where practicable, must be done in consultation with the joint committee or the worker health and safety representative, as applicable, and with the worker who will use the equipment.

[am. B.C. Reg. 185/99, s. 49.]

Program

8.5 If personal protective equipment is required to protect against a chemical exposure or an oxygen deficient atmosphere the employer must implement an effective protective equipment program at the workplace which includes

(a) a statement of purpose and responsibilities,

(b) written procedures for selection, use, inspection, cleaning, maintenance and storage of protective equipment, when required,

(c) instruction and training in the correct use and maintenance of the equipment,

(d) for respirators, medical assessment of respirator wearers, when required,

(e) documentation when required, and

(f) program review.

[am. B.C. Reg. 312/2010, App. G, s. 6.]

Annual review

8.6 (1) The personal protective equipment program must be reviewed annually by the employer in consultation with the joint committee or the worker health and safety representative, as applicable.

(2) The annual review must

(a) assess exposure control measures to ensure their continued effectiveness,

(b) determine the need for further control,

(c) ensure the adequacy of instruction, and

(d) for respirators, assess the adequacy of exposure monitoring data and assess the need for further monitoring, and ensure the adequacy of the fit test program.

[am. B.C. Regs. 185/99, s. 49; 312/2010, App. G, s. 7.]

Instruction

8.7 The employer must ensure that a worker who wears personal protective equipment is adequately instructed in the correct use, limitations and assigned maintenance duties for the equipment to be used.

Supervisor's responsibilities

8.8 The supervisor must ensure that appropriate personal protective equipment is

(a) available to workers,

(b) properly worn when required, and

(c) properly cleaned, inspected, maintained and stored.

Worker's responsibilities

8.9 (1) A worker who is required to use personal protective equipment must

(a) use the equipment in accordance with training and instruction,

(b) inspect the equipment before use,

(c) refrain from wearing protective equipment outside of the work area where it is required if to do so would constitute a hazard, and

(d) report any equipment malfunction to the supervisor or employer.

(2) A worker who is assigned responsibility for cleaning, maintaining or storing personal protective equipment must do so in accordance with training and instruction provided.

[am. B.C. Reg. 185/99, s. 50.]

Personal clothing and accessories

8.10 (1) The personal clothing of a worker must be of a type and in a condition which will not expose the worker to any unnecessary or avoidable hazards.

(2) If there is a danger of contact with moving parts of machinery or with electrically energized equipment, or if the work process presents similar hazards

(a) the clothing of the worker must fit closely about the body,

(b) dangling neckwear, bracelets, wristwatches, rings or similar articles must not be worn, except for medical alert bracelets which may be worn with transparent bands that hold the bracelets snugly to the skin, and

(c) cranial and facial hair must be confined, or worn at a length which will prevent it from being snagged or caught in the work process.

Safety Headgear

General requirement

8.11 (1) Before a worker starts a work assignment in a work area where there is a risk of head injury to the worker from falling, flying or thrown objects, or other harmful contacts, the employer must take measures to

(a) eliminate the risk, or

(b) if it is not practicable to eliminate the risk, minimize the risk to the lowest level practicable by applying the following control measures in order of priority:

(i) engineering controls;

(ii) administrative controls;

(iii) requiring the worker to wear safety headgear.

(2) Safety headgear must meet the requirements of one of the following standards:

(a) *CSA Standard CAN/CSA-Z94.1-05* or *CAN/CSA-Z94.1-15, Industrial protective headwear — Performance, selection, care, and use*;

(b) *ANSI Standard ANSI/ISEA Z89.1-2009* or *ANSI/ISEA Z89.1-2014, American National Standard for Industrial Head Protection*.

(3) If a worker may be exposed to an electrical hazard the safety headgear must have an appropriate non-conductive rating.

(4) Chin straps or other effective means of retention must be used on safety headgear when workers are climbing or working from a height exceeding 3 m (10 ft), or are exposed to high winds or other conditions that may cause loss of the headgear.

(5) Repealed. [B.C. Reg. 381/2004, s. 3.]

(6) Damaged headgear or headgear with missing, mismatched, or modified components must be removed from service.

[am. B.C. Regs. 312/2003, App. A, s. 8; 381/2004, s. 3; 14/2019, App. A, s. 1; 139/2021, App. C.]

Use with all-terrain vehicles, snowmobiles and motorcycles

8.12 (1) Operators and passengers on all-terrain vehicles, snowmobiles and motorcycles must wear headgear meeting the requirements of

(a) *CSA Standard CAN3-D230-M85, Protective Headgear in Motor Vehicle Applications*,

(b) *British Safety Institution Standard BS5361:1976, Specification: Protective Helmets for Vehicle Users, (as amended to 1981)*,

(c) *Snell Memorial Foundation 1995 Standard for Protective Headgear for Use with Motorcycles and Other Motorized Vehicles*, or

(d) *US Federal Standard for Motorcycle Helmets (Title 49 – Transportation – Part 571.218)*.

(e) Repealed. [B.C. Reg. 312/2003, App. A, s. 9 (c).]

(2) Headgear in good condition meeting earlier editions of a standard listed in subsection (1) may remain in service if purchased before April 15, 1998.

(3) When an all-terrain vehicle is operated within a specific location, with no rollover hazard area and no area containing a significant hazard that may cause loss of control and at a speed not exceeding 20 km/h (13 mph), safety headgear meeting the requirements of section 8.13 may be used in place of headgear specified in subsection 8.12 (1).

[am. B.C. Regs. 312/2003, App. A, s. 9; 139/2021, App. D, s. 3.]

Use with bicycles and skates

8.13 (1) A worker riding a bicycle or using in-line skates or similar means of transport must wear headgear meeting the requirements of

(a) *CSA Standard CAN/CSA-D113.2-M89, Cycling Helmets*,

(b) *Snell Memorial Foundation 1994 Standard for Protective Headgear for Use in Non-Motorized Sports*, or

(c) *Snell Memorial Foundation 1995 Standard for Protective Headgear for Use in Bicycling*.

(d) Repealed. [B.C. Reg. 312/2003, App. A, s. 10 (c).]

(2) If a bicycle or similar conveyance is operated at speeds not exceeding 20 km/h (13 mph) within a specific location, safety headgear meeting the requirements of section 8.11 is acceptable when worn with a chin strap.

[am. B.C. Reg. 312/2003, App. A, s. 10.]

Eye and Face Protection

Eye protection

8.14 (1) In this section and sections 8.15 to 8.17, **"eye protection"** means personal protective equipment for the eyes.

(2) A worker must wear eye protection if the worker is in an area of the workplace where one or more hazards involving the eyes exist, or are created, due to conditions or activities conducted in the area.

(3) Eye protection that is required to be worn under subsection (2), or under any other provision of this Regulation, must meet all of the following requirements:

(a) the eye protection must fit the worker properly;

(b) the eye protection must provide the worker with appropriate protection from the eye hazards referred to in subsection (2);

(c) the eye protection must meet the requirements set out in one of the following standards:

(i) *CSA Standard CAN/CSA-Z94.3-07* or *Z94.3-15, Eye and Face Protectors*;

(ii) *ANSI Standard ANSI/ISEA Z87.1-2015, Occupational and Educational Personal Eye and Face Protection Devices*.

(4) To determine whether eye protection provides a worker with appropriate protection from the eye hazards referred to in subsection (2), all factors relevant to the nature and extent of each of those eye hazards must be considered, including, without limitation, the following:

(a) the form of the hazard;

(b) the manner in which the hazard may be transmitted;

(c) the injury or occupational disease that could occur as a result of the hazard.

[en. B.C. Reg. 14/2019, App. B, s. 1.]

Glass lenses

8.15 (1) Except as permitted by subsection (2), eyeglasses or eye protection with glass lenses must not be worn by a worker in an area of the workplace where there is a risk, due to conditions in the area or the activities conducted in it, that something could damage the glass lenses and cause an injury to the eye.

(2) Eyeglasses or eye protection with glass lenses may be worn by a worker in an area of the workplace described in subsection (1) if, covering the glass lenses, the worker wears eye protection that meets one of the following:

(a) the impact resistance requirements set out in clause 6.1 of a standard referred to in section 8.14 (3) (c) (i);

(b) the impact rated requirements set out in section 6 of the standard referred to in section 8.14 (3) (c) (ii).

[en. B.C. Reg. 14/2019, App. B, s. 1.]

Side protection

8.16 (1) Eye protection must have side protection if an eye hazard referred to in section 8.14 (2) could reach a worker's eye through an unprotected area beside the eye.

(2) Despite section 8.14 (3) (c) (i), removable side shields may be used for eye protection under subsection (1).

[en. B.C. Reg. 14/2019, App. B, s. 1.]

Face protection

8.17 (1) In this section, **"face protection"** means personal protective equipment for the face.

(2) A worker must wear face protection covering the worker's eye protection if the worker is in an area of the workplace where one or more hazards involving the face exist, or are created, due to conditions in the area or the activities conducted in it.

(3) Face protection that is required to be worn under subsection (2), or under any other provision of this Regulation, must meet all of the following requirements:

(a) the face protection must fit the worker properly;

(b) the face protection must provide the worker with appropriate protection from the face hazards referred to in subsection (2);

(c) the face protection must meet the requirements set out in one of the standards referred to in section 8.14 (3) (c).

(4) To determine whether face protection provides a worker with appropriate protection from the face hazards referred to in subsection (2), all factors relevant to the nature and extent of each of those face hazards must be considered, including, without limitation, the factors described in section 8.14 (4) (a), (b) and (c).

[en. B.C. Reg. 14/2019, App. B, s. 1.]

8.18 Repealed. [B.C. Reg. 14/2019, App. B, s. 1.]

Limb and Body Protection

General requirement

8.19 (1) The employer must provide appropriate skin, hand, foot or body protection if a worker is exposed to a substance or condition which is likely to puncture, abrade or otherwise adversely affect the skin, or be absorbed through it.

(2) If there is a danger of injury, contamination or infection to a worker's hands, arms, legs, or torso, the worker must wear properly fitting protective equipment appropriate to the work being done and the hazards involved.

Cleaning or replacement

8.20 If a glove, apron, or other protective equipment used to protect the skin against contact with a hazardous substance is rendered ineffective due to contamination with the substance, the protective equipment must be promptly replaced with clean or decontaminated equipment to maintain the required protection.

Leg protection

8.21 (1) Leg protective devices must be worn by a worker operating a chain saw.

(2) Leg protective devices referred to in subsection (1) must meet or exceed

(a) the general requirements of section 4 of the *WorkSafeBC Standard – Leg Protective Devices*, as set out in Schedule 8-A of this Part, and

(b) the performance requirements of one of the following standards, using the cut-resistance testing protocol set out in that standard except as varied in subparagraph (ii):

(i) *WorkSafeBC Standard – Leg Protective Devices*, as set out in section 5 of Schedule 8-A of this Part, applying a threshold chain speed of 18.3 metres per second or 3 600 feet per minute;

(ii) *ASTM F 1414-04 Standard Test Method for Measurement of Cut Resistance to Chain Saw in Lower Body (Legs) Protective Clothing*, but applying a threshold chain speed of 16.8 metres per second or 3 300 feet per minute;

(iii) *ISO 11393-2 Protective clothing for users of hand-held chain-saws – Part 2: Test methods and performance requirements for leg protectors*, applying a Class 2 threshold chain speed of 24 metres per second or 4 724 feet per minute;

(iv) *BS EN 381-5: 1995 Protective clothing for users of hand-held chain saws – Part 5: Requirements for leg protectors*, applying a Class 2 threshold chain speed of 24 metres per second or 4 724 feet per minute.

(3) A leg protective device worn by a worker must have a label that

(a) is permanently affixed,

(b) uses lettering that is at least 6 mm (1/4 in.) high, and

(c) clearly indicates all of the following information:

(i) the name or trademark of the manufacturer;

(ii) the standard met or exceeded under subsection (2) (a);

(iii) the standard met or exceeded under subsection (2) (b);

(iv) the year of manufacture of the device unless otherwise marked on the device.

(4) The requirement to wear leg protective devices does not apply to a firefighter using a chain saw at the scene of a structural fire.

[am. B.C. Regs. 312/2003, App. A, s. 5; 312/2010, App. F, s. 1.]

Footwear

General requirement

8.22 (1) A worker's footwear must be of a design, construction, and material appropriate to the protection required and that allows the worker to safely perform the worker's work.

(2) To determine appropriate footwear under subsection (1), the following factors must be considered:

(a) slipping;

(b) tripping;

(c) uneven terrain;

(d) abrasion;

(e) ankle protection and foot support;

(f) potential for musculoskeletal injury;

(g) crushing potential;

(h) temperature extremes;

(i) corrosive substances;

(j) puncture hazards;

(k) electrical shock;

(l) any other recognizable hazard.

(2.1) An employer must not require a worker to wear footwear that does not comply with subsection (1).

(3) If a determination has been made that safety protective footwear is required to have toe protection, metatarsal protection, puncture resistant soles, dielectric protection or any combination of these, the footwear must meet the requirements of

(a) *CSA Standard CAN/CSA-Z195-M92, Protective Footwear*,

(b) *ANSI Standard Z41-1991, American National Standard for Personal Protection – Protective Footwear*,

(c) *British Safety Institution Standard BS EN 345:1993 Specification for Safety Footwear for Professional Use*, or

(d) *British Safety Institution Standard BS EN 346:1993 Specification for Protective Footwear for Professional Use*.

(e) Repealed. [B.C. Reg. 312/2003, App. A, s. 12 (c).]

(4) A worker must wear the appropriate footwear and ensure that it is in a condition to provide the required protection.

(5) If it is not practicable for workers in the performing arts to wear safety footwear meeting the requirements of subsection (3) other effective measures must be taken for protection from injury.

[am. B.C. Regs. 312/2003, App. A, s. 12; 140/2017.]

Slippery surfaces

8.23 (1) If a workplace has slippery surfaces, appropriate non-slip footwear must be worn.

(2) Caulked or other equally effective footwear must be worn by workers who are required to walk on logs, poles, pilings or other round timbers.

High Visibility and Distinguishing Apparel

High visibility apparel

8.24 (1) A worker who is exposed to vehicles or mobile equipment travelling at speeds in excess of 30 km/h must wear high visibility apparel that meets the requirements

for Class 2 or Class 3 apparel in *CSA Standard Z96-15, High-Visibility Safety Apparel*.

(2) A worker who is exposed to vehicles or mobile equipment travelling at speeds equal to or less than 30 km/h must wear high visibility apparel that meets the requirements for Class 1, Class 2 or Class 3 apparel in *CSA Standard Z96-15, High-Visibility Safety Apparel*.

(3) Subsections (1) and (2) do not apply to the following:

(a) a firefighter who is wearing a protective coat that meets the requirements of the 2007, 2013 or 2018 edition of *NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*;

(b) the following persons who are wearing high visibility apparel that meets the requirements for Class 2 apparel in *CSA Standard Z96-15, High-Visibility Safety Apparel* as modified in accordance with subsection (4):

(i) a person who is employed by British Columbia Emergency Health Services as an emergency medical assistant or in any other capacity;

(ii) a municipal constable as defined in the *Police Act*;

(iii) a person who is employed in the Commercial Vehicle Safety and Enforcement branch of the Ministry of Transportation and Infrastructure;

(c) a traffic control person referred to in section 18.9 of this regulation.

(4) For the purposes of subsection (3) (b), the requirements for Class 2 apparel are modified as follows:

(a) retroreflective or combined-performance stripes and bands must have

(i) a minimum width of 25 mm,

(ii) an entirely retroflective area with a minimum width of 25 mm,

(iii) a minimum coefficient of retroreflection of 240 cd/(lx•m^2) measured at an observation angle of 0.2 degrees and an entrance angle of -4 degrees in accordance with *CSA Standard Z96-15, High-Visibility Safety Apparel*, and

(iv) a minimum area of 0.05 m^2 on the front of the apparel and 0.05 m^2 on the back of the apparel;

(b) retroreflective or combined-performance stripes and bands do not have to form an "X" on the back of the apparel;

(c) the requirements relating to identification patches and lettering do not apply;

(d) background material, excluding identification patches, lettering and retro-reflective or combined-performance stripes and bands, must have a

minimum area of 0.13 m^2 on the front of the apparel and 0.13 m^2 on the back of the apparel.

[en. B.C. Reg. 139/2021, App. B.]

Distinguishing apparel

8.25 If distinguishing apparel is required in another Part of this Regulation for the purpose of identifying a worker's location or well-being, the apparel must be of a colour which contrasts with the environment and must have at least 775 sq cm (120 sq in) of fluorescent trim for daytime use and retroreflective trim for nighttime use, on both the front and back.

Buoyancy Equipment

When required

8.26 (1) A worker who is employed under conditions which involve a risk of drowning must wear a personal flotation device (PFD) or lifejacket with sufficient buoyancy to keep the worker's head above water.

(2) Subsection (1) does not apply if other acceptable safety measures are in place which will protect workers from the risk of drowning, or the water is too shallow to allow the lifejacket or PFD to function effectively.

(3) A personal flotation device need not be worn when a personal fall protection system, guardrail or safety net is being used in accordance with the relevant requirements in Part 11 (Fall Protection) to prevent a fall into the water.

Compliance with standards

8.27 Buoyancy equipment must be labelled and otherwise meet the requirements of

(a) *CGSB Standard CAN/CGSB-65.7-M88, Lifejackets, Inherently Buoyant Type* with a minimum buoyancy of 93 N (21 lbs),

(b) *CGSB Standard CAN/CGSB-65.11-M88, Personal Flotation Devices* with a minimum buoyancy of 69 N (15.5 lbs),

(c) *CGSB Standard 65-GP-14M, Lifejackets, Inherently Buoyant, Standard Type* with a minimum buoyancy of 125 N (28 lbs), or

(d) *British Safety Standard BS EN 396-1994, Lifejackets and Personal Buoyancy Aids – Lifejacket 150 N*, automatically inflatable units with a minimum buoyancy of 150 N (34 lbs).

(e) Repealed. [B.C. Reg. 312/2003, App. A, s. 13 (c).]

[am. B.C. Reg. 312/2003, App. A, s. 13.]

Working alone

8.28 If a worker working alone is exposed to risk of drowning, the worker must wear a lifejacket meeting the requirements of section 8.27 (a), (c) or (d).

[am. B.C. Reg. 312/2003, App. A, s. 14.]

Record of inspection and maintenance

8.29 If workers use inflatable personal flotation devices (PFDs) or automatically inflatable lifejackets, the employer must keep a record of all inspections made and maintenance performed on those PFDs or automatically inflatable lifejackets.

[en. B.C. Reg. 14/2019, App. E, s. 1.]

Retroreflective material

8.30 Personal flotation devices and lifejackets must have at least 200 sq cm (32 sq in) of white or silver retroreflective material fitted on surfaces that are normally above the water surface.

[en. B.C. Reg. 312/2003, App. E, s. 4.]

Flame Resistant Clothing

When required

8.31 Workers must wear flame resistant clothing appropriate to the risk if working in areas where they may be exposed to flash fires, molten metal, welding and burning or similar hot work hazards.

Respirators

When respirator required

8.32 If a worker is or might be exposed in a workplace to an air contaminant that exceeds

(a) an 8-hour TWA limit, ceiling limit or short-term exposure limit set by ACGIH for the air contaminant,

(b) a limit that is otherwise determined by the Board under section 5.48 for the air contaminant, or

(c) a limit set by section 5.49 for the air contaminant,

the employer must provide an appropriate respirator and ensure that the worker uses an appropriate respirator in accordance with section 8.34.

[en. B.C. Reg. 312/2010, App. G, s. 8.]

Selection

8.33 (1) The employer, in consultation with the worker and the occupational health and safety committee, if any, or the worker health and safety representative, if any, must select an appropriate respirator in accordance with *CSA Standard CAN/CSA-Z94.4-93, Selection, Use, and Care of Respirators*.

(2) Only a respirator which meets the requirements of a standard acceptable to the Board may be used for protection against airborne contaminants in the workplace.

[am. B.C. Regs. 312/2003, App. A, s. 4; 312/2010, App. G, s. 9.]

Maximum use concentration

8.34 (1) In subsection (2):

"established 8-hour TWA limit" means the 8-hour TWA limit set by the Board for an air contaminant, or if the Board has not set an 8-hour TWA limit for an air contaminant, the TWA limit set by ACGIH for the air contaminant;

"established ceiling limit" means a ceiling limit set by the Board for an air contaminant, or if the Board has not set a ceiling limit for an air contaminant, the ceiling limit set by ACGIH for the air contaminant;

"established short-term exposure limit" means the short-term exposure limit set by the Board for an air contaminant, or if the Board has not set a short-term exposure limit for an air contaminant, the short-term exposure limit set by ACGIH for the air contaminant.

(2) In subsection (3), **"maximum use concentration"** means the concentration of an air contaminant calculated in one of the following ways:

(a) if an established 8-hour TWA limit applies to the air contaminant to which a worker is or might be exposed, by multiplying

(i) the established 8-hour TWA limit for the air contaminant, and

(ii) the protection factor set out in Table 8-1 that applies to the respirator type that the worker is using;

(b) if there is no established 8-hour TWA limit that applies to the air contaminant to which a worker is or might be exposed, by multiplying

(i) the established short-term exposure limit for that air contaminant, and

(ii) the protection factor set out in Table 8-1 that applies to the respirator type that the worker is using;

(c) if there is no established 8-hour TWA limit or short-term exposure limit that applies to the air contaminant to which a worker is or might be exposed, by multiplying

(i) the established ceiling limit for that air contaminant, and

(ii) the protection factor set out in Table 8-1 that applies to the respirator type that the worker is using.

(3) The employer must ensure that a worker does not use a respirator for protection against a concentration of an air contaminant in the workplace that is greater than the maximum use concentration.

(4) The protection factor of 1 000 set out in Table 8-1: Respirator protection factors for a hood or helmet facepiece, powered (PAPR), and equipped with a HEPA filter or a sorbent cartridge or canister or both a HEPA filter and a sorbent cartridge or canister applies only if an employer who uses or wishes to use that respirator type has evidence from the manufacturer that demonstrates that

(a) the manufacturer has tested that type of respirator, and

(b) those tests demonstrate that a respirator of that type has a protection factor of at least 1 000.

(5) The protection factor of 25 set out in Table 8-1: Respirator protection factors for a hood or helmet facepiece, powered (PAPR), and equipped with a HEPA filter or a sorbent cartridge or canister or both a HEPA filter and a sorbent cartridge or canister applies if the conditions set out in subsection (4) are not met.

[en. B.C. Reg. 312/2010, App. G, s. 10.]

Table 8-1: Respirator protection factors

Respirator type	Protection Factor
Air purifying	
Half facepiece, non-powered	10
Full facepiece, non-powered	50
Full facepiece, powered (PAPR), equipped with HEPA filters for exposure to asbestos	100
Full facepiece, powered (PAPR), equipped with HEPA filters and/or sorbent cartridge or canister for exposure to contaminants other than asbestos	1 000
Loose-fitting facepiece, powered (PAPR)	25
Hood or helmet facepiece, powered (PAPR), and equipped with a HEPA filter or a sorbent cartridge or canister or both a HEPA filter and a sorbent cartridge or canister, if section 8.34 (5) applies	25
Hood or helmet facepiece, powered (PAPR), and equipped with a HEPA filter or a sorbent cartridge or canister or both a HEPA filter and a sorbent cartridge or canister, if the conditions set out in section 8.34 (4) are met	1 000
Air supplying	
Airline – demand (negative pressure)	
Half facepiece	10
Full facepiece	50
Airline – continuous flow	
Loose-fitting facepiece/hoods	25
Half facepiece	50
Full facepiece	1 000
Helmet/hood	1 000
Airline – pressure demand (positive pressure)	
Half facepiece	50
Full facepiece	1 000
Full facepiece, with egress bottle	10 000

Respirator type	Protection Factor
Self-contained breathing apparatus (SCBA)	
Demand (negative pressure)	50
Pressure demand (positive pressure)	10 000
Other factors such as warning properties, IDLH levels, and cartridge/canister limitations must also be taken into account when determining the maximum use concentration. Refer to the manufacturer's instructions and standards acceptable to the Board for further information.	

[am. B.C. Regs. 20/2006, s. 2; 312/2010, App. G, s. 11.]

IDLH or oxygen deficient atmosphere

8.35 (1) If a worker is required to enter or work in an IDLH or oxygen deficient atmosphere the worker must

(a) wear a full facepiece positive pressure respirator which is either an SCBA, or an airline respirator with an auxiliary self-contained air cylinder of sufficient capacity to permit the worker to escape unassisted from the contaminated area if the air supply fails, and

(b) be attended by at least one other worker stationed at or near the entrance to the contaminated area who is similarly equipped and capable of effecting rescue.

(2) Subsection (1) (a) applies if there is a significant risk of accidental release into a worker's breathing zone of quantities of an air contaminant sufficient to produce an IDLH atmosphere.

Emergency escape respirators

8.36 (1) If the nature or quantity of an air contaminant and the nature of the work area could prevent a worker escaping from a contaminated area without assistance, the worker must carry an emergency escape respirator.

(2) The emergency escape respirator must be

(a) carried on the worker's person or be within arm's reach at all times, and

(b) sufficient to permit the worker to leave the contaminated area without assistance.

Respirable air quality

8.37 (1) Compressed breathing air supplied for equipment such as an SCBA and a supplied air respirator must be tested at least annually to ensure that the air being supplied meets the requirements of *CSA Standard CAN/CSA-Z180.1-00, Compressed Breathing Air and Systems*.

(2) If an SCBA cylinder has not been used for a period in excess of one year, air in the cylinder must be slowly depressurized to atmosphere and refilled with

compressed breathing air that meets the requirements of *CSA Standard CAN/CSA-Z180.1-00, Compressed Breathing Air and Systems*.

[en. B.C. Reg. 20/2006, s. 3.]

Corrective eyewear

8.38 (1) If a worker who wears prescription eyeglasses is required to wear a full facepiece respirator, the employer must assess the work to be performed, and provide appropriate specialty corrective eyewear if necessary to ensure that the work can be performed safely.

(2) The employer may permit the use of contact lenses by a worker who is required to wear a full facepiece respirator if their use is not likely to adversely affect the health or safety of the worker.

Face seal

8.39 (1) Except for specialty eyewear approved by the Board for use with positive pressure full facepiece respirators, nothing is permitted which intrudes between the facepiece and the face, or which interferes with the face seal of the facepiece.

(2) A worker required to wear a respirator which requires an effective seal with the face for proper functioning must be clean shaven where the respirator seals with the face.

Fit tests

8.40 (1) A respirator which requires an effective seal with the face for proper functioning must not be issued to a worker unless a fit test demonstrates that the facepiece forms an effective seal with the wearer's face.

(2) Fit tests must be performed in accordance with procedures in *CSA Standard CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators*.

(2.1) A fit test must be carried out

(a) before initial use of a respirator,

(b) at least once a year,

(c) whenever there is a change in respirator facepiece, including the brand, model, and size, and

(d) whenever changes to the user's physical condition could affect the respirator fit.

(3) Other personal protective equipment that is to be worn at the same time as a respirator and which could interfere with the respirator fit must be worn during a fit test.

(4) Repealed. [B.C. Reg. 20/2006, s. 4 (b).]

[am. B.C. Reg. 20/2006, s. 4.]

User seal check

8.41 (1) Before each use of a respirator which requires an effective seal with the face for proper functioning, a worker must perform a positive or negative pressure user seal check in accordance with *CSA Standard CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators*.

(2) Subsection (1) does not apply to the emergency use of an escape respirator.

[am. B.C. Reg. 20/2006, s. 5.]

Medical assessment

8.42 If a worker is required to use a respirator and there is doubt about the worker's ability to use a respirator for medical reasons, the worker must be examined by a physician, and the examining physician must be provided with sufficient information to allow the physician to advise the employer of the ability of the worker to wear a respirator.

Optional use

8.43 In circumstances where section 8.32 does not apply, and either an employer chooses to provide a respirator to a worker or the worker chooses to use a personal respirator, then the requirements of sections 8.3, 8.7 and 8.33 (2) apply.

Records

8.44 The employer must maintain a record of

(a) fit test results and worker instruction,

(b) maintenance for air supplying respirators, powered air purifying respirators, and for sorbent cartridges and canisters, and

(c) maintenance and repairs for each self-contained breathing apparatus and all air cylinders in accordance with the requirements of *CSA Standard CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators*.

[am. B.C. Reg. 20/2006, s. 6.]

Maintenance and inspections

8.45 (1) Inspection of compressed air cylinders must be done in accordance with *CSA Standard CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators*.

(2) Self-contained breathing apparatus, including regulators, must be serviced and repaired by qualified persons.

(3) Compressed air cylinders must be hydrostatically tested in accordance with *CSA Standard CAN/CSA-B339-96, Cylinders, Spheres, and Tubes for the Transportation of Dangerous Goods*.

[en. B.C. Reg. 20/2006, s. 7.]

SCHEDULE 8-A

[en. B.C. Reg. 312/2010, App. F, s. 2.]

(section 8.21 [leg protection])

WORKSAFEBC STANDARD – LEG PROTECTIVE DEVICES

Scope

1 This standard provides specifications and performance criteria for leg protection for a worker using a chain saw.

Definition

2 In this standard, **"leg protection"** or **"leg protective device"** means personal protective equipment worn for protection from leg injury due to contact with a moving saw chain.

Types of leg protection

3 Leg protection must be of one of the following types:

(a) pant type: the protective pad is secured to and held in position by the trousers;

(b) apron type: the protective pad is secured to an apron style garment normally worn outside the trousers and secured around the worker's legs and waist;

(c) chap type: the protective pad is secured to a chap style garment normally worn outside the trousers and secured around the worker's legs.

General requirements

4 (1) Leg protection must be of materials suitable for the intended application.

(2) Leg protection

(a) must not unduly restrict the manoeuvrability of the worker, and

(b) must not shrink more than 10% when cleaned in accordance with the manufacturer's instructions during its service life.

(3) The protective pad of leg protection must be at least 711 mm (28 in.) long and of a width covering 180° in the front of both legs from inseam to outseam plus 100 mm (4 in.) on the left side of both legs.

(4) If the length requirement in subsection (3) results in a tripping hazard, the protective pad may be shorter, as long as it meets the requirements set out in subsection (5).

(5) When leg protection is worn by a worker, the protective pad

(a) must extend at minimum from the crotch to within 75 mm (3 in.) of the ankle, and

(b) must be effectively secured in this position.

(6) Effective measures must be taken to prevent unravelling or fraying of material along any edges or other area of leg protection where unravelling or fraying is likely to occur.

(7) A heat seal used to control unravelling or fraying of synthetic fibres of leg protection

(a) must be effective over the life of the product, and

(b) if subject to cracking, must be covered to prevent abrasion of the worker's skin.

(8) Instructions on the proper care, maintenance and repair of leg protection must be provided by the manufacturer.

(9) Leg protection showing damage that will affect its performance must be removed from service.

Cut-resistance testing protocol and performance requirements

5 (1) Leg protection must meet or exceed the "threshold chain speed test" in which the protective pad must be able to consistently resist being cut-through by a running saw chain operating at a speed of 1 098 m/min (3 600 ft./min) or more for at least 1.01 seconds.

(2) Threshold chain speed tests must be conducted

(a) on leg protection samples assembled in the manner in which the leg protection will be produced for distribution, and

(b) using the test apparatus described in subsection (3) in accordance with the procedures and methodology described in this section.

(3) The test apparatus to be used in conducting a threshold chain speed test must include a simulated "leg", chain saw and instruments as follows:

(a) a simulated "leg" (see Figure 1) that is

(i) made of wood approximately 150 mm (6 in.) in diameter with a 20 mm (3/4 in.) layer of resilient covering (Ensolite or similar material) attached to simulate the resilience of flesh,

(ii) designed to allow the leg protection to be mounted and tested similar to the configuration the leg protection will take when worn by a worker while the worker's leg is extended, and

(iii) mounted to allow rotation about the longitudinal axis of up to 75 mm (3 in.) at the outer circumference, against an applied torque of at least

1.7 Newton-metres (15 inch pounds) and which torque may increase as the leg rotates;

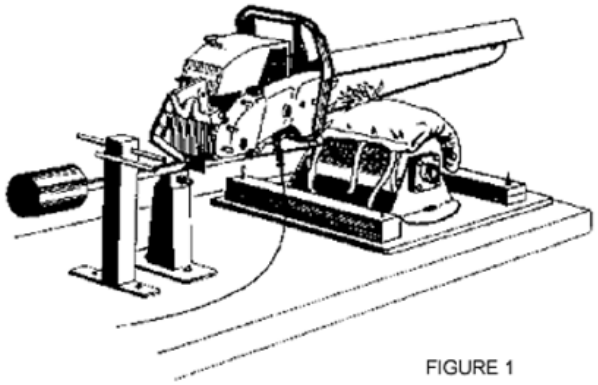


FIGURE 1

(b) a chain saw, with Oregon 72 LP chisel chain and capable of a chain speed of at least 1 220 m/min (4 000 ft./min), that must pivot in a vertical plane to contact the "leg" (see Figure 1) with a downward force of 50 ± 1 Newtons (11 ± 0.1 lb.);

(c) instruments to measure and record chain speed and cut-through time.

(4) The test procedure and methodology are as follows:

(a) start the saw and set the chain speed to the constant level selected for the test cut;

(b) allow the bottom of the running saw chain to freefall 6 mm (1/4 in.) onto the test specimen mounted on the "leg";

(c) record the time from contact of the saw chain with the test specimen to the nearest 0.01 second;

(d) record the chain speed during each test;

(e) repeat the tests on the same material until the maximum chain speed (± 15 m/min or ± 50 ft./min) at which cut-through does not occur for at least 1.01 seconds or more is determined;

(f) maintain the chain saw in good repair throughout the testing and keep the saw cutters sharp in accordance with the saw chain manufacturer's recommendations.

PART 9 – CONFINED SPACES

Definitions

9.1 In this Part:

"adjacent piping" means a device such as a pipe, line, duct or conduit which is connected to a confined space or is so located as to allow a substance from within the device to enter the confined space;

"blank" means a solid plate installed through the cross-section of a pipe, usually at a flanged connection;

"blanking or blinding" means the absolute closure of adjacent piping, by fastening across its bore a solid plate or cap that completely covers the bore and that is capable of withstanding the maximum pressure of the adjacent piping;

"blind" means a solid plate installed at the end of a pipe which has at that point been physically disconnected from a piping system;

"clean respirable air" when used to describe the atmosphere inside a confined space, means an atmosphere which is equivalent to clean, outdoor air and which contains

(a) about 20.9% oxygen by volume,

(b) no measurable flammable gas or vapour as determined using a combustible gas measuring instrument, and

(c) no air contaminant in concentrations exceeding either 10% of its applicable exposure limit in Part 5 *[Chemical Agents and Biological Agents]* or an acceptable ambient air quality standard established by an authority having jurisdiction over environmental air standards, whichever is greater;

"confined space", except as otherwise determined by the Board, means an area, other than an underground working, that

(a) is enclosed or partially enclosed,

(b) is not designed or intended for continuous human occupancy,

(c) has limited or restricted means for entry or exit that may complicate the provision of first aid, evacuation, rescue or other emergency response service, and

(d) is large enough and so configured that a worker could enter to perform assigned work;

"disconnecting" means physically disconnecting adjacent piping from a confined space to prevent its contents from entering the space in the event of discharge;

"double block and bleed" means the closure of adjacent piping by locking out a drain or vent in the open position in the line between 2 locked out valves in the closed position;

"harmful substance" means a WHMIS hazardous product, a substance referred to under section 5.48, or a substance which may have a harmful effect on a worker in a confined space;

"high hazard atmosphere" means an atmosphere that may expose a worker to risk of death, incapacitation, injury, acute illness or otherwise impair the ability of the worker to escape unaided from a confined space, in the event of a failure of the ventilation system or respirator;

"inerting" means intentionally flooding the atmosphere inside a confined space with an inert gas such as nitrogen to eliminate the hazard of ignition of flammable vapours inside the confined space but thereby creating an oxygen deficient atmosphere;

"low hazard atmosphere" means an atmosphere which is shown by pre-entry testing or otherwise known to contain clean respirable air immediately prior to entry to a confined space and which is not likely to change during the work activity, as determined by a qualified person after consideration of the design, construction and use of the confined space, the work activities to be performed, and all engineering controls required by this Regulation;

"moderate hazard atmosphere" means an atmosphere that is not clean respirable air but is not likely to impair the ability of the worker to escape unaided from a confined space, in the event of a failure of the ventilation system or respirator.

[am. B.C. Regs. 315/2003, App. A, s. 13; 381/2004, s. 4; 30/2015, s. 33.]

General Requirements

Initial determination

9.2 The employer must

(a) ensure that each confined space in the workplace is identified, and

(b) determine whether any such space will require entry by a worker, either in scheduled work activities or as a result of foreseeable system failures or other emergencies.

Prohibited entry

9.3 If a confined space exists at a workplace but no worker entry is required, the employer must ensure that each point of access to the confined space is secured against entry or identified by a sign or other effective means which indicates the nature of the hazard and the prohibition of entry, and that workers are instructed not to enter.

Control of hazards

9.4 The employer must ensure that all confined space hazards are eliminated or minimized and that work is performed in a safe manner.

Confined space entry program

9.5 Before a worker is required or permitted to enter a confined space, the employer must prepare and implement a written confined space entry program which includes

(a) an assignment of responsibilities,

(b) a list of each confined space or group of similar spaces and a hazard assessment of those spaces, and

(c) written safe work procedures for entry into and work in the confined space, that address, where applicable

(i) identification and entry permits,

(ii) lockout and isolation,

(iii) verification and testing,

(iv) cleaning, purging, venting or inerting,

(v) ventilation,

(vi) standby persons,

(vii) rescue,

(viii) lifelines, harnesses and lifting equipment,

(ix) personal protective equipment and other precautions, and

(x) coordination of work activities.

Responsibilities

Administration

9.6 The employer must assign overall responsibility for administration of the confined space entry program to a person or persons adequately trained to do so.

Supervision

9.7 (1) The employer must assign responsibility for supervision to a person who is adequately trained to supervise the job before any worker enters a confined space.

(2) The responsible supervisor must ensure that

(a) pre-entry testing and inspection is conducted based on the written procedures,

(b) the precautions identified in the written procedures and the precautions required by this Regulation or which are otherwise necessary for the health and safety of workers are followed, and

(c) only authorized workers enter a confined space.

Instruction

9.8 Each person who is assigned duties or responsibilities related to entry into a confined space must be adequately instructed and trained in

(a) the hazards of the space, and

(b) the precautions identified in written procedures to properly perform their duties.

Hazard Assessment and Work Procedures

Hazard assessment

9.9 (1) A hazard assessment must be conducted for each

(a) confined space, or each group of confined spaces which share similar characteristics, and

(b) work activity, or group of work activities which present similar hazards, to be performed inside a confined space.

(2) The hazard assessment required by subsection (1) must consider

(a) the conditions which may exist prior to entry due to the confined space's design, location or use, or which may develop during work activity inside the space, and

(b) the potential for oxygen enrichment and deficiency, flammable gas, vapour or mist, combustible dust, other hazardous atmospheres, harmful substances requiring lockout and isolation, engulfment and entrapment, and other hazardous conditions.

Procedures

9.10 Written procedures specifying the means to eliminate or minimize all hazards likely to prevail must be developed, based on the hazard assessment required by section 9.9.

Qualifications

9.11 (1) The hazard assessment and written confined space entry procedures must be prepared

(a) by a qualified person who has adequate training and experience in the recognition, evaluation and control of confined space hazards, and

(b) in consultation with the person assigned overall responsibility for administration of the confined space entry program and with the joint committee or the worker health and safety representative, as applicable.

(2) For the purposes of subsection (1) (a) qualifications which are acceptable as evidence of adequate training and experience include

(a) certified industrial hygienist (CIH), registered occupational hygienist (ROH), certified safety professional (CSP), Canadian registered safety professional (CRSP) or professional engineer (P. Eng.), provided that the holders of these qualifications have experience in the recognition, evaluation and control of confined space hazards, or

(b) Repealed. [B.C. Reg. 243/2006, s. 3 (b).]

(c) other combination of education, training and experience acceptable to the Board.

[am. B.C. Regs. 185/99, s. 52; 243/2006, s. 3.]

Identification and Entry Permits

Identification

9.12 When a confined space requires entry by a worker, each point of access which is not secured against entry must be identified by a sign or other effective means which indicates the hazard and prohibits entry by unauthorized workers.

When permits required

9.13 (1) An entry permit must be completed and signed by the responsible supervisor before a worker enters a confined space

(a) with a high hazard atmosphere,

(b) that requires lockout or isolation procedures to be followed, or

(c) in which there is a hazard of entrapment or engulfment.

(2) An entry permit must be posted at each designated point of entry to a confined space.

(3) Subsection (2) does not apply if

(a) the entry permit is posted at a minimum of one designated point of entry,

(b) the identification at other designated points of entry includes up-to-date information on whether it is safe to enter, and

(c) all workers authorized to enter are informed of the location of posted entry permits.

Contents of permit

9.14 An entry permit must identify the

(a) confined space and the work activities to which it applies,

(b) workers who are inside the space,

(c) required precautions for the space, and

(d) time of expiration of the permit.

Updating the information

9.15 (1) Once issued, the information on an entry permit may only be altered by

(a) the responsible supervisor who signed the permit to update it in accordance with subsection (2) or (3),

(b) the standby worker to update the list of workers inside the confined space, or

(c) the tester to record test results.

(2) An entry permit must be reviewed and updated as necessary to ensure the ongoing safety of the workers inside the space.

(3) The permit must be re-authorized and signed by the responsible supervisor

(a) if there is a change in the work crew,

(b) after each shift change, or

(c) after a change of the responsible supervisor.

(4) Every worker affected must be informed of an alteration of an entry permit regarding a change in the required precautions or work activity.

Record of permit

9.16 A copy of the signed entry permit must be kept for at least one year.

Lockout and Control of Harmful Substances

Lockout

9.17 Before a worker enters a confined space, any material conveyance equipment that transports material to or from the space must be free of material if the material could present a hazard.

[en. B.C. Reg. 312/2003, App. D, s. 5.]

Control of harmful substance in adjacent piping

9.18 (1) Before a worker enters a confined space where adjacent piping contains a harmful substance that is

(a) a liquid with sufficient volatility to produce a hazardous concentration of an air contaminant, or

(b) a gas or vapour,

the harmful substance in the adjacent piping must be controlled by either disconnecting the adjacent piping or isolating it using blanks or blinds that meet the requirements of section 9.20.

(2) Subject to subsection (3), before a worker enters a confined space where adjacent piping contains a harmful substance that is neither

(a) a liquid with sufficient volatility to produce a hazardous concentration of an air contaminant, nor

(b) a gas or vapour,

the harmful substance in the adjacent piping must be controlled by either disconnecting the adjacent piping or isolating it using blanks or blinds that meet the requirements of section 9.20 or using a double block and bleed system that meets the requirements of section 9.21.

(3) Before a worker enters a confined space where adjacent piping contains a substance that is harmful only because of the temperature, pressure or quantity of the substance, the harmful substance must be controlled

(a) by either disconnecting the adjacent piping or isolating it using blanks or blinds that meet the requirements of section 9.20 or using a double block and bleed system that meets the requirements of section 9.21,

(b) by isolating the adjacent piping in a manner that a professional engineer has certified will make the confined space safe for a worker to carry out the intended work, or

(c) if there is no head pressure in the adjacent piping, by de-energizing and locking out each pressure source for the adjacent piping and depressurizing the adjacent piping.

(4) Where a confined space is

(a) subject to the ingress of gases from a gravity-flow municipal or domestic sanitary sewer system or storm sewer system, and

(b) protected from the ingress of gases by a p-trap,

a worker may enter the confined space only if the atmosphere of the confined space has been tested immediately before entry and the test results confirm that the confined space contains clean respirable air.

(5) If a worker enters a confined space of the type referred to in subsection (4), the following must be undertaken:

(a) the operational integrity of the p-trap must be confirmed immediately on the entry of the worker;

(b) while the worker is inside the confined space, the atmosphere of the confined space must be continuously monitored and confirmed to contain clean respirable air.

[en. B.C. Reg. 312/2010, App. H, s. 1.]

9.18.1 Repealed. [B.C. Reg. 312/2010, App. H, s. 1.]

Isolation points

9.19 (1) The employer must keep a record which identifies the location of every isolation point.

(2) Every isolation point must be visually checked or otherwise verified to ensure that the confined space is effectively isolated before a worker enters the space.

Blanks and blinds

9.20 (1) Unless certified by a professional engineer to provide adequate safety for the particular conditions of anticipated pressure, temperature and service, a blank or blind must be manufactured in accordance with the specifications of one of the following standards:

(a) *ANSI Standard API 590-1985, Steel Line Blanks*;

(b) *ANSI Standard ASME/ANSI B16.5-1988, Pipe Flanges and Flanged Fittings*;

(c) *ANSI Standard ASME B31.1-1992, Power Piping*;

(d) *ANSI Standard ASME B31.3-1993, Chemical Plant and Petroleum Refinery Piping*.

(2) If a blank or blind is certified by a professional engineer, the employer must keep a record of its certification, location and conditions of service.

(3) If required, an allowance for corrosion must be made in the design of a blank or a blind.

(4) A blank or blind must be stamped with or otherwise indicate its pressure rating.

(5) If a line is to be opened for disconnection or to insert a blank or a blind, written safe work procedures must be prepared and followed to prevent hazardous exposure of workers to its contents.

(6) Visual indication that a blank or blind has been installed must be provided at the point of installation.

(7) If required to prevent leakage, gaskets must be installed on the pressure side of blanks or blinds and flanges must be tightened to make the blanks or blinds effective.

(8) If threaded lines are used, threaded plugs or caps must be used to blind the lines.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Double block and bleed

9.21 If a double block and bleed isolation system is used

(a) the diameter of the bleed line must be no less than the diameter of the line being isolated, unless certified by a professional engineer,

(b) the bleed for a liquid system must be at a lower elevation than the block valves,

(c) all valves must be locked out in their proper open or closed position,

(d) the downstream block valve must be checked to ensure that it is capable of safely withstanding the line pressure,

(e) the bleed must be checked to ensure that it remains clear of obstructions while the confined space is occupied, either by continuous automatic monitoring or by manually checking within 20 minutes before worker entry, or before re-entry after the confined space has been vacated for more than 20 minutes, and

(f) in the event of discharge from the bleed line resulting from failure of the upstream block valve, all workers must immediately exit the confined space and the space must be effectively re-isolated before a worker enters the space.

Alternative measures of control or isolation of adjacent piping

9.22 (1) Section 9.18 does not apply if

(a) a measure specified in section 9.18 to control or isolate harmful substances contained in adjacent piping from a confined space is not practicable, and

(b) the employer implements alternative measures of control or isolation that are acceptable to the Board.

(2) All workers affected by measures implemented under subsection (1) must be informed of the measures taken and instructed in any applicable work procedures.

[am. B.C. Regs. 243/2006, s. 5; 312/2010, App. H, s. 2.]

Discharge area

9.23 The area of potential discharge from a disconnected line or from the bleed of a double block and bleed isolation system must be controlled to ensure that any accidental discharge will not present a hazard to workers.

Verification and Testing

Verifying all precautions

9.24 Before a worker enters a confined space, pre-entry testing and inspection must be conducted to verify that the required precautions have been effective at controlling the identified hazards and that it is safe for a worker to enter.

Testing the atmosphere

9.25 (1) Except as stated in subsection (7), before a worker enters a confined space, the employer must ensure that the atmosphere in the confined space is tested in accordance with this section and section 9.26.

(2) The pre-entry testing must be

(a) conducted as specified in the written work procedures, and

(b) completed not more than 20 minutes before a worker enters a confined space.

(3) When all workers have vacated the confined space for more than 20 minutes, pre-entry testing, as required by subsection (1), must be repeated.

(4) While a worker is inside a confined space with a moderate or high hazard atmosphere, additional testing must be conducted as necessary to ensure the worker's continuing safety.

(5) Whenever practicable, continuous monitoring of the atmosphere must be done.

(6) If a worker enters a confined space with a moderate or high hazard atmosphere, the employer must continuously monitor the atmosphere if a flammable or explosive atmosphere in excess of 20% of the lower explosive limit could develop.

(7) Pre-entry atmospheric testing is not required in a confined space with a low hazard atmosphere if

(a) the location and control of the space ensures that a more hazardous atmosphere could not inadvertently develop,

(b) such testing is not required to verify the effectiveness of an isolation or other pre-entry control,

(c) prior representative sampling has demonstrated that the atmosphere within the space or group of similar spaces meets the low hazard atmosphere definition, and

(d) the written entry procedures do not require such testing.

[am. B.C. Reg. 188/2011, App. D, s. 1.]

Procedures and equipment

9.26 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 12 (a).]

(2) Each confined space test must be carried out by a qualified person who has training and experience to calibrate, operate and monitor testing equipment and interpret readings from the testing equipment.

(3) The test record must show the date and time of the test, the initials of the tester and the levels or condition found.

(4) Test results, other than continuous monitoring results, must be posted without delay at all points of entry to the confined space.

[am. B.C. Regs. 312/2003, App. B, s. 12; 188/2011, App. D, s. 2.]

Cleaning, Purging, Venting and Inerting

Cleaning, purging and venting

9.27 (1) When practicable, the employer must ensure that a confined space to be entered contains clean respirable air.

(2) If a confined space is known, or shown by pre-entry testing to contain other than clean respirable air, the hazard must be controlled by cleaning, purging or venting the space and the atmosphere must be retested before a worker enters the space.

(3) The dead-ends of a line that has been isolated must be cleaned, purged or vented to remove any harmful substance which could present a hazard to a worker entering the confined space.

Risk control

9.28 If clean respirable air cannot be assured in a confined space before worker entry, the employer must ensure that

(a) all workers entering the space wear appropriate personal protective equipment including respirators when necessary,

(b) the concentrations of flammable gases and vapours are maintained below 20% of the lower explosive limit, and

(c) if flammable or explosive gases, vapours or liquids are present, all sources of ignition are eliminated or adequately controlled.

Inerting

9.29 (1) The employer must notify the Board in writing, and submit a copy of the proposed work procedures, at least 7 days before a worker enters a confined space which has been inerted.

(2) The employer must follow any additional precautions that are prescribed by the Board after review of the notification.

(3) If a confined space has been inerted

(a) all entry precautions for high hazard atmospheres must be followed, except the requirement for continuous ventilation,

(b) every worker entering the confined space must be equipped with a supplied-air respirator meeting the requirements of Part 8 *[Personal Protective Clothing and Equipment]*,

(c) all ignition sources must be controlled, and

(d) the atmosphere inside the confined space must remain inerted while workers are inside.

(4) Subsection (1) does not apply to entry for the purpose of performing emergency rescue duties.

[am. B.C. Reg. 312/2010, App. G, s. 12.]

Ventilation

Continuous ventilation

9.30 Every confined space must be ventilated continuously while a worker is inside the space, except in

(a) an atmosphere intentionally inerted in accordance with section 9.29,

(b) a low hazard atmosphere controlled in accordance with section 9.31 (2), or

(c) an emergency rescue, if ventilation is not practicable.

Low hazard atmospheres

9.31 (1) The employer must ensure that a minimum of 85 m^3/hr (50 cfm) of clean respirable air is supplied for each worker inside a confined space with a low hazard atmosphere, except as permitted in subsection (2).

(2) Continuous ventilation is not required in a confined space which has a low hazard atmosphere, if

(a) the atmosphere is continuously monitored and shown to contain clean respirable air, and

(b) the space has an internal volume greater than 1.8 m^3 (64 cu ft.) per occupant, is occupied for less than 15 minutes, and the work inside the space generates no contaminants other than exhaled air.

Mechanical ventilation

9.32 (1) A ventilation system for the control of airborne contaminants in a confined space must be designed, installed and maintained in accordance with established engineering principles and must be specified in the written procedures.

(2) Ventilation equipment must be located and arranged so as to adequately ventilate every occupied area inside the confined space.

(3) If a contaminant is produced in a confined space, it must be controlled at the source by a local exhaust ventilation system if practicable, by general (dilution) ventilation, or by a combination of both.

(4) If practicable, a mechanical ventilation system for a confined space must be sufficient to maintain concentrations of airborne contaminants below the applicable exposure limits.

Natural ventilation

9.33 (1) If natural ventilation is relied upon for the control of airborne contaminants in a confined space, the rate of airflow through the space must be monitored and must be sufficient to maintain concentrations of airborne contaminants below the applicable exposure limits.

(2) Natural ventilation must not be used

(a) to ventilate a confined space that has a high hazard atmosphere, or

(b) if such ventilation could draw air other than clean respirable air into the confined space.

Standby Persons

Low hazard atmosphere

9.34 If a worker enters a confined space which contains a low hazard atmosphere

(a) another worker must be assigned as a standby person,

(b) there must be a continuous means of summoning the standby person,

(c) the standby person must check on the well-being of workers inside the space at least every 20 minutes, and

(d) the standby person must have a means to immediately summon rescue personnel.

Moderate hazard atmosphere

9.35 If a worker enters a confined space which contains a moderate hazard atmosphere

(a) another worker or workers must be assigned as the standby person(s),

(b) a standby person must be stationed at or near the entrance to the space,

(c) the standby person must visually observe or otherwise check the well-being of the worker(s) inside the space, as often as may be required by the nature of the work to be performed, but at least every 20 minutes,

(d) there must be a continuous means of summoning the standby person from inside the space, and

(e) the standby person must have a means to immediately summon rescue personnel.

High hazard atmosphere, engulfment or entrapment

9.36 If a worker enters a confined space which contains a high hazard atmosphere, a risk of engulfment or entrapment or with any other recognized serious health or safety hazard

(a) another worker or workers must be assigned as the standby person(s),

(b) the standby person(s) must be stationed at the entrance to the space and must continuously attend to the standby duties,

(c) the standby person(s) must visually observe or otherwise continuously monitor the well-being of the worker(s) inside the space,

(d) there must be a continuous means of summoning the standby person(s) from inside the space,

(e) the standby person(s) must be equipped and capable of immediately effecting rescue using lifting equipment if required, or otherwise performing the duties of rescue persons, and

(f) the standby person(s) must prevent the entanglement of lifelines and other equipment.

Rescue

Provision of rescue services

9.37 (1) The employer must provide for the services of rescue persons when a worker enters a confined space.

(2) If the rescue persons are employees of another firm, or an agency such as a fire department, there must be a written agreement detailing the services that are to be provided.

Equipment and training

9.38 (1) Every person assigned rescue duties must be properly equipped and adequately trained to carry out such duties.

(2) A practice drill must be conducted at least annually.

(3) Records of training and practice drills must be maintained by the employer of the rescue persons.

Notification

9.39 (1) Before a worker enters a confined space, the responsible supervisor or the standby person must notify rescue personnel of work in the space.

(2) The responsible supervisor or the standby person must notify rescue personnel when all workers have completed their work and exited from the space.

(3) If more than one confined space is to be entered at the same time, notification of rescue personnel to be on alert status at the commencement of work is adequate.

(4) Notification requirements in this section do not apply if the written agreement indicates that rescue personnel are available 24 hours each day.

Summoning rescue

9.40 The employer must ensure that rescue personnel monitor any signalling system that will be used to summon the rescue persons in the event of an emergency whenever they have been informed by the responsible supervisor or the standby person that a confined space entry is in progress.

Rescue procedures

9.41 (1) Rescue or evacuation from a confined space must be directed by a supervisor who is adequately trained in such procedures or a qualified rescue person.

(2) Effective voice communication must be maintained at all times between workers engaged in the rescue or evacuation and the person directing the rescue.

(3) A rescue worker must not enter a confined space unless there is at least one additional worker located outside to render assistance.

(4) A self-contained breathing apparatus, or air supplied respirator with escape bottle, must be used during rescue operations in an unknown or IDLH atmosphere.

Lifelines, Harnesses and Lifting Equipment

When required

9.42 (1) When entering a confined space which contains a high hazard atmosphere, a risk of entrapment or engulfment or with any other recognized serious health or safety hazard, the worker must wear a harness of a type which will keep the worker in a position to permit rescue.

(2) A lifeline must be attached to the harness and be tended at all times by a standby person stationed outside the entrance to the space.

(3) The standby person must be equipped with suitable lifting equipment if necessary to permit rescue.

(4) The use of a lifeline is not required if the risk assessment identifies obstructions or other conditions that make its use impractical or unsafe.

Standards

9.43 Harnesses, lifelines and lifting equipment must meet the requirements of standards acceptable under this Regulation.

Line entanglement

9.44 If one or more workers enter a confined space, provision must be made to prevent the entanglement of lifelines and other equipment.

Additional workers

9.45 If rescue cannot be effected by the standby person(s) using harnesses, lifelines and lifting equipment, then one or more additional workers must be stationed at the entrance to the confined space and these workers must be equipped and capable of entering the space and effecting rescue.

Personal Protective Equipment and Other Precautions

9.46 Repealed. [B.C. Reg. 312/2003, App. D, s. 6.]

Emergency escape respirator

9.47 Workers entering a confined space which contains a high hazard atmosphere must carry on their person or have within arm's reach an emergency escape respirator sufficient to permit them to leave the confined space without assistance.

Compressed gas cylinders

9.48 A cylinder of compressed gas is not permitted inside a confined space, except for a cylinder of compressed air supplied to a respirator, medical resuscitation equipment, handheld aerosol spray containers, fire extinguishers, or other equipment permitted by the Board.

[en. B.C. Reg. 253/2001, s. 5.]

Torches and hoses

9.49 When practicable, torches and hoses used for welding, brazing or cutting must be removed from a confined space when not in use and when the confined space is vacated.

[am. B.C. Reg. 253/2001, s. 6.]

Electrical equipment

9.50 (1) Electrical tools and equipment used in a confined space must be grounded or double-insulated and so marked, and if wet or damp conditions exist inside the space, must be protected by an approved ground fault circuit interrupter as required by Part 19 (Electrical Safety).

(2) Electrical tools and equipment used in a confined space where flammable or explosive gases, vapours or liquids are present must be CSA approved for

hazardous locations classified under *CSA Standard C22.1-94, Canadian Electrical Code Part 1*, as Class 1, Division 2, Groups A, B and C.

Non-sparking tools

9.51 Only non-sparking tools may be used in a confined space where flammable or explosive gases, vapours or liquids are present.

PART 10 – DE-ENERGIZATION AND LOCKOUT

Definitions

10.1 In this Part:

"control system isolating device" means a device that physically prevents activation of a system used for controlling the operation of machinery or equipment;

"energy isolating device" means a device that physically prevents the transmission or release of an energy source to machinery or equipment;

"energy source" means any electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other source of energy of potential harm to workers;

"key securing system" means a system which physically prevents access to keys when locks or positive sealing devices are applied in a group lockout procedure;

"lockout" means the use of a lock or locks to render machinery or equipment inoperable or to isolate an energy source in accordance with a written procedure;

"maintenance" means work performed to keep machinery or equipment in a safe operating condition, including installing, repairing, cleaning, lubricating and the clearing of obstructions to the normal flow of material;

"normal production" means work that is routine, repetitive, and integral to the normal use of machinery or equipment for production;

"personal lock" means a lock provided by the employer for use by a worker to ensure personal lockout protection such that each lock when applied is operable only by a key in the worker's possession, and by a key under the control of the supervisor or manager in charge.

General requirement

10.2 If the unexpected energization or startup of machinery or equipment or the unexpected release of an energy source could cause injury, the energy source must be isolated and effectively controlled.

When lockout required

10.3 (1) If machinery or equipment is shut down for maintenance, no work may be done until

(a) all parts and attachments have been secured against inadvertent movement,

(b) where the work will expose workers to energy sources, the hazard has been effectively controlled, and

(c) the energy isolating devices have been locked out as required by this Part.

(2) If machinery or equipment is in use for normal production work, subsection (1) applies if a work activity creates a risk of injury to workers from the movement of the machinery or equipment, or exposure to an energy source, and the

machinery or equipment is not effectively safeguarded to protect the workers from the risk.

Lockout procedures

10.4 (1) When lockout of energy isolating devices is required, the devices must be secured in the safe position using locks in accordance with procedures that are made available to all workers who are required to work on the machinery or equipment.

(2) The employer must ensure that each worker required to lock out has ready access to sufficient personal locks to implement the required lockout procedure.

(3) Combination locks must not be used for lockout.

(4) Each personal lock must be marked or tagged to identify the person applying it.

(5) Procedures must be implemented for shift or personnel changes, including the orderly transfer of control of locked out energy isolating devices between outgoing and incoming workers.

(6) If the use of a personal lock is not practicable for lockout, another effective means, if approved by the Board, may be used in place of a personal lock to secure an energy isolating device in the safe position.

Access to energy isolating devices

10.5 When an energy isolating device is locked out, the lock must not prevent access to other energy isolating devices supplying machinery or equipment that could cause injury to workers.

Checking locked out equipment

10.6 (1) Effective means of verifying lockout must be provided and used.

(2) Before commencing work, a worker must verify that all energy sources have been effectively locked out.

Worker responsibilities

10.7 Each worker who works on machinery or equipment requiring lockout is responsible for

(a) locking out the energy isolating devices before starting work, except as provided by section 10.9,

(b) removing personal locks on the completion of the worker's work, and

(c) maintaining immediate control of the key(s) to personal locks throughout the duration of the work.

[am. B.C. Reg. 116/2022, App. B, s. 9.]

Removal of locks

10.8 (1) A personal lock must only be removed by the worker who installed it, or if this is not possible, the matter must be referred to the supervisor or manager in charge, who will be responsible for its removal.

(2) The supervisor or manager in charge must

(a) make every reasonable effort to contact the worker who installed the lock, and

(b) ensure that the machinery or equipment can be operated safely before removing the lock.

(3) A worker must be notified at the start of the worker's next shift if the worker's personal lock(s) have been removed since the worker's previous shift.

[am. B.C. Reg. 116/2022, App. B, s. 9.]

Group lockout procedure

10.9 (1) If a large number of workers are working on machinery or equipment or a large number of energy isolating devices must be locked out, a group lockout procedure that meets the requirements of subsections (2) to (7) may be used.

(2) In a group lockout procedure 2 qualified workers must be responsible for

(a) independently locking out the energy isolating devices,

(b) securing the keys for the locks used under paragraph (a) with personal locks or other positive sealing devices acceptable to the Board, and

(c) completing, signing and posting a checklist that identifies the machinery or equipment components covered by the lockout.

(3) Before commencing work each worker working on the locked out components must apply a personal lock to the key securing system used in subsection (2) (b).

(4) Workers may lock out a secondary key securing system if 2 qualified workers lock out the primary key securing system and place their keys in the secondary system.

(5) On completion of the worker's work, each worker referred to in subsections (3) and (4) must remove the worker's personal lock from the key securing system.

(6) When the requirements of subsection (5) have been met and it has been determined that it is safe to end the group lockout, 2 qualified workers must be responsible for removing their personal locks or the positive sealing device(s) from the key securing system or systems containing the keys for the locks used under subsection (2) (a), and once those keys are released, the system is no longer considered to be locked out.

(7) The written group lockout procedure must be conspicuously posted at the place where the system is in use.

[am. B.C. Reg. 116/2022, App. B, s. 9.]

Alternative procedures

10.10 (1) If lockout of energy isolating devices as required by section 10.3 is not practicable,

(a) in the case of a power system as defined in Part 19 (Electrical Safety), the requirements of that Part must be followed,

(b) in the case of mobile equipment, the requirements of Part 16 must be followed,

(c) in the case of machinery or equipment designed and equipped with effective control system isolating devices, the devices must be locked out as required by sections 10.4 to 10.9, and 10.10 (2), and

(d) in an emergency, the energy isolating devices or control system devices must be effectively controlled to prevent inadvertent start up or hazardous energy release.

(2) Control system isolating devices and the procedures for using them must be approved in writing by the Board, and must be used by workers qualified and authorized to carry out the work.

[am. B.C. Reg. 139/2021, App. D, s. 4.]

Locks not required

10.11 The application of a lock is not required under section 10.3 or 10.10 if

(a) the energy isolating device is under the exclusive and immediate control of the worker at all times while working on the machinery or equipment, or

(b) a tool, machine or piece of equipment which receives power through a readily disconnected supply, such as an electrical cord or quick release air or hydraulic line, is disconnected from its power supply and its connection point is kept under the immediate control of the worker at all times while work is being done.

Work on energized equipment

10.12 If it is not practicable to shut down machinery or equipment for maintenance, only the parts which are vital to the process may remain energized and the work must be performed by workers who

(a) are qualified to do the work,

(b) have been authorized by the employer to do the work, and

(c) have been provided with and follow written safe work procedures.

PART 11 – FALL PROTECTION

Definitions

11.1 In this Part:

"anchor" means a component or subsystem of a fall protection system used to connect other parts of a fall protection system to an anchorage, and includes an anchorage connector;

"anchorage" means a secure connection point for a fall protection system;

"fall arrest system" means a system that will stop a worker's fall before the worker hits the surface below;

"fall protection system" means

(a) a fall restraint system,

(b) a fall arrest system, or

(c) work procedures that are acceptable to the Board and minimize the risk of injury to a worker from a fall;

"fall restraint system" means a system to prevent a worker from falling from a work position, or from travelling to an unguarded edge from which the worker could fall;

"full body harness" means a body support device consisting of connected straps designed to distribute the force resulting from a fall over at least the thigh, shoulders and pelvis, with provision for attaching a lanyard, lifeline or other components;

"horizontal lifeline system" means a system composed of a synthetic or wire rope, installed horizontally between 2 anchors, to which a worker attaches a personal fall protection system;

"lanyard" means a flexible line of webbing, or synthetic or wire rope, that is used to secure a safety belt or full body harness to a lifeline or anchor;

"lifeline" means a synthetic or wire rope, rigged from one or more anchors, to which a worker's lanyard or other part of a personal fall protection system is attached;

"personal fall protection system" means a worker's fall restraint system or fall arrest system composed of

(a) a safety belt or full body harness, and

(b) a lanyard, lifeline and any other connecting equipment individual to the worker

that is used to secure the worker to an anchor, an anchorage or a horizontal lifeline system;

"safety belt" means a body support device consisting of a strap with a means for securing it about the waist and attaching it to other components.

[am. B.C. Regs. 420/2004, s. 2; 404/2012, App. A, s. 1.]

Obligation to use fall protection

11.2 (1) Unless elsewhere provided for in this Regulation, an employer must ensure that a fall protection system is used when work is being done at a place

(a) from which a fall of 3 m (10 ft) or more may occur, or

(b) where a fall from a height of less than 3 m involves a risk of injury greater than the risk of injury from the impact on a flat surface.

(2) The employer must ensure that guardrails meeting the requirements of Part 4 (General Conditions) or other similar means of fall restraint are used when practicable.

(3) If subsection (2) is not practicable, the employer must ensure that another fall restraint system is used.

(4) If subsection (3) is not practicable, the employer must ensure that one of the following is used:

(a) a fall arrest system;

(b) a rope access system that meets the requirements of Part 34.

(5) If subsection (4) is not practicable, or will result in a hazard greater than if a fall arrest system or a rope access system was not used, the employer must ensure that work procedures are followed that are acceptable to the Board and minimize the risk of injury to a worker from a fall.

(6) Before a worker is allowed into an area where a risk of falling exists, the employer must ensure that the worker is instructed in the fall protection system for the area and the procedures to be followed.

(7) A worker must use the fall protection system provided by the employer.

[am. B.C. Regs. 420/2004, s. 4; 199/2014, App. K, s. 1.]

Fall protection plan

11.3 (1) The employer must have a written fall protection plan for a workplace if

(a) work is being done at a location where workers are not protected by permanent guardrails, and from which a fall of 7.5 m (25 ft) or more may occur, or

(b) section 11.2 (5) applies.

(c) Repealed. [B.C. Reg. 420/2004, s. 5 (a) (iii).]

(2) The fall protection plan must be available at the workplace before work with a risk of falling begins.

(3) Repealed. [B.C. Reg. 420/2004, s. 5 (b).]

[am. B.C. Reg. 420/2004, s. 5.]

Selection of harness or belt

11.4 (1) A worker must wear a full body harness or other harness acceptable to the Board when using a personal fall protection system for fall arrest.

(2) A worker must wear a safety belt, a full body harness or other harness acceptable to the Board when using a personal fall protection system for fall restraint.

[en. B.C. Reg. 420/2004, s. 6.]

Equipment standards

11.5 Equipment used for a fall protection system must

(a) consist of compatible and suitable components,

(b) be sufficient to support the fall restraint or arrest forces, and

(c) meet, and be used in accordance with, an applicable CSA or ANSI standard in effect when the equipment was manufactured, subject to any modification or upgrading considered necessary by the Board.

[en. B.C. Reg. 420/2004, s. 6.]

Anchors

11.6 (1) In a temporary fall restraint system, an anchor for a personal fall protection system must have an ultimate load capacity in any direction in which a load may be applied of at least

(a) 3.5 kN (800 lbs), or

(b) four times the weight of the worker to be connected to the system.

(2) Each personal fall protection system that is connected to an anchor must be secured to an independent attachment point.

(3) In a temporary fall arrest system, an anchor for a personal fall protection system must have an ultimate load capacity in any direction required to resist a fall of at least

(a) 22 kN (5 000 lbs), or

(b) two times the maximum arrest force.

(4) A permanent anchor for a personal fall protection system must have an ultimate load capacity in any direction required to resist a fall of at least 22 kN (5 000 lbs).

[en. B.C. Reg. 420/2004, s. 6; am. B.C. Regs. 19/2006, s. 3; 404/2012, App. A, s. 2.]

Temporary horizontal lifelines

11.7 A temporary horizontal lifeline system may be used if the system is

(a) manufactured for commercial distribution and installed and used in accordance with the written instructions from the manufacturer or authorized agent, and the instructions are readily available in the workplace,

(b) installed and used in accordance with written instructions certified by a professional engineer, and the instructions are readily available in the workplace, or

(c) designed, installed and used in a manner acceptable to the Board.

[en. B.C. Reg. 420/2004, s. 6; am. B.C. Reg. 19/2006, s. 4.]

Certification by engineer

11.8 The following types of equipment and systems, and their installation, must be certified by a professional engineer:

(a) permanent anchors;

(b) anchors with multiple attachment points;

(c) permanent horizontal lifeline systems;

(d) support structures for safety nets.

[en. B.C. Reg. 420/2004, s. 6.]

Inspection and maintenance

11.9 Equipment used in a fall protection system must be

(a) inspected by a qualified person before use on each workshift,

(b) kept free from substances and conditions that could contribute to its deterioration, and

(c) maintained in good working order.

[en. B.C. Reg. 420/2004, s. 6.]

Removal from service

11.10 (0.1) If, at any time, a permanent anchor does not meet the requirements of section 11.5 (c), the anchor must not be used until it has been inspected and recertified, by a professional engineer, as meeting the requirements of section 11.5 (c).

(1) After a fall protection system has arrested the fall of a worker, it must

(a) be removed from service, and

(b) not be returned to service until it has been inspected and recertified as safe for use by the manufacturer or its authorized agent, or by a professional engineer.

(2) Subject to subsection (3), subsection (1) (b) does not apply to a personal fall protection system designed and intended for reuse by a performer in the entertainment industry for conducting a planned fall sequence.

(3) The following conditions must be met before a personal fall protection system described in subsection (2) will be exempt from subsection (1) (b):

(a) the system must be designed and used in accordance with a standard acceptable to the Board;

(b) each use of the system must be carried out in accordance with the plan for the conduct of the fall;

(c) the peak arrest forces generated in the system during each use must be at or below both the planned limits and the maximum forces allowed for the system;

(d) after each use of the system no part of the system, including the anchorage, may be reused until a qualified person has inspected it and determined it is in serviceable condition and safe for reuse.

[en. B.C. Reg. 420/2004, s. 6; am. B.C. Regs. 320/2007, App. C; 404/2012, App. A, s. 3.]

11.11 to **11.40** Repealed. [B.C. Reg. 420/2004, s. 6.]

PART 12 – TOOLS, MACHINERY AND EQUIPMENT

Definitions

12.1 In this Part:

"guard" means a type of safeguard consisting of a physical barrier which prevents a worker from reaching over, under, around or through the barrier to a moving part or point of operation;

"jumbo" means a mobile platform having one or more levels which provides work areas for persons, machines, tools, drills or other materials;

"point of operation" means the danger area in a machine where a part is being formed or work is being done;

"power transmission part" means any moving part of a machine that transfers power from a power source to a point of operation;

"safeguard" means the use of a guard, a safety device, a shield, an awareness barrier, warning signs, or other appropriate means, either singly or in combination, to provide effective protection to workers from hazards;

"safety device" means a type of safeguard consisting of an arrangement of operating controls, an active or passive physical restraint, an interlock, or a presence sensing device which ensures that a worker cannot access or be in a hazardous area while a machine is operating;

"shield" means a type of safeguard consisting of a physical cover or barrier which restricts but does not prevent access to a hazardous moving part or a point of operation.

General Requirements

Safeguarding requirement

12.2 Unless elsewhere provided for in this Occupational Health and Safety Regulation, the employer must ensure that machinery and equipment is fitted with adequate safeguards which

(a) protect a worker from contact with hazardous power transmission parts,

(b) ensure that a worker cannot access a hazardous point of operation, and

(c) safely contain any material ejected by the work process which could be hazardous to a worker.

Standards

12.3 The application, design, construction and use of safeguards, including an opening in a guard and the reach distance to a hazardous part, must meet the requirements of *CSA Standard Z432-94, Safeguarding of Machinery*.

[en. B.C. Reg. 312/2003, App. A, s. 15.]

Effectiveness of safeguards

12.4 A safeguard must be capable of effectively performing its intended function.

Fixed guards

12.5 A fixed guard must not be modified to be readily removable without the use of tools.

Lubrication

12.6 A guard must be designed, where practicable, to allow lubrication and routine maintenance without removal of the guard.

12.7 Repealed. [B.C. Reg. 312/2003, App. A, s. 16.]

12.8 Repealed. [B.C. Reg. 312/2003, App. D, s. 7.]

12.9 Repealed. [B.C. Reg. 312/2003, App. B, s. 13.]

Identifying unsafe equipment

12.10 An unsafe tool, machine or piece of equipment must be removed from service and identified in a manner which will ensure it is not inadvertently returned to service until it has been made safe for use.

Operating controls

12.11 (1) Powered equipment other than portable powered tools or mobile equipment must have

(a) starting and stopping controls located within easy reach of the operator,

(b) controls and switches clearly identified to indicate the functions they serve,

(c) controls positioned, designed or shielded as necessary to prevent inadvertent activation,

(d) if two-hand controls are installed, controls designed to require concurrent use of both hands to operate the equipment, and to require both controls to be released before another machine cycle can be initiated, and

(e) control systems meeting the requirements of this Regulation.

(2) Portable powered tools and mobile equipment must have operating controls conforming to an appropriate standard acceptable to the Board.

(3) A remote control device that operates mobile equipment must be equipped with a fail safe, or stop, mechanism that becomes operational if the remote control device fails.

[am. B.C. Reg. 139/2021, App. D, s. 5.]

Machinery location

12.12 A machine must be located or safeguarded so that operation of the machine will not endanger workers using normal passage routes about the workplace or operating an adjacent machine.

Marking physical hazards

12.13 A physical hazard must be marked in a manner that clearly identifies the hazard to the affected workers.

Identification of piping

12.14 (1) Repealed. [B.C. Reg. 312/2003, App. D, s. 8.]

(2) A piping system containing substances other than hazardous products must be identified in a manner known to the affected workers.

(3) The identification markings on a piping system must be maintained in a legible condition.

[am. B.C. Regs. 312/2003, App. D, s. 8; 30/2015, s. 34.]

Restraining devices

12.15 Effective means of restraint must be used

(a) on a connection of a hose or a pipe if inadvertent disconnection could be dangerous to a worker,

(b) if unplanned movement of an object or component could endanger a worker, or

(c) to secure an object from falling and endangering a worker.

Guarding Mechanical Power Transmission Parts

Rotating hazards

12.16 Rotating parts, such as friction drives, shafts, couplings and collars, set screws and bolts, keys and keyways, and projecting shaft ends, exposed to contact by workers must be guarded.

Gears and sprockets

12.17 (1) Every gear and chain sprocket must be completely enclosed, or if complete enclosure is impracticable, must have band-type guards with flanges extending below the root of the teeth.

(2) If there is a hazard from rotating spokes, the spokes must be guarded on the sides accessible to workers.

Safeguards for objects or materials

12.17.1 (1) If a log loader or a rail car loader is mounted on rails, tracks or a fixed structure, the loader must not be used by an operator until

(a) a qualified person has completed a written risk assessment of any hazards created by falling, flying or intruding objects or materials that may be present while the loader is being used, and

(b) suitable protective structures, including cabs, windows, screens, grills, shields, deflectors, guards or structures, have been installed on the loader that are designed or approved by the manufacturer of the loader or by a professional engineer to

(i) eliminate, or reduce to the greatest extent possible, the risks identified in the risk assessment referred to in paragraph (a), and

(ii) provide an adequate view for the operator to safely use the machine.

(2) A person must not remain in a cab of a loader that is mounted on rails, tracks or a fixed structure while loads are elevated over the cab unless that cab is protected by an adequate overhead guard.

[en. B.C. Reg. 139/2021, App. D, s. 6.]

Reciprocating machinery

12.18 A crank, connecting rod, tail rod, extension piston rod or other reciprocating or oscillating part exposed to contact by workers must be guarded.

Drive belts

12.19 A power transmission belt, rope or chain must be guarded to protect workers who would be endangered in the event of its failure.

Reaching up

12.20 (1) The in-running nip point of a power transmission belt, rope or chain, and any portion of a flywheel or pulley located within 2.5 m (8 ft) above a floor, walkway or platform must be guarded to prevent contact by workers.

(2) An installation of the type covered by subsection (1) in place before January 1, 1999, which has unguarded parts more than 2.1 m (7 ft) but less than 2.5 m (8 ft) above the floor, walkway or platform may have those portions remain unguarded unless the work process presents an undue risk to workers if those portions remain unguarded, or until such time as the installation is substantially overhauled or renovated.

Flywheels and pulleys

12.21 (1) A pit for a flywheel or pulley must have curbs or toeboards around the upper edge of the pit.

(2) Repealed. [B.C. Reg. 312/2003, App. B, s. 14.]

(3) A flywheel or pulley which is defective or has been exposed to excessive heat must be removed from service and must not be returned to service until it has

been repaired according to the manufacturer's recommendations, or certified safe for use by a professional engineer.

[am. B.C. Reg. 312/2003, App. B, s. 14.]

Conveyors

Standards

12.22 Unless otherwise permitted by this Regulation, a conveyor must meet the requirements of *ANSI Standard ANSI/ASME B20.1-1993, Safety Standards for Conveyors and Related Equipment*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Belt-type conveyors

12.23 A belt conveyor must have accessible nip points of spools and pulleys guarded to prevent contact by a worker.

Screw-type conveyors

12.24 (1) The moving parts of a screw-type conveyor must be guarded from contact by a worker.

(2) Each guard on a screw-type conveyor must be secured by fasteners requiring a tool for removal.

(3) The openings in mesh and grid guards must meet the requirements of Appendix A of *CSA Standard Z432-94, Safeguarding of Machinery*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Feed points

12.25 If the feed point for a conveyor cannot be guarded because of the work process, any workers required to be in the area must have and use suitable devices and tools which prevent the worker from contacting moving parts of the conveyor system.

12.26 Repealed. [B.C. Reg. 312/2003, App. D, s. 9.]

Falling materials

12.27 A conveyor must have guards or sideboards to prevent material from falling from the conveyor into areas occupied by workers if the falling material presents a hazard of impact injury or burn.

Emergency stopping devices

12.28 (1) A conveyor must have an emergency stopping system unless worker access to the conveyor is prevented by guarding.

(2) The conveyor emergency stopping system must be designed and installed so that the system will activate as a worker falls onto the conveyor, or if a fallen worker on the conveyor moves an arm or leg off to one side of the conveyor.

(3) If a conveyor emergency stopping system uses a pull wire, the system must activate by a pull of the wire in any direction, or by a slack cable condition.

(4) The conveyor emergency stopping system must be designed and installed so that after an emergency stop, manual resetting is required before the conveyor can be restarted.

(5) A conveyor must not be restarted after an emergency stop until inspection has determined it can be operated safely.

Power Presses, Brake Presses and Shears

Standards

12.29 Point of operation safeguarding, and the design, construction and reliability of operating controls of a power press, brake press, ironworker or shear must meet the requirements of the following applicable standard:

(a) *CSA Standard CAN/CSA-Z142-M90, Code for Punch Press and Brake Press Operation: Health, Safety, and Guarding Requirements*;

(b) *ANSI Standard B11.4-1993, American National Standard for Machine Tools – Shears – Safety Requirements for Construction, Care, and Use*;

(c) *ANSI Standard B11.5-1988(R1994), American National Standard for Machine Tools – Ironworkers – Safety Requirements for Construction, Care, and Use*.

(d) Repealed. [B.C. Reg. 312/2003, App. A, s. 17.]

[am. B.C. Reg. 312/2003, App. A, s. 17.]

Point of operation safeguarding

12.30 (1) The point of operation of a power press, brake press or shear must be safeguarded to prevent injury to the operator or any other worker.

(2) A hand feeding or extraction tool must not be used as a substitute for point of operation safeguarding.

(3) A guillotine or alligator shear must have a guard or other device which protects the operator from flying particles or material emanating from the shears.

(4) The point of operation of a manually powered press, shear or cutter must be effectively guarded.

Exception for custom work

12.31 The safeguarding for the point of operation of a brake press may be removed if custom or different bends are being done with each cycle of the machine, provided that safe work procedures are followed, and safeguarding is replaced upon completion of such custom work.

Supervisory control

12.32 If a power press or brake press is being used in a production mode the keys for all control selector switches must remain under a supervisor's control.

12.33 Repealed. [B.C. Reg. 312/2003, App. D, s. 10.]

Feed-rolls and Metal-forming Rolls

Feed-rolls

12.34 Feed-rolls must have a guard or safety device to prevent the operator from contacting any in-running nip points.

Guard design

12.35 A feed-roll guard must be effective for the material thickness being processed, and the clearance between the guard and the material passing through the feed-rolls must not exceed 6 mm (1/4 in).

Metal-forming rolls

12.36 If the work process on metal-forming rolls precludes the use of guards, an emergency stopping system must be installed across the machine, and also across the rear (offside) of the machine if a worker is exposed to the hazard on that side, and the emergency stopping system must activate automatically when contacted.

Machine Tools

Splash guards and shields

12.37 Cutting or cooling fluids, metal chips, swarf or turnings from machine tool work must be contained.

Lathe chucks

12.38 Dogs that extend beyond the circumference of a lathe chuck must be safeguarded from contact by the operator.

Restriction on hand polishing

12.39 Lathe stock must be polished with tools designed for this purpose, and the use of hand held strips of abrasive cloth is prohibited.

Stock projection

12.40 Safeguards must be provided to prevent a worker from contacting stock projecting from a machine tool.

Shapers/planers

12.41 A shaper or planer bed opening must be covered or safeguarded to eliminate shearing hazards.

Carriage travel

12.42 Safeguards must be installed at the farthest points of travel of the carriage or table of a shaper, planer, surface grinder or similar equipment to protect workers against contact with moving parts.

Vertical boring mills

12.43 The rim of the revolving table of a vertical boring mill must be safeguarded to prevent contact by workers.

Abrasive Equipment

Standards

12.44 An abrasive wheel must be guarded, used and maintained to meet the requirements of *ANSI Standard B7.1-1988, The Use, Care and Protection of Abrasive Wheels*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Protective hood

12.45 (1) An abrasive wheel must have a protective hood that will contain fragments of the wheel should it break apart while turning.

(2) Subsection (1) does not apply to

(a) an abrasive wheel used for internal work,

(b) a mounted wheel of any shape or type which is 50 mm (2 in) or less in diameter,

(c) a threaded-hole, cone or plug type of wheel if the nature of the work provides protection, or

(d) a portable grinder when it is being used for grinding root passes in welded pipe, provided it has a protective hood covering at least 120° of the wheel periphery and the operator wears adequate eye and face protection.

Speed of abrasive wheels

12.46 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 15.]

(2) The allowable arbor or shaft speed of abrasive equipment must be clearly marked on the equipment.

(3) A pneumatic grinder must have a governor which limits maximum shaft speed to that specified by the tool manufacturer, and the maximum rated speed must be marked on the equipment.

(4) Repealed. [B.C. Reg. 312/2003, App. B, s. 15.]

[am. B.C. Reg. 312/2003, App. B, s. 15.]

Grinding prohibitions

12.47 The side of an abrasive wheel must not be used for grinding and non-ferrous materials must not be ground unless the wheel is designed for such use.

Work rests

12.48 When the work is hand-held, a grinding machine must have an adjustable work rest with its upper edge at or above the centreline of the abrasive wheel and within 3 mm (1/8 in) of the cutting surface.

Dust control

12.49 Dust from a grinding or buffing operation must be controlled to prevent a hazard to any worker.

12.50 Repealed. [B.C. Reg. 312/2003, App. B, s. 16.]

Powder Actuated Tools

Standards

12.51 A powder actuated fastening system, consisting of the tool, power loads and fasteners must meet the requirements of *ANSI Standard A10.3-1995, American National Standard for Construction and Demolition Operations – Safety Requirements for Powder-Actuated Fastening Systems*.

[am. B.C. Reg. 312/2003, App. A, s. 4.]

Tool selection

12.52 A low velocity powder actuated tool, with a fastener test speed rating of less than 100 m (330 ft) per second, must be used unless no low velocity tool available on the market is capable of doing the fastening task.

Tool design

12.53 (1) Two separate and distinct operations must be required to activate a powder actuated tool and the final firing movement must be separate and subsequent to depressing the tool into the firing position.

(2) The tool must be designed so that positive means of varying the power level is available, or can be made available, so that the operator may select a power level appropriate to perform the desired work.

Markings

12.54 (1) A powder actuated tool must be marked with the manufacturer's name or trademark, model number and serial number.

(2) A guard or accessory for use with a powder actuated tool must be marked with the manufacturer's name or trademark.

Storage

12.55 (1) When not in use, a powder actuated tool must be unloaded and the tool and power loads must be securely stored and be accessible only to qualified and authorized persons.

(2) Power loads of different power levels and types must be kept in different compartments or containers.

Tool use

12.56 (1) Only a qualified person may handle or use a powder actuated tool or power loads.

(2) The operator must have immediately available when using or servicing a powder actuated tool

(a) a copy of the manufacturer's operating instructions for the tool,

(b) a copy of the power load and fastener charts for the tool, and

(c) any accessories or tools needed for use or field servicing of the tool, including personal protective equipment.

(3) Repealed. [B.C. Reg. 312/2003, App. B, s. 17 (b).]

(4) A powder actuated tool must not be used in an explosive or flammable atmosphere.

(5) A powder actuated tool may only be loaded when it is being prepared for immediate use, and must be unloaded at once if work is interrupted after loading.

(6) A powder actuated tool must not be pointed at any person.

(7) If a powder actuated tool misfires, the operator must hold the tool firmly against the work surface for at least 5 seconds, then follow the manufacturer's instructions for such occurrences, and until the cartridge has been ejected, keep the tool pointed in a direction which will not cause injury to any person.

[am. B.C. Reg. 312/2003, App. B, s. 17.]

Limitations on use

12.57 (1) A powder actuated tool fastener must not be driven into very hard or brittle materials, such as cast iron, glazed tile, hardened steel, glass block, natural rock, hollow tile, and most brick.

(2) A powder actuated tool fastener may only be driven into easily penetrated or thin materials or materials of unknown resistance if the receiving material is backed by a material that will prevent the fastener from passing completely through.

(3) A powder actuated tool fastener must not be driven into steel within 13 mm (1/2 in) of an edge, or within 5 cm (2 in) of a weld except for special applications permitted by the tool manufacturer.

(4) Except for special applications recommended by the manufacturer, a powder actuated tool fastener may not be driven into masonry materials

(a) within 7.5 cm (3 in) of an unsupported edge with a low velocity tool, or

(b) within 15 cm (6 in) of an unsupported edge with a medium or high velocity tool.

(5) A powder actuated tool fastener must not be driven

(a) into concrete unless material thickness is at least 3 times the fastener shank penetration,

(b) into any spalled area, or

(c) through existing holes unless a specific guide means, as recommended and supplied by the tool manufacturer, is used to assure positive alignment.

Woodworking Tools and Equipment

Hand feeding

12.58 A template, jig, or pushstick must be used if there is a risk of injury to a worker's hands when feeding woodworking machinery.

Removing guards

12.59 (1) If the use of a guard on woodworking machinery is clearly impracticable for a specific operation, the guard may be removed, but an appropriate pushstick, jig, feather board or similar device must be used to prevent the operator encroaching into the cutting area, and upon completion of the operation the guard must be replaced.

(2) A guard may otherwise only be removed if the guard itself creates a hazard, or if its removal is necessary for maintenance.

Kickback fingers, splitters and spreaders

12.60 (1) If a hand-fed circular saw is used for ripping wood, or is used for any other purpose where there is a risk of kickback, the circular saw must have

(a) anti-kickback fingers and a splitter or spreader designed to prevent kickback, or

(b) a riving knife designed to prevent kickback.

(2) Subsection (1) does not apply when the circular saw is used for grooving, dadoing or rabbeting.

[en. B.C. Reg. 312/2012, App. A, s. 1.]

Radial arm saw travel limits

12.61 The cutting table and the saw travel stop on a radial arm saw must be designed and maintained so that no part of the saw blade can travel past the forward edge of the cutting table.

Jointers

12.62 A hand-fed wood jointer must have a self adjusting guard over the cutting head on the working side and a guard over the portion of the cutting head behind the fence.

Sanding machines

12.63 (1) The revolving drums, pulleys, nip points, and unused runs of a sanding belt of a sanding machine must be effectively guarded.

(2) Guards must be arranged so that only the portion of the belt necessary for the operation is exposed.

Tenoning machines

12.64 A hand-fed tenoning machine must have a device which holds the material being cut.

Hand-held circular saws

12.65 A hand-held circular saw must have a guard which automatically adjusts to the thickness of the material being cut, and which, when the saw is withdrawn from the material, completely covers the cutting area of the blade.

Cutting heads

12.66 (1) A cutting head on a woodworking tool or piece of equipment such as a router, a shaper or a sticker must be properly adjusted and secured.

(2) If two or more knives are used in one head, they must be balanced.

(3) A cutting head protective hood fitted on woodworking equipment must be strong enough to contain fragments which result from failure of cutting head components.

(4) A small hand-held router using a one piece cutting bit is exempt from the requirements of subsection (3).

Band saws

12.67 (1) A band saw blade must be enclosed or guarded, except for the working side of the blade between the guide rolls and the table.

(2) A band saw wheel must be fully encased.

Mobile Chippers

Hand-fed chippers

12.68 A hand-fed mobile chipper must have a barrier or baffle installed on the feed side of the rotor to prevent the ejection of chipped material.

Self-feeding chippers

12.69 A self-feeding chipper must have a table or apron extending at least 1.5 m (5 ft) back from the rotor with sides sufficiently high to prevent a worker from reaching in and contacting the rotating knife.

Driven-feed chippers

12.70 (1) A driven-feed chipper must have

(a) a feed table that meets both of the following requirements:

(i) the feed table, including the drop-down extension, if any, must extend at least 150 cm (59 in) from the nip point of the feed rollers;

(ii) the total distance from the nip point of the feed rollers to the ground must be at least 210 cm (82 in), as measured along the centre line of the feed table to the lip of the feed table and then vertically from the lip of the feed table to the ground,

(b) side walls on the feed table, including any drop-down extension, and on the guard chute that are of sufficient height to prevent a worker who is standing on the ground from reaching the feed rollers, and

(c) a feed control bar that is

(i) located across the top and close to the feed end of the guard chute, and

(ii) designed so that a worker endangered by the feed rollers is able to stop or reverse the feed rollers both by

(A) pushing the feed control bar to its forward travel limit, and

(B) pulling the feed control bar to its rearward travel limit.

(2) No part of a person's body may be on the feed table or in the guard chute unless

(a) the feed rollers have stopped, and

(b) the motor of the driven-feed chipper is turned off and locked out.

(3) Despite subsection (1), a driven-feed chipper that is in use in British Columbia before February 1, 2012 may continue to be used if

(a) the driven-feed chipper meets the requirements of subsection (1) (a) and (b),

(b) the feed control bar meets the requirements of subsection (1) (c) (i), and

(c) the feed control bar is designed so that a worker endangered by the feed rollers is able to stop or reverse the feed rollers by at least one of the means set out in subsection (1) (c) (ii).

[en. B.C. Reg. 188/2011, App. E, s. 1.]

Vertically fed chippers

12.71 On a mobile chipper which gravity feeds material through a vertical hopper to the rotor, the sides of the hopper must be of a depth which prevents the operator from reaching in so as to contact the rotor, but which, in no case, is less than 90 cm (3 ft) measured from the top edge of the hopper to the periphery of the rotor.

Chain Saws

Standards

12.72 (1) A chain saw must meet the requirements of *CSA Standard Z62.1-95, Chain Saws*.

(2) A chain saw must have a chain brake that activates automatically upon kickback regardless of the position of the power head or operator's hands.

(3) A chain saw manufactured before January 1, 1999, with a guide bar exceeding 66 cm (26 in.), measured from the top of the cutters at the bar tip to the point of the "dogs" or "bumper spikes", is exempt from the requirement for a chain brake.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Stopping chain movement

12.73 A chain saw chain must be stopped before the saw operator moves from cut to cut, unless the next cut is in the immediate area and the saw operator can safely move to the next cutting position.

Automotive Lifts and Other Vehicle Supports

Standards

12.74 (1) An automotive lift must meet the requirements of *ANSI Standard ANSI/ALI ALCTV-1998, American National Standard for Automotive Lifts – Safety Requirements for Construction, Testing and Validation*.

(2) The operation, inspection and maintenance of an automotive lift must meet the requirements of *ANSI Standard ANSI/ALI ALOIM-2000, American National Standard for Automotive Lifts – Safety Requirements for Operation, Inspection and Maintenance*.

(3) Portable automotive lifting devices and vehicle supports must meet the requirements of the applicable section of *ANSI Standard ASME PALD-2003, Safety Standard for Portable Automotive Lifting Devices*.

[en. B.C. Reg. 17/2006, s. 1.]

Assembly and installation

12.75 An automotive lift, portable automotive lifting device or other vehicle support must be assembled and installed by qualified personnel.

[am. B.C. Regs. 312/2003, App. B, s. 18; 17/2006, s. 2.]

Operation

12.76 Operation, inspection, repair, maintenance and modification of an automotive lift, portable automotive lifting device or other vehicle support must be carried out according to the manufacturer's instructions or the written instructions of a professional engineer.

[am. B.C. Reg. 17/2006, s. 3.]

Records

12.77 The employer must keep a maintenance, inspection, modification and repair record for each automotive lift.

[en. B.C. Reg. 17/2006, s. 4.]

Inspection and testing

12.78 An automotive lift must be inspected and tested monthly in a manner acceptable to the Board, unless the manufacturer requires more frequent inspection and testing.

[am. B.C. Reg. 17/2006, s. 5.]

Rated capacity

12.79 (1) The rated capacity must be marked on each automotive lift, portable automotive lifting device or other vehicle support and must not be exceeded.

(2) Repealed. [B.C. Reg. 312/2003, App. C, s. 3 (c).]

(3) If the rated capacity of a device listed in subsection (1) is dependent on the concurrent use of 2 or more devices, the number of devices required to achieve the rated capacity must be clearly marked on the devices.

[am. B.C. Regs. 312/2003, App. C, s. 3; 17/2006, s. 6.]

Controls

12.80 The control for an automotive lift must require continuous pressure by the operator when raising or lowering the unit, and the control must return to the neutral position when released.

Vehicle restraint

12.80.1 Before a runway type automotive lift is used,

(a) manual wheel chocks must be used as the primary means to restrain the vehicle from movement, and

(b) automatic or fixed stops, or a combination of them, must be provided and used as a secondary means to prevent the vehicle from inadvertently rolling off either end of the runway.

[en. B.C. Reg. 17/2006, s. 7.]

Swing-arm restraint

12.80.2 (1) An automotive lift that has swing arms must have swing-arm pivot restraints if

(a) no part of the rigid superstructure is under the raised vehicle, or

(b) the lift has 2 or more superstructures and the clearance between the rigid parts of the superstructures on each side of the vehicle is 1.3 m (51 in.) or more.

(2) Swing-arm pivot restraints required under subsection (1) must be designed and maintained to prevent unintentional removal or disengagement of the swing-arm pivot restraints when a vehicle is being supported by the automotive lift.

[en. B.C. Reg. 312/2010, App. I.]

Miscellaneous Equipment

Tumblers

12.81 A tumbler drum must be guarded or enclosed, and any access door in a guard or enclosure must have interlocks which prevent the access door from being opened while the drum is rotating, and the drum from operating while the access door is open.

Pneumatic nailing and stapling tools

12.82 (1) A hand held pneumatic nailing or stapling tool capable of driving fasteners larger than 1.2 mm (0.05 in. or 18 gauge ASWG) must not activate unless the operator performs 2 actions, one of which is to place the tool against a work surface.

(2) The trigger of a pneumatic nailing or stapling tool must not be taped or otherwise secured in the "on" position, or held in the "on" position while moving between operations.

(3) The air supply to a pneumatic nailing or stapling tool must be disconnected before adjusting or servicing the tool.

(4) Repealed. [B.C. Reg. 312/2003, App. B, s. 19.]

[am. B.C. Reg. 312/2003, App. B, s. 19.]

Industrial robots

12.83 An industrial robot or robot system must be installed, safeguarded, maintained, tested and started, used, programmed and workers trained to meet the requirements of

(a) *CSA Standard CAN/CSA-Z434-94, Industrial Robots and Robot Systems – General Safety Requirements*, or

(b) *ANSI Standard ANSI/RIA R15.06-1992, American National Standard Industrial Robots and Robot Systems – Safety Requirements*.

(c) Repealed. [B.C. Reg. 312/2003, App. A, s. 18 (c).]

[am. B.C. Reg. 312/2003, App. A, s. 18.]

Chassis dynamometers – motor vehicle testing

12.83.1 (1) In this section:

"guard screen" means a screen manufactured from shock-absorbing material and designed to prevent any material striking the screen from ricocheting;

"motor vehicle" means a wheeled vehicle that is propelled by motorized or electric power, but does not include a vehicle that is designed to be used on rails or tracks.

(2) Only a qualified worker may

(a) test a motor vehicle on a chassis dynamometer, or

(b) operate a motor vehicle, chassis dynamometer or other test equipment for the purpose of testing a motor vehicle on a chassis dynamometer.

(3) Before a motor vehicle is tested on a chassis dynamometer, the wheels and tires of the motor vehicle must be inspected by a qualified worker.

(4) A motor vehicle must not be tested on a chassis dynamometer if any of the following apply:

(a) the tires on the motor vehicle contain rocks, stones or other foreign material embedded in the tire treads;

(b) the tires on the motor vehicle are studded;

(c) the wheels or tires on the motor vehicle are incapable of operating safely at the speeds to be reached during testing;

(d) the wheels or tires on the motor vehicle bounce during testing in a manner that is likely to cause the motor vehicle to move laterally off the rolls;

(e) the motor vehicle is likely, without continuous corrective steering, to move laterally off the rolls during testing.

(5) The following safety measures must be taken when testing a motor vehicle on a chassis dynamometer:

(a) the chassis dynamometer must be equipped with front-mounted idler safety rolls unless the motor vehicle is chained or otherwise secured to anchor points to prevent runaways;

(b) wheel chocks must be used to block the non-driving wheels to prevent runaways;

(c) in the case of a motor vehicle with front-wheel drive, the motor vehicle must be prevented from moving laterally during testing;

(d) guard screens of a size that is appropriate for the motor vehicle must be positioned behind the rear of the motor vehicle to block any materials that may be ejected from or by the wheels or tires;

(e) the exposed portions of the moving rolls of the chassis dynamometer must be fitted with adequate guards while the rolls are in motion during testing;

(f) exhaust gases from the motor vehicle must be removed from the work area.

[en. B.C. Reg. 9/2017, App. H.]

Drilling Rock or Similar Materials

General requirement

12.84 The employer must ensure that before drilling

(a) the back, face and sides of the work area have been scaled and stabilized,

(b) the working face and surrounding area have been thoroughly washed, and

(c) remnants of holes have been inspected for explosives and distinctively marked.

Drilling equipment

12.85 The employer must ensure that

(a) a rock drill is not used unless equipped with a water jet or other device capable of suppressing rock dust, and

(b) adequate restraining devices are installed on hose connections under pressure, if inadvertent disconnection could endanger workers.

Control location

12.86 Operating controls must not be installed on the feed slide of a top-hammer percussion drill.

Boom hazard

12.87 A worker must not proceed beyond the front of the drill controls of a drill jumbo if the drills are in operation, unless the drilling equipment is specifically designed and certified for that purpose.

Drill jumbos

12.88 (1) A drill jumbo that contains decks must be

(a) fitted with guardrails and toeboards, meeting the requirements of Part 4 (General Conditions), around the upper decks,

(b) equipped with a rack or receptacle for securely storing drill rods and other equipment,

(c) provided with safe access to each working level,

(d) provided with a visual warning system to warn workers located below the upper decks, before a worker above collars a hole or removes the boom stabilizer from the face after finishing a hole, and

(e) securely fixed in position at the face to prevent inadvertent movement during drilling operations.

(2) Explosives must not be brought onto or under a drill jumbo during a drilling operation, nor may holes be loaded until drilling is complete.

Drilling procedures

12.89 A driller must ensure that

(a) the cut is not drilled in the same location as the previous round,

(b) holes are not drilled within 15 cm (6 in) of any part of a bootleg as defined in section 21.1, and

(c) there is no drilling at a face when a hole is loaded or being loaded with explosives except in conformity with the requirements on drilling to refire a misfire, as specified in Part 21 (Blasting Operations).

[am. B.C. Reg. 207/2021, App. A, s. 1.]

Rod handling

12.90 (1) A drill operator working without a helper must not manually add or remove drill steel or a drill bit, or service drilling equipment, while the drill is rotating under power.

(2) A worker assisting the drill operator with drill bit or drill steel handling must remain clear of rotating parts of the drill system.

(3) Except as provided in subsection (4), a boom-mounted percussion drill being used with multiple lengths of coupled drill steel must have a rod changer or other effective device installed and used to add or remove drill steel.

(4) If it is not practicable to fit a rod changer to a boom-mounted percussion drill, adequate written safe work procedures for adding and removing drill steel must be available, and the drill must be operated in accordance with those procedures.

Self-propelled rock drills

12.91 A self-propelled rock drill without a ROPS

(a) must have controls for machine travel that allow the operator to access the controls

(i) while standing on the upslope side of the machine, or

(ii) from a position off the machine and upslope from it, and

(b) may only be moved under its own power if the operator is in a position referred to in paragraph (a) (i) or (ii), so that the operator is already off the machine or in a position to safely step off the machine should it roll or slide downhill.

[en. B.C. Reg. 139/2021, App. D, s. 7.]

Cleaning drilled holes

12.92 If a drilled hole is being cleaned using an air or water pressure blowpipe, the operator must ensure that everyone is clear of the area made hazardous by blowback.

Breaking and Melting Metal

Breaking metal

12.93 An effective guard or barrier must be installed to protect workers from flying metal fragments if a drop weight or other impact device is used to break castings or other metal.

Inspection of linings

12.94 A furnace, crucible, ladle, mould or other equipment for handling or containing molten metal must be inspected at regular intervals to determine the condition of the lining, and if any abnormal deterioration is observed the equipment must be removed from service without delay.

Preventing eruptions

12.95 All practicable means must be used to prevent eruptions caused by moisture in furnaces, ladles, crucibles, molds and other equipment containing molten metal.

Inspection of materials

12.96 (1) Material to be put in a melting furnace must be carefully inspected to ensure that a cylinder, tank or similar closed vessel of any description is not placed in the furnace.

(2) Before being exposed to the intense heat of a furnace, a closed vessel must be cut open to eliminate the explosion hazard, but must not be cut open using a method involving the application of heat or flame.

(3) If a worker must be situated near an open furnace during charging operations, the material to be melted must be carefully examined and, if necessary, must be sufficiently preheated to ensure that moisture and foreign substances are eliminated.

(4) Preheating must be done under controlled circumstances to ensure that no worker is endangered by the process.

Abrasive Blasting and High Pressure Washing

Definitions

12.97 In sections 12.97 to 12.111:

"cabinet" means an enclosure designed to permit abrasive blasting, high pressure washing or a similar operation to be conducted safely inside the enclosure by a worker who is outside the enclosure;

"enclosure" means a temporary or permanent enclosure of a work area provided with exhaust ventilation and makeup air to reduce exposure of workers inside the enclosure and prevent the uncontrolled release of air contaminants from the enclosure;

"high pressure washing" or **"jetting"** means the use of water or other liquid delivered from a pump at a pressure exceeding 34 MPa (5 000 psi), with or without the addition of solid particles, to remove unwanted matter from a surface or to penetrate into the surface of a material for the purpose of cutting that material.

Risk assessment

12.98 The employer must ensure that a risk assessment is done before any abrasive blasting activity, high pressure washing process, or related cleanup is started which may cause release of a harmful level of an air contaminant from a surface or coating containing a toxic heavy metal or asbestos.

Work procedures outside a cabinet

12.99 If abrasive blasting, high pressure washing or a similar operation is conducted by a worker outside a cabinet, written safe work procedures addressing the hazards and necessary controls must be prepared and implemented by the employer.

Substitution

12.100 Abrasive blasting materials containing crystalline silica must be replaced with less toxic materials, when practicable.

Reuse prohibition

12.101 (1) An abrasive material must not be reused if it

(a) contains crystalline silica, or

(b) becomes contaminated with any harmful impurities including metals such as lead, chromium, nickel or mercury.

(2) The requirements of subsection (1) do not apply to a fully enclosed, vented cabinet designed to recirculate the abrasive material.

Cleanup

12.102 (1) Used abrasive blasting materials which contain a substance designated under section 5.57 must be removed from the work area by using effective procedures designed to minimize the generation of airborne dust, and suitable personal protective equipment.

(2) Removal under subsection (1) must take place by the end of each shift unless

(a) a risk assessment establishes that the risks from removal will exceed the risks from leaving the materials in place,

(b) no workers will be exposed to the materials before removal occurs, or

(c) the materials cannot be separated from the environment in which the abrasive blasting takes place.

(3) If removal is delayed pursuant to subsection (2), the employer must assess the risks arising from delaying the removal and develop safe work procedures.

(4) The work procedures developed under subsection (3) must be in writing.

[en. B.C. Reg. 253/2001, s. 8.]

Engineering controls

12.103 Engineering controls such as an enclosure or local exhaust ventilation with dust collection must be used to maintain airborne contaminant levels below exposure limits, where practicable.

Exhaust ventilation

12.104 (1) When abrasive blasting or a similar operation is conducted within a structure, the process must be isolated in a separate, properly ventilated enclosure or cabinet to minimize worker exposure to air contaminants generated by the process.

(2) When abrasive blasting or a similar operation is conducted inside an enclosure or cabinet, the enclosure or cabinet must have exhaust ventilation that

(a) maintains air pressure below the air pressure outside the enclosure or cabinet, so as to prevent the escape of air contaminants from the enclosure or cabinet to other work areas, and

(b) minimizes worker exposure inside the enclosure.

Restricted work zones

12.105 (1) When abrasive blasting or a similar operation is conducted outside a structure, the process must be restricted to a work zone which is identified by signs or similar means as being a contaminated area.

(2) Only properly protected workers who are necessary to perform the work are permitted inside an enclosure or a restricted work zone where abrasive blasting or a similar operation is conducted.

Operating controls

12.106 (1) The operating controls for a sandblasting machine or jetting gun must be

(a) located near the nozzle in a position where the operator's hands will be when using the device,

(b) the continuous pressure type that immediately stops the flow of material when released, and

(c) protected from inadvertent activation.

(2) Subsection (1) (a) does not apply to sandblasting machines or jetting guns used in operations where hand operated controls are clearly impracticable, in which case the operator must use a foot operated control or equivalent safety device, both of a design acceptable to the Board.

[en. B.C. Reg. 253/2001, s. 9.]

12.107 Repealed. [B.C. Reg. 312/2003, App. B, s. 20.]

Jetting gun

12.108 A jetting gun must not be modified except as authorized by the manufacturer.

Holding work

12.109 A worker must not hand hold an object while it is being cleaned or cut by a jetting gun.

Hose restraint

12.110 High pressure hoses, pipes, and fittings must be supported to prevent excessive sway and movement.

Personal protective equipment

12.111 (1) A nozzle or jetting gun operator must wear personal protective clothing and equipment on the body, hands, arms, legs and feet, including the metatarsal area, made of canvas, leather or other material which will protect the worker's skin from injury in the event of contact with the flow from the nozzle.

(2) Unless the process is isolated from the operator in a separate cabinet, a suitable respirator must be provided and worn whenever abrasive blasting or a similar operation is conducted.

[am. B.C. Reg. 312/2010, App. G, s. 13.]

Welding, Cutting and Allied Processes

Standards

12.112 Welding, cutting and similar processes must be carried out according to the requirements of *CSA Standard W117.2-94, Safety in Welding, Cutting, and Allied Processes*.

[en. B.C. Reg. 312/2003, App. B, s. 21.]

12.113 Repealed. [B.C. Reg. 312/2003, App. E, s. 5.]

Ventilation

12.114 Effective local exhaust ventilation must be used at any fixed work station to minimize worker exposure to harmful air contaminants produced by welding, burning or soldering.

Coatings on metals

12.115 A coating on metal which could emit harmful contaminants (such as lead, chromium, organic materials, or toxic combustion products) must be removed from the base metal, whenever practicable, before welding or cutting begins.

Flammable and explosive substances

12.116 (1) A container which may have held a combustible substance must be thoroughly cleaned before any welding or burning operation is carried out on the container.

(2) Burning, welding or other hot work must not be done on any vessel, tank, pipe or structure, or in any place where the presence of a flammable or explosive substance is likely until

(a) tests have been made by a qualified person to ensure the work may be safely performed, and

(b) suitable safe work procedures have been adopted, including additional tests made at intervals that will ensure the continuing safety of the workers.

Silver solder

12.117 Silver solder containing cadmium must not be used without prior written approval from the Board.

Correct equipment

12.118 Welding equipment, including regulators, automatic reducing valves and hoses, must be used only for the gas for which it is designed.

Equipment inspection

12.119 Before using gas welding or burning equipment, the operator must ensure that the equipment is free from defects, leaks, oil and grease.

Flashback prevention

12.120 Suitable safety devices to prevent reverse gas flow and to arrest a flashback must be installed on each hose in an oxyfuel system, between the torch and the regulator.

[am. B.C. Reg. 312/2003, App. B, s. 22.]

Receptacles for stubs

12.121 Receptacles for electrode stubs must be provided and used.

Radiation protection

12.122 (1) Arc welding must not be carried out unless workers who may be exposed to radiation from the arc flash are protected by adequate screens, curtains or partitions or wear suitable eye protection.

(2) A screen, curtain or partition near an arc welding operation must be made of or be treated with a flame resistant material or coating, and must have a nonreflective surface finish.

Protective clothing and equipment

12.123 A worker involved in welding or burning operations must wear

(a) flame resistant work clothing,

(b) gauntlet gloves of leather or other suitable material and arm protection,

(c) an apron of leather or other suitable material for heavy work,

(d) eye and face protection against harmful radiation, particles of molten metal, and while chipping and grinding welds, and

(e) substantial safety footwear made of leather or other suitable material.

Respiratory protection

12.124 A respirator must be provided and worn if an effective means of natural, mechanical or local exhaust ventilation is not practicable

(a) during short duration welding, burning or similar operations, and

(b) during emergency work.

[en. B.C. Reg. 253/2001, s. 10; am. B.C. Reg. 312/2010, App. G, s. 14.]

Marking hot work

12.125 Recently welded or flame cut work must be marked "HOT" or effectively guarded to prevent contact by a worker, if a worker not directly involved in the hot work is likely to enter the work area.

Fire extinguishers

12.126 (1) At least one fire extinguisher of a suitable type and capacity must be immediately available at a work location where welding or cutting is done.

(2) Fire extinguisher locations must be marked and made known to workers.

Painting, Coating and Work with Plastics and Resins

Application

12.127 Sections 12.128 to 12.141 apply to a workplace in which there is spraying or use of a paint or similar coating, a fibre reinforced resin, a thermoplastic material, an expandable resin foam, or other similar materials.

Substitution

12.128 (1) An employer must ensure that a less hazardous substance or work process is substituted for a higher hazard substance or process, whenever practicable.

(2) The employer must ensure that a substitute for a paint containing toxic heavy metal components is used if an alternative product exists.

Restrictions

12.129 (1) A toxic (WHMIS D1 or D2) or flammable chemical or chlorofluorocarbon must not be used as a propellant in spraying operations.

(2) Spraying a flammable or other hazardous product is prohibited within a general work area, unless effective controls have been installed to control the fire, explosion and toxicity hazards.

(3) When practicable, a coating must not be applied to a material about to be welded.

Warning signs

12.130 A work area or enclosure where hazardous materials are handled or used must be posted with suitable signs or placards warning workers of the hazards within the identified restricted access area and stating the precautions for entry into the area.

Enclosure

12.131 When practicable, a ventilated spray booth or other enclosure designed to control worker exposure must be used during

(a) any operation or process which involves spraying a paint or resin,

(b) lay-up or moulding of reinforced plastic, or

(c) any application of a paint, coating or insulation containing a sensitizer such as an isocyanate compound, or similar operations using very toxic materials.

Air flow

12.132 (1) The air velocity through a horizontal flow spray booth, a vertical flow, down-draft booth or other enclosure required by section 12.131 must be at least

(a) 50 cm/s (100 fpm) if the cross-sectional area is 14 m^2 (150 ft^2) or less, and

(b) 25 cm/s (50 fpm) if the cross-sectional area is greater than 14 m^2 (150 ft^2).

(2) In outdoor applications of materials listed in section 12.131, an air velocity across the work area of at least 0.25 m/s (50 fpm) must be assured, by mechanical means if necessary, to carry vapours and aerosols away from the breathing zone of a worker.

Control of ignition sources

12.133 A ventilation system used to control airborne contaminants must have electrical and mechanical systems designed to control all potential ignition sources.

[en. B.C. Reg. 312/2003, App. E, s. 6.]

Arrester filters

12.134 (1) A ventilation system subject to heavy concentrations of overspray from the operation must have an arrester filter.

(2) An arrester filter must be maintained in good operating condition and replaced when the pressure drop across the filter exceeds the design criteria.

Respiratory protection

12.135 Each worker who is or may be exposed to an airborne contaminant generated by a spray operation involving a sensitizing agent referred to in section 5.57 (1) must be provided with and wear a supplied-air respirator.

[am. B.C. Regs. 315/2003, App. A, s. 14; 312/2010, App. G, s. 15.]

Disposal of isocyanate containers

12.136 Empty, non-returnable containers which contained isocyanates must be decontaminated by filling them with water and allowing them to stand for a minimum of 48 hours, without being sealed, stoppered or closed, after which they must be pierced to prevent re-use.

12.137 Repealed. [B.C. Reg. 312/2003, App. F, s. 3.]

Airless spray equipment

12.138 An airless spray gun must have

(a) a means to electrically bond the gun to the paint reservoir and pump,

(b) a guard that will protect against trigger activation if the gun is dropped, and

(c) the trigger function configured to require two distinct operations by the user to activate the release of paint or fluid through the nozzle, or a safety device which prevents the nozzle tip from coming into contact with a worker.

Design for high pressure

12.139 An airless spray gun, hose, fitting and pressure vessel must be designed and constructed to withstand the pressure involved.

Heating plastics

12.140 Emissions from operations involved in heating plastics to temperatures which may release thermal decomposition products must be removed from the workplace by local exhaust ventilation when there is a risk of harm to a worker from exposure to these emissions.

Resin foams

12.141 (1) A foam installation process performed indoors must be controlled or contained so that unprotected workers are not exposed to emissions by using an enclosure, portable local exhaust ventilation, or scheduling arrangements.

(2) A foam installation process performed outdoors and relying on natural ventilation must be done in an area restricted to authorized personnel wearing adequate personal protective equipment.

Laundry and Dry Cleaning Activities

Definitions

12.142 In sections 12.143 to 12.166:

"dry-to-dry machine" means a system in which the washing and drying is done in a single machine that is vented to a vapour recovery system or to the atmosphere during the drying and deodorizing phases of the machine cycle;

"fully enclosed refrigerated system" means a system in which the washing and drying is done in a single machine that is not vented to either a vapour recovery system or to the atmosphere during the drying and deodorizing phases of the machine cycle;

"spot cleaning" means applying spotting solvents or solutions by hand to remove spots or stains;

"transfer system" means a system in which the washing and drying is done in separate machines.

Dry Cleaning

Open cleaning prohibited

12.143 Dry cleaning in an open vessel by immersion, agitation, or spraying is prohibited except as required for spot cleaning.

Systems and equipment

12.144 (1) Dry cleaning systems and equipment must be designed, installed, operated and maintained to prevent the escape of solvent.

(2) Dry cleaning solvents may only be used in transfer, dry-to-dry, or fully enclosed refrigerated systems designed and installed for this purpose.

[am. B.C. Reg. 312/2003, App. B, s. 23.]

Equipment labels

12.145 A dry cleaning machine must have a label specifying the chemical name of the solvent it has been designed to use.

Solvent handling

12.146 Dry cleaning solvents and additives must be stored and handled in a manner that minimizes evaporation and spillage.

Bulk storage

12.147 A dry cleaning solvent bulk storage tank located inside a building must be effectively vented to the outdoors.

Machine ventilation

12.148 (1) A transfer, dry-to-dry, or fully enclosed refrigerated system must have an effective exhaust ventilation system which operates whenever the loading door is open to create an airflow into the door opening of at least 50 cm/sec (100 fpm) averaged across the face of the opening, and which maintains the concentration of solvent vapour in the workplace below the applicable exposure limits.

(2) A fully enclosed refrigerated system is exempt from the requirements of subsection (1) if workers are not exposed to levels of solvent vapours above 50% of the applicable exposure limits.

General ventilation

12.149 A dry cleaning area must have adequate general ventilation to maintain the concentration of evaporated solvents below the applicable exposure limits.

Inspection and repair

12.150 Dry cleaning equipment must be regularly inspected for liquid and vapour leaks, and any leaks must be repaired promptly.

Open flame heaters

12.151 An open flame heating apparatus must not be located in the same work area as a dry cleaning machine and must have corrosion-resistant flue and draft hoods to conduct products of combustion to the outdoors.

Combustion air supply

12.152 A flame heating apparatus must not obtain combustion air from areas subject to contamination with dry cleaning solvent vapours.

Vents

12.153 A vent pipe and duct which carries solvent vapour from a dry cleaning process, solvent recovery equipment or dry cleaning work area must

(a) have vapour-proof joints,

(b) discharge to the outside atmosphere at least 1.8 m (6 ft) above the roof peak and at least 3 m (10 ft) from any door, window or other building opening, and

(c) not discharge into any flue used for combustion products, nor into any building ventilation duct.

Servicing and maintenance

12.154 (1) A worker who may be exposed to dry cleaning solvent liquid or vapour during equipment servicing such as changing solvent filters, must wear appropriate personal protective equipment to prevent inhalation and skin contact.

(2) A filter or filter material that has been used in a dry cleaning system must be placed in a metal container with a tight fitting lid and stored in a well ventilated area.

Emergency ventilation

12.155 (1) Supplemental floor level emergency ventilation equipment must be available within 4.6 m (15 ft) of the dry cleaning equipment for use in the event of a spill, leak or accidental release of solvent liquid or solvent vapour.

(2) Supplemental ventilating equipment must be capable of changing the air in the dry cleaning area every 5 minutes (12 room-air changes per hour).

(3) The control switch for supplemental ventilation equipment must be readily accessible in an emergency, and must be clearly identified by signs or similar means.

Spotting chemicals

12.156 (1) A work surface where spot cleaning is done must be designed to contain spills and minimize exposure.

(2) Spotting chemicals must be kept in containers which will prevent skin contact, and appropriate skin protection must be used when spot cleaning is done.

Supplier responsibility

12.157 When articles are sent for processing to a laundry or dry cleaning facility, the employer sending the articles must advise the operator of the facility, in writing, of

(a) the identity of any materials contained with the articles which could pose a hazard to workers handling the articles,

(b) the nature of any hazard that may arise from the materials, and

(c) general precautionary measures to be followed when handling the materials.

Operator responsibility

12.158 If articles to be processed may contain materials such as hazardous biological or chemical contaminants, sharp objects, or other materials which would pose a hazard to workers handling the articles, the operator of a laundry or dry cleaning establishment must

(a) determine the nature of any hazard to workers,

(b) develop effective written safe work procedures to minimize the risk of injury and disease, and

(c) ensure that workers are adequately instructed and directed to follow the safe work procedures.

Laundry Equipment

Flatwork ironers

12.159 Feed-rolls for a flatwork ironer must have a front mounted trip bar designed to stop the machine on contact, or a fixed guard that will prevent the operator's hands from entering the rolls.

Roller-type ironers

12.160 (1) A roller-type ironer must have a front mounted fixed guard, designed to prevent the operator's hands from entering the rolls.

(2) The hot roll must be guarded to prevent contact by workers.

Press-type ironers

12.161 (1) A press-type ironer must have an automatic device to prevent the application of injurious pressure when the operator's fingers are between the bed and the pressure-head, or have a device which requires both of the operator's hands to be removed from the danger zone when the machine is tripped.

(2) Hand controls must be well recessed or effectively shrouded to prevent inadvertent activation, require concurrent use of both the operator's hands, and require both controls to be released before another machine cycle can be initiated.

(3) Pads and covers must not be of a type that will allow the garment or fabric to slip off the buck easily, with or without vacuuming.

Interlocks

12.162 Drum-type washing machines and dryers must have devices which prevent the drum from operating while the door is open.

Centrifugal extractors

12.163 A centrifugal extractor must have devices to prevent power being applied before the cover is closed and to prevent the cover being opened while the basket is in motion.

Laundry chutes

12.164 A laundry chute must discharge into an unoccupied area, or have baffles or other equally effective means to prevent laundry coming out of the chute from striking workers.

Laundry carts

12.165 A laundry cart must be maintained in good mechanical condition and free of sharp corners, edges, or splintered wood.

Spillage

12.166 Curbs or other effective means must be provided to contain any liquid spilled from a washing machine, dry cleaning machine or associated equipment.

Rail Car Movement

Application

12.167 Sections 12.168 to 12.172 apply to movement of rail cars except those on a federally or otherwise provincially regulated railway.

General requirements

12.168 (1) Written safe work procedures must be developed and made available to all workers involved in moving, loading or unloading railway cars.

(2) Equipment used to move railway cars must be adequately designed and have the capacity to control railway car speed and direction at all times.

(3) Proper, designated attachment points on railway cars must be used to move railway cars.

(4) Railway cars being loaded on a siding must be protected against unexpected movement by other rail traffic on the siding by the "Blue Flag Rule" as specified in the *Canadian Rail Operating Rules*.

(5) Before a railway car is coupled or moved the load must be properly secured and all vehicles and equipment used to load or unload the car must be in the clear.

(6) Derails must be installed and used

(a) where it is possible for railway cars to move freely and to foul other tracks or create other hazards, and

(b) where required by the *Transportation of Dangerous Goods Act, 1992* (Canada).

Clearance

12.169 The employer must identify clearances that are less than the standard clearance with restricted clearance signs as specified in the *Canadian Rail Operating Rules*.

Riding restriction

12.170 If less than standard clearance exists, as specified in the *Canadian Rail Operating Rules*, workers must not ride on the top or sides of railway equipment.

Brakes

12.171 (1) Railway cars on a siding must have an adequate number of hand brakes set to prevent inadvertent movement.

(2) Railway car air brake systems must not be used on a private siding unless authorized by the Engineering and Inspection Branch of the Ministry of Municipal Affairs and Housing.

Tracks

12.172 (1) All dead end tracks located in areas where workers are required to be must have a means to prevent rail mounted equipment from travelling off the end of the tracks.

(2) All tracks on private sidings must be maintained to standards which permit the safe transit of all rail mounted equipment using the tracks.

Pressure Vessels

Pressure relief device – when required

12.173 (1) In this section **"pressure vessel"** has the same meaning as in the Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation, B.C. Reg. 104/2004.

(2) A pressure vessel must have a pressure relief device that is set to discharge at 103 kPa (15 psi) or less, if the pressure vessel

(a) is connected to a production facility, compressor station or other pressure source, and

(b) is not directly open to the atmosphere.

(3) Subsection (2) does not apply to a pressure vessel if

(a) the pressure vessel is subject to the Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation, B.C. Reg. 104/2004, or

(b) the manufacturer of the pressure vessel or a professional engineer indicates in writing that

(i) the pressure vessel will not operate in accordance with its engineered design if the vessel has a pressure relief device that is set to discharge at 103 kPa (15 psi), and

(ii) the pressure vessel can be operated safely without a pressure relief device or with a pressure relief device that is set to discharge at greater than 103 kPa (15 psi).

(4) A pressurized system, including any lines running from the output side of a pressure relief device that may be subject to accidental restriction, must be protected by a pressure relief device.

[en. B.C. Reg. 312/2012, App. B, s. 2.]

Pressure relief device – installation

12.174 (1) In this section **"pressure relief device"** means a pressure relief device referred to in section 12.173.

(2) A pressure relief device must

(a) have a flow capacity that is not less than the flow capacity of the pressure source, and

(b) be set to discharge at not more than the pressure rating of the component in the pressurized system with the lowest pressure rating.

(3) Any fluid or material discharged through a pressure relief device must be piped to a place where it will not endanger workers.

(4) The diameter of piping connected to the pressure side and the discharge side of a pressure relief device must not be smaller than the diameter of the openings to the device.

(5) The piping on the discharge side of a pressure relief device must be

(a) secured to prevent movement, and

(b) sloped to drain fluids away from the pressure relief device if freezing could restrict the fluid flow.

(6) A valve must not be installed in the discharge opening of a pressure relief device, or the device's discharge pipe, unless required by engineering design.

(7) A pressure relief device that requires block valves by engineering design must have the block valves locked in the appropriate position.

(8) A guard must be installed around the shear pin and spindle of a pressure relief device.

[en. B.C. Reg. 312/2012, App. B, s. 2.]

Roll-on/Roll-off Containers

Definitions

12.175 In sections 12.176 to 12.183:

"container safety standard" means *ANSI Standard ANSI Z245.30-2008, American National Standard for Equipment Technology and Operations for Wastes and Recyclable Materials – Waste Containers – Safety Requirements*;

"roll-on/roll-off container" means a container that

(a) is typically used to receive, store and transport refuse, and

(b) is designed to be used with a vehicle equipped with hydraulic or mechanical tilt-frame and hoist-type equipment, commonly referred to as roll-offs or hook-lifts.

[en. B.C. Reg. 199/2014, App. D, s. 2.]

Container safety standard

12.176 (1) A supplier of a roll-on/roll-off container manufactured on or after February 1, 2015, must ensure that the container is designed and manufactured in accordance with the requirements of the container safety standard.

(2) Employers must ensure that workers handle roll-on/roll-off containers in accordance with the requirements of the container safety standard.

[en. B.C. Reg. 199/2014, App. D, s. 2.]

Protection against specified hazards

12.177 An owner of a roll-on/roll-off container, and an employer, must ensure that persons are not exposed to the following hazards in respect of a roll-on/roll-off container:

(a) the rupture or disintegration, resulting from poor maintenance, of the lifting eye, cables, anchors, latches, doors, guards, hinges or ladder rungs;

(b) being hit or struck by the unintended or premature discharge of any thing or substance collected, used, stored or transported in the container.

[en. B.C. Reg. 199/2014, App. D, s. 2.]

Visual inspection before loading container onto vehicle

12.178 (1) Before loading a roll-on/roll-off container onto a vehicle, the driver of the vehicle must

(a) visually inspect the container for defects that may be a hazard, and

(b) ensure that the container doors will not open when the container is moved between the ground and the vehicle.

(2) If the driver identifies a defect in a roll-on/roll-off container that may be a hazard, the driver must immediately inform the following, as applicable, of the defect:

(a) the driver's employer;

(b) if the driver has no employer, the owner of the container.

[en. B.C. Reg. 199/2014, App. D, s. 2; am. B.C. Reg. 116/2022, App. B, s. 10.]

Withdrawal from service

12.179 (1) In this section, **"notified person"** means the person notified under section 12.178 (2) that a roll-on/roll-off container has a defect that may be a hazard.

(2) On receiving notification under section 12.178 (2), a notified person must

(a) withdraw the container from service immediately, or

(b) if it is not practical to withdraw the container from service immediately,

(i) arrange for the safe removal of the container to a place where it can be unloaded, if necessary, and

(ii) have the container repaired.

(3) A roll-on/roll-off container that has been withdrawn from service or repaired under this section may not be returned to service until inspected under section 12.180.

[en. B.C. Reg. 199/2014, App. D, s. 2.]

Inspection following repair

12.180 (1) An owner of a roll-on/roll-off container, and an employer, must ensure that a roll-on/roll-off container is inspected by a qualified person after any of the following occur:

(a) significant structural modification or refurbishment;

(b) significant repair of a structural component;

(c) repairs made under section 12.179.

(2) The qualified person must determine whether, following the modification, refurbishment or repairs referred to in subsection (1), the container meets the requirements of the container safety standard.

(3) An inspection under this section must occur on or before the earlier of the following:

(a) 30 days after the making of the modification, refurbishment or repairs referred to in subsection (1);

(b) the return of the container to the place where it is ordinarily stored or located.

[en. B.C. Reg. 199/2014, App. D, s. 2.]

Periodic inspection

12.181 (1) An owner of a roll-on/roll-off container, and an employer, must ensure that a qualified person inspects, in accordance with this section, each roll-on/roll-off container to determine if the container meets the requirements of the container safety standard.

(2) The first inspection of a container manufactured before February 1, 2015, or for which the date of manufacture is unknown, must occur as follows:

(a) if section 12.180 applies, as required by that section;

(b) if the container has not previously been inspected under section 12.180, before August 1, 2017;

(c) if the owner or employer, as applicable, acquires the container on or after June 2, 2017, but has no record of it being inspected in accordance with paragraph (a) or (b) of this subsection, within 60 days of acquiring it.

(3) The first inspection of a container manufactured on or after February 1, 2015, must occur as follows:

(a) if section 12.180 applies, as required by that section;

(b) if a container has not previously been inspected under section 12.180, before February 1, 2020;

(c) if the owner or employer, as applicable, acquires the container on or after December 3, 2019, but has no record of it being inspected in accordance with paragraph (a) or (b) of this subsection, within 60 days of acquiring it.

(4) Subsequent inspections of the container must occur within

(a) 30 months of the most recent inspection, whether made under this section or section 12.180, or

(b) a shorter period set by a qualified person, having regard to the condition of the container.

[en. B.C. Reg. 199/2014, App. D, s. 2.]

Records of inspection

12.182 An owner of a roll-on/roll-off container, and an employer, must keep a record for each roll-on/roll-off container that includes all of the following:

(a) the date of each inspection made under sections 12.180 and 12.181;

(b) details of any tests conducted, including testing methods and results;

(c) details of any repairs made;

(d) the date before which the next inspection must occur under section 12.181.

[en. B.C. Reg. 199/2014, App. D, s. 2.]

Withdrawal from service following inspection

12.183 If a qualified person determines, following an inspection under section 12.180 or 12.181, that a roll-on/roll-off container does not meet the container safety standard, the owner of the container, or the employer, must withdraw the container from service

(a) until it is repaired to meet the container safety standard, or

(b) permanently.

[en. B.C. Reg. 199/2014, App. D, s. 2.]

PART 13 – LADDERS, SCAFFOLDS AND TEMPORARY WORK PLATFORMS

Division 1 – General

Definitions

13.1 In this Part:

"boom-supported" means supported by an elevating device that telescopes, articulates, rotates or extends relative to the machine base or vehicle, so that the platform can be positioned completely beyond the base;

"boatswain's chair", also known as a bosun's chair, means a seat attached to a suspended rope designed to accommodate one person in a sitting position;

"elevating work platform" means a movable work platform that self-elevates to overhead work locations;

"movable work platform" means a work platform that can be re-positioned during the course of the work;

"permanent powered platform" means a movable work platform that

(a) is raised or lowered by other than manual means, and

(b) is permanently installed on or attached to a building or structure;

"portable powered platform" means a movable work platform that

(a) is raised or lowered by other than manual means, and

(b) is not permanently installed on or attached to a building or structure;

"scaffold" means any temporary elevated work platform and its supporting structure used for supporting workers, materials or equipment;

"self-propelled" means the capability of an elevating work platform to travel under power with the primary controls on the work platform;

"swing stage" means a work platform that is raised and lowered by manual or powered hoisting equipment, supported by 2 or more suspension lines;

"work platform" means an elevated or suspended temporary work surface used for supporting workers and includes a scaffold and boatswain's chair.

[en. B.C. Reg. 422/2004, s. 1.]

Standards

13.2 (1) A ladder, window cleaner's belt or work platform must meet and be used in accordance with

(a) the applicable CSA or ANSI standard in effect when the equipment or structure was manufactured, except as otherwise determined by the Board,

(b) another standard acceptable to the Board, or

(c) if there is no applicable standard under paragraphs (a) or (b), the requirements of a professional engineer.

(2) In designing and installing a work platform, appropriate safety factors and minimum rated loads must be used in the materials and method of installation, in accordance with

(a) *WCB Standard WPL 1, Design, Construction and Use of Wood Frame Scaffolds, 2004*,

(b) *WCB Standard WPL 2, Design, Construction and Use of Crane Supported Work Platforms, 2004*,

(c) *WCB Standard WPL 3, Safety Factor and Minimum Breaking Strength for Suspended Work Platforms and Associated Components, 2004*, and

(d) *WCB Standard LDR 1, Job Built Ladders, 2004*.

[en. B.C. Reg. 422/2004, s. 1.]

Inspections

13.3 A ladder, window cleaner's belt, work platform and associated components must be inspected before use on each shift, and after any modification, and any condition that might endanger workers must be remedied before the equipment is used.

[en. B.C. Reg. 422/2004, s. 1.]

Division 2 – Ladders

Manufactured ladders

13.4 A manufactured portable ladder must be marked for the grade of material used to construct the ladder and the use for which the ladder is constructed.

[en. B.C. Reg. 422/2004, s. 1.]

Position and stability

13.5 (1) A portable ladder must

(a) be placed on a firm and level surface, and

(b) be of sufficient length to enable the safe performance of the work activity while being used.

(2) A portable non-self-supporting ladder must,

(a) as shown in Figure 13-1, be positioned so that the ladder is leaning against the vertical plane of support at an approximate angle of 75° when measured from the horizontal plane of support,

(b) if the ladder provides access to or egress from an upper landing,

(i) project approximately 1 m (3 ft) above the upper landing, and

(ii) be sufficiently secured in place to ensure the stability of the ladder during access to or egress from the upper landing, and

(c) if the ladder is not already secured in accordance with paragraph (b) (ii), be sufficiently secured in place to ensure the stability of the ladder during use if conditions exist that are likely to cause the ladder to be unstable.

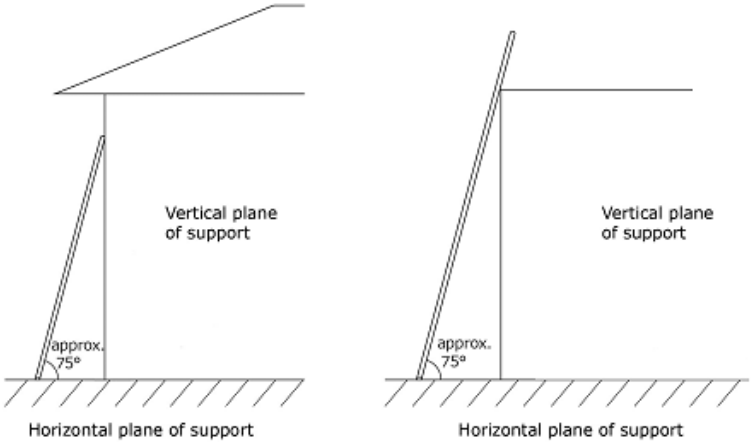


Figure 13-1: Ladder Angle

[en. B.C. Reg. 199/2014, App. F, s. 1.]

Use restrictions

13.6 (1) If work cannot be done from a ladder without hazard to a worker, a work platform must be provided.

(2) A worker must not carry up or down a ladder, heavy or bulky objects or any other objects which may make ascent or descent unsafe.

[en. B.C. Reg. 422/2004, s. 1.]

Division 3 – Work Platforms

Access

13.7 Safe access must be provided to every work platform.

[en. B.C. Reg. 422/2004, s. 1.]

General requirements

13.8 Each work platform must

(a) have sufficient strength to bear the load to be placed on it, and

(b) be secured against separation from the supporting equipment, structure or surface to which it is attached.

[en. B.C. Reg. 422/2004, s. 1.]

Lines supporting work platforms

13.9 Rigging and lines used to suspend or support work platforms must

(a) have sufficient breaking strength to withstand the loads likely to be imposed with the required factor of safety,

(b) be free of knots or splices except for terminal eye-splices,

(c) be suitable for the purpose for which they are used,

(d) be protected from abrasion or other damage from the work environment,

(e) be secured to the platform and to an anchorage able to withstand the loads likely to be imposed on them,

(f) be of sufficient length to lower the work platform to a safe lower landing, and

(g) except for load lines, be used exclusively for suspending the work platform.

[en. B.C. Reg. 422/2004, s. 1.]

Hooks and clamps

13.10 (1) Cornice hooks, parapet clamps and thrust-out beams must be secured by tiebacks to a solid anchor on the building or structure.

(2) Tiebacks for cornice hooks, parapet clamps and thrust-out beams must, as nearly as is practicable, be rigged at right angles to the building face.

(3) Each cornice hook, parapet clamp, hanger or stirrup used to support a swing stage must be manufactured of mild steel or other material having similar ductile properties.

(4) Counterweights must be

(a) made of solid material not subject to loss of weight through attrition, and

(b) secured to the thrust-out beam.

[en. B.C. Reg. 422/2004, s. 1.]

Engineering required

13.11 (1) The following must be constructed, installed and used in accordance with the instructions of a professional engineer:

(a) bracing for a scaffold, if the scaffold is enclosed by a tarpaulin or any other cover;

(b) a scaffold exceeding 38 m (125 ft) in height;

(c) a scaffold exceeding 25 m (80 ft) in height, if stairways are included as part of the scaffold;

(d) a scaffold used to support a temporary floor;

(e) a scaffold used to support a crane or hoist, other than a scaffold used to support a manually powered crane or manually powered hoist;

(f) a scaffold suspended or cantilevered from a structure;

(g) a scaffold system supported by a catenary line;

(h) a needle beam scaffold;

(i) an outrigger scaffold.

(2) Permanent powered platforms must be constructed, installed and used in accordance with the instructions of a professional engineer.

(3) If a boat is used as a work platform in a pile driving operation, a professional engineer must certify the integrity of the boat for this purpose.

(4) A signed copy of the engineer's instructions or certification referred to in subsections (1) to (3) must be available at the workplace during installation, disassembly and use of the system.

[en. B.C. Reg. 422/2004, s. 1; am. B.C. Reg. 9/2017, App. I, s. 1.]

Removal from service

13.12 A work platform must be removed from service until certified safe for use by the manufacturer or a professional engineer if it has

(a) been subjected to a sudden drop,

(b) been in contact with exposed energized electrical equipment or conductors, or

(c) shows signs of any kind of structural or mechanical damage or substantial wear.

[en. B.C. Reg. 422/2004, s. 1.]

Division 4 – Scaffolds

Responsibilities

13.13 The employer must ensure that scaffolds used by workers are in a safe condition and are able to withstand the load, regardless of who erected the scaffold.

[en. B.C. Reg. 422/2004, s. 1.]

Scaffold platforms

13.14 (1) The platform of each scaffold must

(a) be a minimum nominal width of 50 cm (20 in), except that a nominal 30 cm (12 in) wide work platform may be used with ladder jacks, pump jack or similar systems,

(b) not leave more than one opening in the work platform, which must be no greater than 25 cm (10 in) in width, and

(c) if not level, be designed to ensure adequate footing for workers using the platform.

(2) Guardrails may be omitted from the edge of a work platform if

(a) the platform is adjacent to a structure that provides protection equivalent to guardrails, and

(b) the open space between the platform and the structure is equal to or less than 30 cm (12 in).

[en. B.C. Reg. 422/2004, s. 1.]

Manufactured components

13.15 Major components of scaffolds must be used in accordance with technical data provided by the manufacturer, or in writing by a professional engineer, that

(a) shows the rated load, erection procedures and compliance with an applicable standard under section 13.2, and

(b) is available at the workplace for reference.

[en. B.C. Reg. 422/2004, s. 1.]

Lumber for structural components

13.16 All lumber used to construct a scaffold must be graded and marked to the National Lumber Grades Authority Standard Grading Rules for Canadian Lumber.

[en. B.C. Reg. 422/2004, s. 1.]

Scaffold stability

13.17 (1) A scaffold must be erected with the vertical members plumb, and with the ledgers and bearers level.

(2) The base of a scaffold must have bearing plates or sills that rest on a solid surface and are sufficient to support the weight of the scaffold.

(3) The poles, legs and uprights of a scaffold must be securely and rigidly braced to prevent movement.

(4) A scaffold must be effectively guyed or secured to a building or structure

(a) if the height of the scaffold exceeds 3 times its minimum base dimension, or

(b) in any other circumstances if required for stability.

(5) Unless otherwise specified by the manufacturer, height adjustment devices must not extend more than 2/3 of their total length or 60 cm (24 in), whichever is less.

[en. B.C. Reg. 422/2004, s. 1.]

Connections

13.18 All connections between the parts of a scaffold must be secure.

[en. B.C. Reg. 422/2004, s. 1.]

Electrical hazards

13.19 A scaffold must be effectively grounded if

(a) it is a metal scaffold and is located close to a high voltage energized electrical conductor or equipment, and

(b) a hazardous level of electrical charge is likely to be induced in the scaffold.

[en. B.C. Reg. 422/2004, s. 1.]

Division 5 – Movable Work Platforms

Marking of the equipment

13.20 (1) The following equipment must be clearly marked with a rated capacity:

(a) a platform that is suspended from or attached to a crane or hoist;

(b) an elevating work platform;

(c) Repealed. [B.C. Reg. 312/2012, App. D, s. 1.]

(d) a swing stage;

(e) interchangeable load bearing components of a suspended work platform system.

(2) The rated load for allowable thrust-out beam projections must be clearly marked on a thrust-out beam.

(3) A swing stage platform, counterweight and hoist unit must each be clearly marked with their own weight.

(4) A work platform that is suspended from a crane or hoist or attached to a crane boom must be marked with the weight of the platform and rigging and the rated capacity.

[en. B.C. Reg. 422/2004, s. 1; am. B.C. Reg. 312/2012, App. D, s. 1.]

Manuals

13.21 (1) For each elevating work platform in use at a workplace,

(a) the equipment manufacturer's operation manual must be available at the workplace, and

(b) the equipment manufacturer's maintenance manual, containing maintenance instructions and replacement part information, must be reasonably available to workers at the workplace.

(2) If either of the manuals required by subsection (1) is not available, the equipment must not be used until

(a) the manual is obtained, or

(b) written instructions for the safe operation and maintenance of the equipment are supplied by a professional engineer.

[en. B.C. Reg. 422/2004, s. 1.]

Maintenance of records

13.22 (1) The employer must keep records of inspection, maintenance, repair or modification that meet the requirements of Part 4 (General Conditions) for each

(a) elevating work platform,

(b) swing stage, and

(c) permanent powered platform.

(2) If the inspection and maintenance records, other than pre-shift inspections, are not available, the equipment must not be used until it has been inspected and certified safe for use by the manufacturer or a professional engineer.

[en. B.C. Reg. 422/2004, s. 1.]

Testing

13.23 (1) A vehicle-mounted elevating work platform and a self-propelled boom-supported elevating work platform must be

(a) inspected in accordance with good engineering practice at least every 12 months, and

(b) certified in writing by the equipment manufacturer or a professional engineer as complying with this Part and safe for use.

(2) to (4) Repealed. [B.C. Reg. 312/2012, App. C, s. 1.]

(5) Repealed. [B.C. Reg. 243/2006, s. 6.]

[en. B.C. Reg. 422/2004, s. 1; am. B.C. Regs. 243/2006, s. 6; 312/2012, App. C, s. 1.]

Work platforms on wheels

13.24 (1) If a movable work platform on wheels is not designed for or intended to be moved along the floor or other supporting surface while a person is occupying the platform, the platform must be secured to prevent that movement before a person accesses or occupies the platform.

(2) If a movable work platform is designed for and intended to be moved along the floor or other supporting surface while a person is occupying the platform, the platform must be moved only in the manner and under the conditions specified by the platform's manufacturer.

(3) Despite subsection (2), if the height of the work platform of a rolling scaffold that is occupied by a person is

(a) not more than one and one half times the least base dimension of the scaffold, the scaffold may be moved by the effort of the person occupying the platform or by the effort of a person on the floor or other supporting surface,

(b) more than one and one half times the least base dimension of the scaffold, the scaffold must be moved only by the effort of a person on the floor or other supporting surface, and

(c) more than two times the least base dimension of the scaffold, the scaffold must not be moved while the person is occupying the platform.

[en. B.C. Reg. 320/2007, App. D, s. 1.]

Warning devices on elevating work platforms

13.25 (1) An elevating work platform, except a vehicle-mounted work platform, must have a warning system consisting of an intermittent horn or flashing light that

(a) is automatically activated during any motion of the work platform, and

(b) can be seen or heard by other workers in proximity to the work platform.

(2) If the safe operation of an elevating work platform requires its carrier vehicle to be on a level surface or level within specified degrees, the platform must be fitted, as the carrier requires, with a device to warn the operator that

(a) the carrier is not level, or

(b) the carrier is outside the permitted degrees from level.

[en. B.C. Reg. 422/2004, s. 1.]

Controls on elevating work platforms

13.26 The controls for an elevating work platform must

(a) be clearly identified to indicate their functions,

(b) be "hold-to-run" (continuous pressure) type that return to the neutral or the stop position when released,

(c) be protected against inadvertent operation,

(d) for each set of controls, be provided with an emergency stop device that is

(i) within easy reach of the operator,

(ii) clearly labelled STOP, and

(iii) coloured red, and

(e) include a clearly marked overriding lowering control that will enable a worker at the lower controls to stop and lower the platform in an emergency.

[en. B.C. Reg. 422/2004, s. 1.]

Cranes and hoists used to suspend work platforms

13.27 (1) The weight of a work platform suspended from a crane or hoist or attached to a crane boom and its rigging, plus the rated capacity, must not exceed 50% of the rated capacity of the crane or hoist at the working radius or configuration.

(2) If a work platform attached to a crane boom causes eccentric loading on the boom,

(a) the effect on the rated capacity of the crane must be determined and the rated capacity certified by the crane manufacturer or a professional engineer, and

(b) the rated capacity of the crane must be reduced accordingly.

(3) The boom of a crane used to suspend a work platform must have a powered boom or a fixed boom.

(4) A work platform must not be

(a) suspended from an articulating boom crane, or

(b) attached to an articulating boom crane, unless the crane manufacturer approves the installation.

(5) If workers are on a work platform suspended from a crane, a secondary hoisting line on the crane must not be used.

[en. B.C. Reg. 422/2004, s. 1.]

Two-blocking

13.28 (1) A crane or hoist used to raise a work platform on a load line must be equipped with

(a) a device to prevent two-blocking at all points, or

(b) in the case of a lattice boom crane, a two-blocking warning device.

(2) Despite subsection (1), a work procedure acceptable to the Board may be followed to minimize the risk of two-blocking if it is not practicable to maintain a two-blocking prevention or warning device on a conventional lattice boom crane used for pile driving and similar applications.

[en. B.C. Reg. 422/2004, s. 1.]

Hoisting and lowering work platforms

13.29 (1) Cranes, winches and other devices used for hoisting and lowering movable work platforms must

(a) be operated as slowly as practicable while supporting the work platform,

(b) be lowered under power, if the device is powered, and

(c) not be equipped with a free running boom or hoisting winch controlled only by brakes.

(2) If a movable work platform is suspended from a crane, winch or other device over a structure that cannot safely support its weight or if other hazards exist below the platform, lower limit travel devices compatible with the hoist system must be used to ensure the platform cannot be lowered beyond the safe lower limit of travel.

(2.1) If the lower limit travel devices required by subsection (2) are not practicable, the employer must ensure that work procedures acceptable to the Board are used that will minimize the risk of the platform going beyond the safe lower limit of travel.

(3) A trial lift for a work platform suspended from or attached to a crane or hoist must be performed at all work locations before the platform is occupied.

[en. B.C. Reg. 422/2004, s. 1; am. B.C. Reg. 19/2006, s. 5.]

Lift truck mounted work platforms

13.30 (1) In this section, **"work platform"** means a movable work platform that is supported by a lift truck.

(2) A work platform may be used to support workers only if other conventional means of access for the task, such as ladders, scaffolds and elevating work platforms, are not practicable.

(3) An employer must ensure that a work platform intended for use by workers was designed, and is used by workers, in accordance with

(a) *ANSI/ITSDF B56.1-2009, Safety Standard for Low Lift and High Lift Trucks*, if the platform is being used with a high lift truck as defined in Part IV of that standard, or

(b) *ANSI/ITSDF B56.6-2011, Safety Standard for Rough Terrain Forklift Trucks*, if the platform is being used with a rough terrain forklift truck as defined in section 2 of that standard.

(4) The employer must ensure that a work platform intended for use by workers is legibly marked in a conspicuous place to show

(a) the name of

(i) the manufacturer of the platform, or

(ii) the professional engineer who certified the platform as having been built to meet the applicable standard referred to in subsection (3),

(b) if the platform was built by a manufacturer,

(i) the model number and serial number, or

(ii) other unique marking or identification that links the platform with the manufacturer's documentation respecting the platform's design and use,

(c) if the platform was custom built, the unique identification number or code that links the platform with the professional engineer's documentation for the platform's design and use,

(d) the title of the safety standard or standards the platform was designed to meet,

(e) the weight of the platform when the platform is empty,

(f) the rated load of the platform, and

(g) the minimum width, as measured in accordance with subsection (5), and the minimum rated capacity a lift truck must have to support the platform in a manner that complies with the applicable standard in subsection (3) when the platform is loaded to its rated load.

(5) The width of a lift truck referred to in subsection (4) (g) must be measured in a straight line from any point on the outer part of the right load bearing tire to the corresponding point on the outer part of the left load bearing tire.

(6) The employer must ensure that a qualified person inspects both the work platform and the lift truck supporting the work platform

(a) each time the platform is mounted on the lift truck, and

(b) at the start of each work shift, if the platform is already mounted on the lift truck at the start of the work shift,

to ensure the platform is properly secured to the lift truck and the lift truck and the platform are safe for use.

(7) The employer must ensure that the inspections referred to in subsection (6) take place before either the work platform or the lift truck is used by a worker.

(8) Only a worker who is qualified and authorized by the employer may operate a work platform, and the lift truck supporting the work platform, for the purpose of supporting workers on the platform.

(9) A worker must not operate either a work platform or the lift truck supporting the work platform unless

(a) there is effective two-way voice communication between the lift truck operator and a worker on the platform who is designated by the employer to provide the lift truck operator with directions for platform movement, and

(b) the lift truck operator and the designated worker on the platform prearrange hand and arm signals, if the voice communication referred to in paragraph (a) relies on the use of a radio or other electronic system, to allow the designated worker to signal the lift truck operator to bring the platform to the ground or floor level in the event the radio or other electronic system fails.

(10) A lift truck operator must remain at the controls of the lift truck at all times there are any workers on the platform supported by the lift truck.

(11) Before a work platform may be used to support workers, the lift truck operator must conduct a trial lift of the platform, with no workers on the platform, to assess the suitability of the surface bearing the weight of the lift truck and whether the platform is clear of all obstructions, unless

(a) the lift truck is on a type of surface the employer has identified as capable of safely supporting the lift truck and the platform when the platform is loaded to its rated load, and

(b) the space in and around which the platform is to be raised is clear of all obstructions.

[en. B.C. Reg. 312/2012, App. D, s. 2.]

Powered platforms

13.31 If a portable powered platform is raised and lowered by two or more separately controlled hoists operated by one person on the platform, the controls must be located so that they can be used simultaneously by that person.

[en. B.C. Reg. 422/2004, s. 1.]

Work in high risk situations

13.32 Before a swing stage, boatswain's chair or portable powered platform is used in any of the following circumstances, a professional engineer must have certified in writing that the design, installation and proposed use of the swing stage, boatswain's chair or portable powered platform, as the case may be, meets the requirements of *CSA Standard CAN/CSA Z271-10 Safety code for suspended platforms* and *CSA Standard*

CAN/CSA Z91-02 (R2008) Health and Safety Code for Suspended Equipment Operations:

(a) one work platform will be used above or below any portion of another work platform,

(b) a deck or planking will be used to span a gap between two independent work platforms,

(c) the work platform will exceed 10 m (32 ft) in length, or

(d) the suspension height will exceed 91 m (300 ft).

[en. B.C. Reg. 422/2004, s. 1; am. B.C. Regs. 312/2010, App. J; 199/2014, App. E, s. 1.]

Fall protection

13.33 (1) A person on an elevating work platform must wear a personal fall arrest system secured to a suitable and substantial anchorage point.

(1.1) Despite subsection (1), a person on a scissor lift, or on an elevating work platform with similar characteristics to a scissor lift, that is on a firm level surface with no irregularities to cause platform instability, is exempt from wearing a personal fall arrest system, provided that all manufacturer's guardrails and chains are in place.

(2) If a person is supported on a work platform suspended by fewer than four suspension lines, the person must use a personal fall arrest system secured to an anchor meeting the requirements of Part 11 *[Fall Protection]* and independent of the work platform and its suspension system.

(3) If a person is supported on a work platform suspended by four or more suspension lines, the person must use a personal fall arrest system secured to an anchor on the platform or to an anchor meeting the requirements of Part 11 *[Fall Protection]* and independent of the work platform and its suspension system.

(3.1) Despite subsection (3), a person is not required to use a personal fall protection system on an outrigger or suspended mason's scaffold with guardrails on the open sides.

(4) Each person on a work platform suspended from a crane or hoist must use a personal fall arrest system with a shock absorbing lanyard, secured to

(a) an anchor above the load hook, or

(b) an anchor attached to the platform and designated for that purpose by the manufacturer or a professional engineer, provided that the platform has a safety strap that will prevent the platform from falling more than 15 cm (6 in) if the platform becomes dislodged from the hook.

(5) Each person on a work platform attached to a crane boom must use a personal fall arrest system secured to an anchor on the boom or on the platform.

(6) The personal fall arrest system referred to in subsection (5) must be secured on the boom or on the platform to an anchor that is designated by

(a) the manufacturer, or

(b) a professional engineer.

[en. B.C. Reg. 422/2004, s. 1; am. B.C. Regs. 19/2006, s. 6; 243/2006, s. 7; 320/2007, App. D, s. 3.]

PART 14 – CRANES AND HOISTS

Definitions

14.1 In this Part:

"chimney hoist" means a temporary hoist used for transporting personnel or materials during the construction of a chimney or similar structure;

"construction material hoist" means a material hoist consisting of a guiding and supporting structure and hoist equipment that is not a permanent part of a building, structure, or other work and that is installed and used during construction, alteration, or demolition to raise and lower materials required for the project;

"critical lift" means

(a) a lift by a mobile crane or boom truck that exceeds 90% of its rated capacity while it is lifting the load at a load radius of more than 50% of its maximum permitted load radius, taking into account its position and configuration during the lift,

(b) a tandem lift if the load on any one crane, hoist or other piece of powered lifting equipment exceeds 75% of the rated capacity of that crane, hoist or other piece of powered lifting equipment,

(c) a tandem lift involving the simultaneous use of more than two cranes, hoists or other pieces of powered lifting equipment,

(d) a lift of a person in a work platform suspended from or attached to a crane or hoist,

(e) a lift in which the centre of gravity of the load changes during the lift,

(f) a lift in which the length of one or more sling legs changes during a lift,

(g) a lift by a crane, boom truck or hoist, supported on a floating base, that exceeds 90% of rated capacity for the lifting system,

(h) a lift of a load over or between energized high voltage electrical conductors, or

(i) a lift of a submerged load;

"duty cycle work" means

(a) the use of a crane to do dragline work, clamshell work, dynamic compaction work or pile driving work, including pile extraction using a vibratory pile extraction device, or

(b) the use of a crane with an electromagnet or grapple for the handling of scrap metal and other similar materials;

"load bearing component" means any component that transfers load through a crane or hoist to the surface supporting the crane or hoist;

"sign truck" means a truck that is

(a) capable of acting as a crane and as an aerial ladder, and

(b) used as a work platform or used for hoisting loads or accessing a work location;

"tandem lift" means a lift using

(a) more than one crane or one hoist, or

(b) a crane or hoist and another piece of powered lifting equipment.

[am. B.C. Regs. 320/2007, App. E, s. 1; 188/2011, App. F, s. 1; 9/2017, App. I, s. 2.]

Application

14.1.1 (1) This Part applies to a crane or hoist of a type required to meet a standard specified in section 14.2 and to any other equipment with a different primary design function that is being used in a hoisting or lifting application.

(2) Except as otherwise specifically provided, this Part applies to logging equipment that uses a load line for lifting.

(3) This Part does not apply to a front end loader, an excavator or other earth moving equipment that is being used

(a) in applications consistent with its primary design purpose, or

(b) during a lifting task incidental to its primary design purpose if the manuals and operating instructions of the manufacturer of that equipment provide criteria for that lifting task.

[en. B.C. Reg. 320/2007, App. E, s. 2.]

General Requirements

Standards

14.2 (1) Except as otherwise required by this Regulation, a crane or hoist must be designed, constructed, erected, disassembled, inspected, maintained and operated as specified by the manufacturer or a professional engineer, and to meet the requirements of the applicable standard listed in subsections (2) to (15).

(2) A bridge, jib, monorail, gantry or overhead travelling crane must meet the design requirements for electrical components and functions of *CSA Standard C22.1-94, Canadian Electrical Code,* Part 1, Section 40 and *CSA Standard C22.2 No. 33-M1984 (Reaffirmed 1992), Construction and Test of Electric Cranes and Hoists*.

(3) A bridge, jib, monorail, gantry or overhead travelling crane must meet the design requirements of

(a) *ANSI Standard MH27.1-2003, Specifications for Patented Track Underhung Cranes and Monorail Systems*,

(b) *Crane Manufacturers Association of America (CMAA) Specifications for Top Running Bridge & Gantry Type Multiple Girder Electric Overhead Traveling Cranes – No. 70 (2004)*, or

(c) *Crane Manufacturers Association of America (CMAA) Specifications for Top Running and Under Running Single Girder Electric Overhead Cranes Utilizing Under Running Trolley Hoist – No. 74 (2004)*.

(4) A bridge, jib, monorail, gantry or overhead travelling crane must meet the safety requirements of

(a) *CSA Standard B167-96, Safety Standard for Maintenance and Inspection of Overhead Cranes, Gantry Cranes, Monorails, Hoists, and Trolleys*,

(b) *ANSI Standard ANSI/ASME B30.2-2005, Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)*,

(c) *ANSI Standard ANSI/ASME B30.11-2004, Monorails and Underhung Cranes*,

(d) *ANSI Standard ANSI/ASME B30.16-2003, Overhead Hoists (Underhung)*, or

(e) *ANSI Standard ANSI/ASME B30.17-2003, Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist)*.

(5) A mobile crane, telescoping or articulating boom truck or sign truck must meet the requirements of

(a) *CSA Standard Z150-1998, Safety Code for Mobile Cranes*,

(b) *ANSI Standard ANSI/ASME B30.5-2004, Mobile and Locomotive Cranes*, or

(c) *ANSI Standard ANSI/ASME B30.22-2005, Articulating Boom Cranes*.

(6) A tower, hammerhead crane or self erecting tower crane must meet the requirements of *CSA Standard Z248-2004, Code for Tower Cranes*.

(7) A portal, tower or pillar crane must meet the requirements of *ANSI Standard ASME B30.4-2003, Portal, Tower, and Pedestal Cranes*.

(8) A construction material hoist, other than a light duty portable material hoist, must meet the requirements of *CSA Standard CAN/CSA-Z256-M87, Safety Code for Material Hoists*.

(9) A chimney hoist must meet the requirements of WorkSafeBC Standard 14.116 – Chimney Hoists, set out in Schedule 14-A.

(10) A base mounted drum hoist must meet the requirements of *ANSI Standard ASME B30.7-2001, Base Mounted Drum Hoists*.

(11) A guy, stiffleg, basket, breast, gin pole, Chicago boom, shearleg or A-frame derrick must meet the requirements of *ANSI Standard ASME B30.6-2003, Derricks*.

(12) A side boom tractor used for pipe laying or similar operations must meet the requirements of *ANSI Standard ASME B30.14-2004, Side Boom Tractors*.

(13) A manually lever operated hoist must meet the requirements of *ANSI Standard B30.21-2005, Manually Lever Operated Hoists*.

(14) A patient lift must meet the requirements of *CSA Standard CAN/CSA Z10535-03, Hoists for the Transfer of Disabled Persons-Requirements and Test Methods*.

(15) A crane or hoist of a type not covered by the standards specified in subsections (2) to (14) must meet good engineering practice and be able to safely perform its function.

[am. B.C. Regs. 312/2003, App. A, s. 19; 320/2007, App. E, s. 3; 188/2011, App. L, s. 2; 9/2017, App. I, s. 3; 222/2021, App. C, s. 1.]

Identification

14.3 (1) A crane or hoist must be permanently identified by the legible display of the manufacturer's name, model and serial number on the structure.

(2) Each major interchangeable structural component of a crane or hoist must be uniquely identified and must be legibly marked to enable confirmation that the component is compatible with the crane or hoist.

(3) If a crane or hoist was not commercially manufactured and does not have a model number or serial number, the crane or hoist must not be used unless engineering documentation signed by a professional engineer, including technical specifications and instructions for use, are available at the workplace where the crane or hoist is being used.

(4) A crane or hoist described in subsection (3) must be identified in a manner that links the engineering documentation referred to in that subsection with that crane or hoist.

[am. B.C. Reg. 320/2007, App. E, s. 4.]

14.4 Repealed. [B.C. Reg. 320/2007, App. E, s. 5.]

Rated capacity indication

14.5 (1) The rated capacity of a crane or hoist, other than a crane or hoist to which subsection (2) or (3) applies, must be permanently indicated on each of the following:

(a) the superstructure;

(b) the hoist;

(c) the load block.

(2) The rated capacity of a monorail crane must be permanently indicated on each of the following:

(a) the hoist;

(b) the load block;

(c) the monorail beam, at intervals not exceeding 10 m (33 ft.).

(3) If the rated capacity of a crane or hoist is affected by

(a) the vertical or horizontal angle of a boom or jib,

(b) the length of a boom or jib,

(c) the position of a load supporting trolley, or

(d) the use or position of outriggers to increase the stability of the structure,

a load chart must be permanently posted on the crane or hoist or must be issued to the crane or hoist operator who must keep it available at all times when operating the crane or hoist.

(4) A load chart under subsection (3) must indicate the rated capacity for the crane or hoist for the working positions and configurations in use and must be in a legible condition.

[am. B.C. Regs. 320/2007, App. E, s. 6; 9/2017, App. J, s. 1.]

14.6 Repealed. [B.C. Reg. 320/2007, App. E, s. 7.]

Boom angle indicator

14.7 A crane or hoist with a boom movable in the vertical plane must have a device to indicate the boom angle if the rated capacity is affected by the boom angle, and the device must be readable by the operator at the control station.

Boom extension and load radius indicators

14.8 A crane or hoist must have a means or device to indicate the boom extension or load radius if the rated capacity of the equipment is affected by boom extension or load radius.

Logging exemption

14.9 Specialized equipment designed and used only for logging operations is exempt from the requirements of sections 14.5 to 14.8.

Reeved-in devices

14.10 The rated capacity of a crane or hoist with reeved-in lifting devices must be the net capacity of the equipment, except for mobile cranes.

Support structure

14.11 (1) The rated capacity of a crane or hoist must not exceed the rated capacity of the structure supporting the crane or hoist.

(2) Selector switches or other effective means must be provided to ensure that the supporting structure is not overloaded by simultaneous use of multiple cranes or hoists installed on the supporting structure.

[am. B.C. Regs. 320/2007, App. E, s. 8; 9/2017, App. J, s. 2.]

Manual and instructions

14.12 (1) In this section:

"engineer's instructions" mean instructions, approved in writing by a professional engineer, for the assembly, erection, dismantling, maintenance, inspection and operation of the component parts of a crane or hoist and of the assembled crane or hoist;

"manufacturer's manual" means a manual, prepared by the manufacturer of a crane or hoist, that describes the approved methods of assembly, erection, dismantling, maintenance, inspection and operation of the component parts of the crane or hoist and of the assembled crane or hoist.

(2) A crane or hoist must not be used unless the following is reasonably accessible to the equipment operator and other persons inspecting or maintaining the equipment at the workplace where the crane or hoist is to be used:

(a) the manufacturer's manual for the crane or hoist;

(b) if the manufacturer's manual is not available, an engineer's instructions for the crane or hoist.

(3) A crane or hoist must not be used unless the following is readily available at the workplace where the crane or hoist is to be used:

(a) the portions of the manufacturer's manual related to the assembly, erection, dismantling, inspection, routine maintenance and safe operation of the crane or hoist;

(b) if the portions of the manufacturer's manual referred to in paragraph (a) are not available, the portions of an engineer's instructions related to the assembly, erection, dismantling, inspection, routine maintenance and safe operation of the crane or hoist.

[en. B.C. Reg. 320/2007, App. E, s. 9.]

Inspection, maintenance and repair

14.13 (1) Each crane and hoist must be inspected and maintained at a frequency and to the extent required to ensure that every component is capable of carrying out its original design function with an adequate margin of safety.

(2) A crane or hoist must not be used until any condition that could endanger workers is remedied.

(3) Any repair to load bearing components of a crane or hoist must be certified by a professional engineer or the original equipment manufacturer as having returned the component to a condition capable of carrying out its original design function with an adequate margin of safety.

(4) Maintenance or repair of a crane or hoist must be done by or under the direct supervision of a qualified person.

[am. B.C. Reg. 320/2007, App. E, s. 10.]

Inspection and maintenance records

14.14 Records of inspection and maintenance meeting the requirements of Part 4 (General Conditions) must be kept by the equipment operator and other persons inspecting and maintaining the equipment, for

(a) a crane or hoist with a rated capacity of 900 kg (2 000 lbs.) or more,

(b) a crane or hoist used to support a worker,

(c) a tower crane,

(d) a mobile crane, boom truck or sign truck,

(e) a side boom tractor or pipe layer,

(f) a construction material hoist,

(g) a chimney hoist,

(g.1) a logging truck trailer reload hoist, and

(h) any other type of hoisting equipment specified by the Board.

[am. B.C. Reg. 320/2007, App. E, s. 11.]

Modifications

14.15 (1) Each crane or hoist must be erected, dismantled, operated, adjusted, inspected and maintained as specified by the manufacturer's manual unless otherwise approved by the original equipment manufacturer or a professional engineer.

(2) If a modification that affects the rated capacity or safe operation of a crane or hoist is made to its structure, to one of its mechanical components or to its control system, the crane or hoist must

(a) be assessed,

(b) have its rated capacity adjusted as necessary, and

(c) be certified as safe for use.

(2.1) The assessment, rated capacity adjustment and certification under subsection (2) must be carried out

(a) in accordance with the applicable design or safety standard specified in section 14.2, and

(b) by the original equipment manufacturer or a professional engineer.

(3) Modifications to a crane or hoist must be recorded in the inspection and maintenance records system and the equipment operation and maintenance manuals must be revised as necessary to ensure that adequate and appropriate information is available for safe use and maintenance of the equipment.

[am. B.C. Reg. 320/2007, App. E, s. 12.]

Certification required

14.16 (1) Subsection (2) applies in respect of a crane or hoist if

(a) the origin or rated capacity of the equipment is not available,

(b) the continued safe use of the equipment cannot be assured because of its condition, age or history, or

(c) modifications referred to in section 14.15 that affect the rated capacity have been made to the crane or hoist.

(2) A person must not use a crane or hoist described in subsection (1) unless a professional engineer has certified the rated capacity of the crane or hoist in accordance with the applicable design or safety standard specified in section 14.2.

[en. B.C. Reg. 320/2007, App. E, s. 13.]

Certification following misadventure

14.16.1 (1) In this section,

"misadventure" means

(a) a contact with a high voltage electrical source,

(b) a shock load,

(c) a loss of a load,

(d) a brake failure,

(e) a collision or upset, or

(f) any other circumstance that may impair the safe operation of the crane or hoist.

(2) If a crane or hoist has been subject to a misadventure, it must be removed from service until a professional engineer has

(a) supervised an inspection of, and supervised any necessary repairs to, the equipment, and

(b) certified the equipment as safe for use at the manufacturer's rated capacity for the equipment or as provided by section 14.16 if the manufacturer's rated capacity is not available.

[en. B.C. Reg. 320/2007, App. E, s. 13.]

Access and egress

14.17 (1) A crane or hoist must have a safe means of access to and egress from

(a) the operator's position, and

(b) all maintenance and inspection locations on the crane and hoist.

(2) If the normal safe means of egress is not always available to the operator during crane operations, an alternative safe means must be provided for the operator to get from the operating position to a safe area in the event of a power failure or other emergency.

[am. B.C. Reg. 320/2007, App. E, s. 14.]

Audible warning

14.18 (1) An effective audible warning device must be installed on a crane or hoist, unless the hoisting equipment is operated using a pendant or remote control and the operator walks in a safe position near the load.

(2) The operator of a crane or hoist must sound a warning signal when it is necessary to alert workers to hoisting operations.

[am. B.C. Reg. 320/2007, App. E, s. 15.]

Drop stops

14.19 (1) A top-running crane, under-running crane, wheel- or rail-mounted gantry crane, tower crane and monorail hoist must have a means to limit the drop of the crane, trolley and bridge truck frames to 25 mm (1 in.) if a tire, wheel or axle fails.

(2) Drop stops must be able to support the trolley, bridge and gantry with the crane or hoist loaded to its rated capacity and must be certified to be able to do so by the original equipment manufacturer or a professional engineer.

[en. B.C. Reg. 320/2007, App. E, s. 16.]

Rail end stops

14.20 (1) End stops must be provided on crane and hoist tracks and rails to prevent the equipment running off the end of the rail or track.

(2) The stops must contact the truck frame or be of a height of at least 1/2 the diameter of the wheels if the wheels contact the stops.

Fenders

14.21 (1) Fenders must be provided on a crane or hoist which operates on rails if there is a possibility of injury to workers from contact with the equipment wheels moving along the rail.

(2) Fenders required by subsection (1) must effectively deflect any object from the path of the wheel.

Securing pins

14.22 A heel-pin, sheave-pin, shackle-pin or similar device must be secured against inadvertent dislodgment, in the manner specified by the equipment manufacturer or by the professional engineer who designed and certified the equipment.

[en. B.C. Reg. 320/2007, App. E, s. 17.]

Boom stops

14.23 (1) Positive boom stops must be provided on a crane or hoist with a boom that may fall over backward.

(2) A boom hoist disconnect, shutoff or hydraulic relief must be provided on a crane or hoist to automatically stop the boom hoist when the boom reaches the

maximum boom operating angle specified by the manufacturer and before the boom stops are contacted.

(3) A jib on a crane or hoist must be restrained from backward overturning.

Molten metal

14.24 A crane or hoist that handles molten metal must have 2 holding brakes on the hoist mechanism.

14.25 Repealed. [B.C. Reg. 19/2006, s. 7.]

Sheave guards

14.26 A running line sheave on a crane or hoist must have a device to retain the rope in the sheave groove.

Ungrounded supply

14.27 An electrically powered crane receiving its source of power from an ungrounded supply must have a ground fault indication system that is monitored on a routine basis.

Controls

14.28 (1) Each control for a crane or hoist must have its function clearly identified and must be maintained in good condition.

(2) Each control for a crane or hoist that causes load movement must return to neutral when pressure from the operator is released.

(3) Subsection (2) does not apply to a crane or hoist manufactured before January 1, 2000 for which continuous pressure controls were not previously required.

(4) Each control for a crane or hoist must be located to allow safe operation of the equipment and if the control is not located in a cab it must be located to provide a safe distance between the operator and the load being handled.

(5) A pendant control for a crane or hoist must be supported independently from its electrical conductors.

(6) A remote control panel for a crane or hoist must be designed to safeguard effectively against the unintended activation of the crane or hoist.

(7) A wireless remote control system for a crane or hoist must incorporate

(a) error checking to prevent the controlled equipment from responding to corrupt data, and

(b) identification coding methods to prevent a transmitter other than the designated transmitter for that crane or hoist from operating the equipment.

(8) A remote control system for a crane or hoist must be designed to ensure the following:

(a) if the power to the remote control system is removed for any reason, all crane or hoist functions stop;

(b) if the control signal for any crane or hoist motion becomes ineffective, the crane or hoist motion stops;

(c) the remote control panel has an operator controlled emergency stop feature that

(i) permits the operator to stop all crane or hoist movement regardless of a malfunction within the remote control system, and

(ii) requires resetting of the emergency stop feature before equipment operation can resume.

(9) A remote control panel for a crane or hoist must be marked to identify the corresponding base control unit to be used with it.

(10) The maximum distance between a remote control panel and the crane or hoist being operated by the remote control system must

(a) not exceed the limit specified by the control system manufacturer, and

(b) be communicated to the operator before the operator uses the crane or hoist.

[en. B.C. Reg. 320/2007, App. E, s. 18.]

Operator protection

14.29 The operator of a crane or hoist must be protected against hazardous conditions such as falling or flying objects and excessive heat or cold that could adversely affect the health or safety of the operator.

Cab windows

14.30 (1) Cab windows on a mobile crane must be made of safety glazing materials meeting the requirements of *ANSI/SAE Z26.1-1996, American National Standard for Safety Glazing Materials for Glazing Motor Vehicles and Motor Vehicle Equipment Operating on Land Highways – Safety Standard*.

(2) Cab windows on a hoist or crane, other than a mobile crane, must be laminated glass, tempered glass, wired glass or clear polycarbonate plastic.

(3) Operator cab windows on a crane or hoist must

(a) be kept clear,

(b) provide an unobstructed field of vision toward the load hook, and

(c) have window wipers, if necessary to maintain a clear view through the window.

[am. B.C. Regs. 312/2003, App. A, s. 5; 320/2007, App. E, s. 19; 139/2021, App. D, s. 8.]

Operator's seat

14.31 The operator's seat on a crane or hoist must be of a design that allows the operator to safely operate the equipment and the seat must be kept in good condition.

Storage

14.32 (1) The operator's cab of a crane or hoist must be kept free of unnecessary tools, material or equipment.

(2) Adequate storage facilities must be provided if it is necessary to keep tools or equipment in the operator's cab of a crane or hoist.

Fire extinguisher

14.33 A fire extinguisher having at least a 10 BC rating must be immediately available in the cab of each crane.

Equipment Operation

Operator qualifications

14.34 (1) A crane or hoist must only be operated by a qualified person who has been instructed to operate the equipment.

(2) A person must demonstrate competency, including familiarity with the operating instructions for the crane or hoist and the code of signals for hoisting operations authorized by the Board before operating the equipment.

(3) Repealed. [B.C. Reg. 243/2006, s. 8 (b).]

[am. B.C. Regs. 312/2003, App. F, s. 4; 243/2006, s. 8.]

Operator certification

14.34.1 On and after July 1, 2007, a mobile crane, tower crane or boom truck must be operated only

(a) by a person with a valid operator's certificate issued by a person acceptable to the Board, and

(b) in accordance with any conditions stipulated on the certificate.

[en. B.C. Reg. 243/2006, s. 9.]

Pre-use inspection

14.35 (1) Before an operator uses a crane or hoist, the operator must ensure that

(a) the crane or hoist was inspected for that work shift, and

(b) the control and safety devices were tested for that work shift.

(1.1) The inspection and testing in subsection (1) must be carried out in the manner specified

(a) by the manufacturer,

(b) in the applicable design or safety standards set out in section 14.2, and

(c) in this Regulation.

(2) Any defects found during inspection or use of a crane or hoist must be recorded in the inspection and maintenance record system and be reported immediately to the supervisor, who must determine the course of action to be taken.

(3) If a defect affects the safe operation of the crane or hoist, the equipment must not be used until the defect has been remedied.

[am. B.C. Reg. 320/2007, App. E, s. 20.]

Load weight

14.36 (1) The weight of each load to be hoisted by a crane or hoist must be determined and communicated to the equipment operator and to any person rigging the load.

(2) If the weight of a load to be lifted cannot be accurately determined, the crane or hoist to be used for the lift must have a load weight indicator or an overload prevention system.

(3) Subsections (1) and (2) do not apply to logging equipment that is being used to lift logs or to lift a log trailer.

[am. B.C. Reg. 320/2007, App. E, s. 21.]

Calibration

14.37 (1) The following devices or systems on a crane or hoist must be calibrated at the intervals specified by the manufacturer and whenever there is an indication the device or system is not functioning correctly:

(a) a load weighing device;

(b) a load moment indicator;

(c) an overload prevention system.

(2) The dates of calibration under subsection (1) must be recorded in the inspection and maintenance records system for the crane or hoist.

[en. B.C. Reg. 320/2007, App. E, s. 22.]

Operator's duties

14.37.1 The operator of a crane, hoist or boom truck must have full control of the equipment controls whenever the hoisting equipment is in use, and engage in no other duties while operating the equipment.

[en. B.C. Reg. 258/2008, App. D, s. 1.]

Safe lifting

14.38 (1) The rated capacity of a crane or hoist must not be exceeded.

(2) The operator of a crane or hoist must not move a load unless the operator is satisfied that the load can be handled safely.

(3) A load must be secured during a lift to ensure that all or any part of the load cannot be dislodged.

(4) A load line on a crane or hoist must not contact anything other than the load block or hook and the sheaves and hoist drum.

(5) Tag lines or other effective means must be used when necessary to control hazardous movement of a load or to assist with positioning a load.

(6) If a crane or hoist is being operated at the same time and in the same location as other work activity, the employer or the prime contractor must organize and control the work of any persons who are not involved in that operation to ensure that the operation can be carried out safely.

[en. B.C. Reg. 320/2007, App. E, s. 23.]

Contact with loads and structures

14.39 (1) A load must not contact a structural member of a crane or hoist and a structural member of a crane or hoist must not contact any building, bridge, other crane or any other structure, fixture or improvement.

(2) If contact as described in subsection (1) occurs, a qualified person must inspect the point of contact, and visible damage such as a cracked weld or a bent or dented member must be assessed, repaired as necessary, and the damaged or repaired area certified by a professional engineer as safe for use.

(3) Equipment used for handling logs and specifically designed for the logs to contact the boom or other structural member is exempt from the requirements of subsections (1) and (2), provided workers are kept out of the hazard area created by the loads being handled.

[am. B.C. Reg. 320/2007, App. E, s. 24.]

Swing and shear hazards

14.40 (1) If a hazard is created by the swing or shearing movement of a load, cab, counterweight or any other part of a crane or hoist, the operator of the crane or hoist must not move the equipment when a person is within range of the swing or shearing movement of the load or equipment.

(2) If a hazard is created by the swing or shearing movement of a load, cab, counterweight or any other part of a crane or hoist, a person must not enter or remain within the range of the swing or shearing movement of the load or equipment.

[en. B.C. Reg. 320/2007, App. E, s. 25.]

Position of equipment

14.41 (1) Equipment must be positioned so that no moving part of the equipment will come within 60 cm (2 ft) of any obstruction in any area accessible to workers.

(2) If the clearance required by subsection (1) cannot be provided, entry to such areas must be prevented by barriers or other effective means.

Tandem lift

14.42 (1) If a tandem lift is a critical lift or if the lifted load is to be moved laterally, the tandem lift must be carried out under the direction of a qualified supervisor who

(a) is not operating a crane, hoist or other piece of powered lifting equipment, and

(b) is responsible for the safe conduct of the operation.

(2) A written lift plan must be prepared for every tandem lift and must be available at the worksite during the lift.

(3) The lift plan required in subsection (2) must include the following:

(a) rigging details;

(b) wind speed limitations;

(c) maximum hoist line speed;

(d) maximum crane travel speed, if applicable;

(e) load distribution;

(f) the need for and position of signallers.

(4) If a tandem lift involves the use of a tower crane, the lift plan required in subsection (2) must be certified by a professional engineer.

(5) At a pre-job meeting held immediately before commencing hoisting operations for a tandem lift, the lift plan required in subsection (2) must be communicated to all people involved and the supervisor must document the meeting.

(6) The pre-job meeting required under subsection (5) must be repeated whenever there is a change in the people or equipment involved in the tandem lift.

(7) Effective communication must be established and maintained between all people involved in a tandem lift.

[en. B.C. Reg. 320/2007, App. E, s. 26.]

Critical lift

14.42.1 (1) A written lift plan must be prepared for every critical lift and must be available at the worksite during the lift.

(2) The written lift plan required in subsection (1) must include the following:

(a) rigging details;

(b) wind speed limitations;

(c) maximum hoist line speed;

(d) maximum crane travel speed, if applicable;

(e) load distribution;

(f) the need for and position of signallers.

(3) At a pre-job meeting held immediately before commencing hoisting operations for a critical lift, the lift plan required in subsection (1) must be communicated to all people involved and the supervisor must document the meeting.

(4) The pre-job meeting required under subsection (3) must be repeated whenever there is a change in the people or equipment involved in the critical lift.

(5) Effective communication must be established and maintained between all people involved in a critical lift.

[en. B.C. Reg. 320/2007, App. E, s. 27.]

Travelling with a load

14.43 (1) When a crane or hoist is travelling with a load, the operator of the crane or hoist must ensure that the load is carried as close to the ground or grade as possible and rigged to control load swing.

(2) When a crane or hoist is travelling with a load, adequate safety measures must be taken to ensure people are not endangered by the movement of the crane, hoist or load.

[am. B.C. Reg. 320/2007, App. E, s. 28.]

Loads over work areas

14.44 (1) If practicable, work must be arranged to prevent passing a load over any person.

(2) A crane or hoist operator must not pass a load over a person unless no practicable alternative exists and then only after the person has been warned of the danger by an audible alarm or other effective means.

(3) A person working at a workplace must not stand under or pass beneath a suspended load.

[en. B.C. Reg. 320/2007, App. E, s. 29.]

Unattended loads

14.45 A load must not be left suspended from or supported by a crane or hoist when an operator is not at the controls.

[am. B.C. Reg. 320/2007, App. E, s. 30.]

Vertical load line

14.46 The load line above the load hook or the load block of a crane or hoist must be kept vertical when lifting a load in order to prevent side loading of the crane or the load swinging.

[en. B.C. Reg. 320/2007, App. E, s. 31.]

Signals

14.47 (1) When the operator of a crane or hoist does not have a clear and unobstructed view of the boom, jib, load line, load hook and load throughout the whole range of the hoisting operation, the operator must act only on the directions of a qualified signaller who has a clear view of the things the operator cannot see.

(2) The operator of the crane or hoist must stop the operation of the equipment on receiving a stop signal from any person.

[en. B.C. Reg. 320/2007, App. E, s. 32.]

Alternative to hand signals

14.48 (1) Two-way radio or other audio or video systems acceptable to the Board must be used if distance, atmospheric conditions or other circumstances make the use of hand signals hazardous or impracticable.

(2) Audio and video communication systems used in a hoisting operation must be designed, installed, operated and maintained according to a standard acceptable to the Board.

Dedicated radio system

14.49 (1) A two-way radio system, used for communications between the operator of a tower crane or a self erecting tower crane and the riggers and signallers working with that operator, must operate on a frequency and at a transmitter power assigned and coordinated by the Board or by a person acceptable to the Board.

(2) Multi-channel radios are not permitted for use to direct crane or hoist movement.

(3) Only the operator of the crane and the riggers and signallers working with the operator may have the capability to transmit on the radio frequency assigned under subsection (1).

[am. B.C. Reg. 320/2007, App. E, s. 33.]

Communication between equipment operators

14.49.1 If, during the operation of a crane or hoist, another piece of equipment is operating in the vicinity and has the reach to interfere with the movement of the crane or hoist, or the load being handled,

(a) each operator must have effective voice communication with every other operator, and

(b) written procedures must be developed and implemented to ensure coordination of the operation of the equipment to prevent any physical contact.

[en. B.C. Reg. 320/2007, App. E, s. 34.]

Unhooking loads

14.50 A load on a crane or hoist load hook must be safely landed and supported, before being unhooked.

Riding hook or load

14.51 A worker must not ride on a load, sling, hook or any other rigging equipment.

Induced voltage

14.52 (1) Before a crane or hoist is operated near a source such as a radio transmitter or energized high voltage electrical equipment which may induce an electric charge which could pose a hazard to workers, the following precautions must be implemented:

(a) the crane or hoist must be effectively grounded;

(b) any induced electric charge on the load must be dissipated by applying grounding cables or by other effective means before workers contact the load;

(c) flammable materials must be removed from the immediate work area.

(2) Subsection (1) (a) and (b) does not apply if work is being performed on a power system in accordance with the requirements of Part 19 (Electrical Safety).

Work near high voltage

14.52.1 A crane or hoist must be operated in a manner that prevents any part of the crane or hoist, load line, rigging or load from coming within the minimum distance of energized high voltage electrical conductors or equipment as specified in Part 19.

[en. B.C. Reg. 320/2007, App. E, s. 34.]

14.53 Repealed. [B.C. Reg. 312/2003, App. D, s. 12.]

Bridge, Gantry and Overhead Travelling Cranes

Operational and running tests

14.54 (1) This section applies to

(a) a bridge crane, gantry crane or overhead travelling crane that was installed after January 1, 1999, and

(b) a crane referred to in paragraph (a) or its runway that has been reinstalled, modified or rebuilt.

(1.1) The following tests must be performed before the equipment described in subsection (1) is used for the first time after it has been installed, reinstalled, modified or rebuilt, as applicable:

(a) all crane motions, holding brakes and travel brakes must be tested to meet the manufacturer's specifications and the requirements of the applicable design or safety standard for when the hook is carrying a load at rated capacity;

(b) all circuits, controls, interlocks and sequences of operation of the equipment must be tested to ensure they are functioning properly;

(c) all crane motions, holding brakes and travel brakes must be tested to prove the crane's ability to safely handle a load of 125% of the crane's rated capacity;

(d) all limit switches, brakes and other protective devices must be tested to ensure they function properly when the crane is carrying a load of 100% of the rated capacity;

(e) structural deflection must be measured with a load of 100% of the rated capacity and must not exceed the allowable deflection specified by the applicable design standard;

(f) the load must be travelled over the full length of the bridge and trolley runways during the load tests at 100% and 125% of rated capacity, and only the parts of runways that have been successfully load tested may be placed into service.

(2) A record of all load tests must be included in the equipment record system giving details of the tests and verification of the loads used, and be signed by the person conducting the tests.

(3) A replacement crane or hoist to be installed on an existing runway may be load tested in the manufacturer's facility and installed on the existing runway provided that the rated capacity of the replacement crane or hoist and the loads imposed on the runway by the replacement crane or hoist are equal to or less than the previously tested load rating for the runway.

(4) In the circumstances set out in subsection (3), the existing runway is not required to be load tested as required in subsection (1.1) unless the runway has been modified since it was previously load tested.

[am. B.C. Reg. 320/2007, App. E, s. 35.]

Detailed inspection

14.54.1 A bridge crane, gantry crane or overhead crane must be inspected by a qualified person in accordance with

(a) the inspection criteria specified by the manufacturer of the crane,

(b) the applicable design or safety standard specified in section 14.2, and

(c) the requirements of this Regulation.

[en. B.C. Reg. 320/2007, App. E, s. 36.]

Uptravel limit

14.55 (1) A bridge, gantry or other overhead travelling crane must have a device which will prevent hook travel beyond the safe upper limit at all design hoist speeds.

(2) The device required by subsection (1) must be tested at the beginning of each shift.

[am. B.C. Reg. 320/2007, App. E, s. 37.]

Electrical conductors

14.56 Electrical conductors for the bridge and trolley must be located or guarded to prevent contact by workers.

Power shutoff

14.57 An electrically powered crane, other than a monorail crane built prior to January 1, 1985, must have a means for the operator to safely interrupt the main electric circuit under any load condition and this means must require a manual reset before power is restored to the crane.

[am. B.C. Reg. 320/2007, App. E, s. 38.]

Direction markings

14.58 A bridge, gantry, or overhead travelling crane operated by a pendant or remote control must have markings on the crane structure or building, visible to the operator, clearly

indicating the direction of hook, bridge and trolley motions compatible with those marked on the controls.

Pneumatically Powered Hoists and Winches

Pneumatically powered hoists

14.59 (1) The air supply for a pneumatically powered hoist or winch must

(a) be sufficient to safely operate the hoist, and

(b) not exceed the maximum allowable pressure for the operation of the hoist, as specified by the hoist manufacturer.

(2) Air supply hoses for a pneumatically powered hoist or winch must be secured against inadvertent disconnection.

[am. B.C. Reg. 320/2007, App. E, s. 39.]

14.60 Repealed. [B.C. Reg. 312/2003, App. E, s. 7.]

Manually Powered Hoists

Brakes

14.61 A manually powered hoist must have a ratchet and pawl, load brake, or other mechanism to hold the load at any height.

Crank handles

14.62 The crank handle for a crank operated winch without automatic load brakes must be

(a) prevented from slipping off the crankshaft while hoisting, and

(b) removed from the crankshaft before the load is lowered.

Mobile Cranes, Boom Trucks and Sign Trucks

14.63 Repealed. [B.C. Reg. 312/2003, App. D, s. 13.]

Load weight indicators

14.64 (1) A mobile crane or boom truck with a rated capacity of 10 tonnes (11 tons) or more must have a device that measures and indicates the weight of the load on the load hook or disengages crane functions whose movement can cause the mobile crane or boom truck to lift beyond the rated capacity.

(2) A load indicating device required by subsection (1) must meet the requirements of *ANSI/SAE Recommended Practice J376-APR85, Load Indicating Devices in Lifting Crane Service*.

(3) A crane being used for duty cycle work is exempt from the requirements of subsection (1) if the load applied to the crane is safely below the rated capacity of the crane and if the possibility of an unexpected overload does not exist.

[am. B.C. Regs. 312/2003, App. A, s. 4; 320/2007, App. E, s. 40.]

14.65 Repealed. [B.C. Reg. 320/2007, App. E, s. 41.]

Level turntable

14.66 (1) A mobile crane or boom truck must be operated with the crane turntable or boom truck frame level, unless the manufacturer provides that it may be operated otherwise.

(2) Level indicating devices must be provided to permit the operator of a mobile crane or boom truck to determine whether the crane turntable or boom truck frame is level within the limits specified by the manufacturer.

(3) When a mobile crane or boom truck is operating on a floating support, the rated capacity must be determined by a professional engineer or the manufacturer of the crane or boom truck, taking into account the list and trim characteristics of the floating support and the mobile crane or boom truck operating together as a system.

(4) When a mobile crane or boom truck is used on a floating support, a device to measure the list of the floating support must be provided and located so it can be read by the operator from the operator's position for the mobile crane or boom truck.

(5) A mobile crane or boom truck being used on a floating support must be blocked and secured as necessary to prevent it from shifting relative to the bearing surface of the floating support.

[am. B.C. Reg. 320/2007, App. E, s. 42.]

Outriggers and stabilizers

14.67 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 24 (b).]

(2) Outrigger beams and stabilizers on a crane or boom truck must be marked to indicate when the necessary extension has been achieved.

(3) Repealed. [B.C. Reg. 312/2003, App. B, s. 24 (b).]

(4) Floats must be secured to the outrigger jacks of a crane or boom truck when outriggers are used.

[am. B.C. Regs. 312/2003, App. B, s. 24; 320/2007, App. E, s. 43.]

Tires

14.68 Mobile crane or boom truck tire type, condition and inflation must be as specified by the manufacturer when lifting on rubber.

Supporting surface

14.69 (1) A mobile crane or boom truck must be used only on a surface capable of safely supporting the equipment and any hoisted load.

(2) If a mobile crane or boom truck will be used adjacent to an excavation, slope or backfilled area, a qualified person must determine the location for the equipment for hoisting operations.

(3) In subsection (2), **"adjacent to an excavation"** has the same meaning as in section 20.1.

(4) Blocking, shoring or cribbing must be sized and used as necessary to ensure the load from a mobile crane or boom truck support does not exceed the bearing capacity of the supporting surface.

[en. B.C. Reg. 320/2007, App. E, s. 44.]

Travelling with a load

14.70 A mobile crane or boom truck may travel with a suspended load only if

(a) the crane manufacturer specifies load ratings for this operation, and

(b) the operation is carried out in accordance with the manufacturer's instructions for this operation.

[en. B.C. Reg. 320/2007, App. E, s. 45.]

Annual inspection

14.71 (1) A mobile crane or boom truck must be inspected at least once every 12 months in accordance with good engineering practice to ensure it meets

(a) the crane or boom truck manufacturer's specifications,

(b) the requirements of the applicable design or safety standard specified in section 14.2, and

(c) the requirements of this Regulation.

(2) A mobile crane or boom truck must not be used after an inspection under subsection (1) unless a professional engineer certifies it is safe for use on the basis of that inspection.

[en. B.C. Reg. 320/2007, App. E, s. 46.]

Boom inspection

14.72 (1) A crane boom used with a vibratory hammer for driving piles must be inspected at least once every 3 months in accordance with good engineering practice to ensure it meets

(a) the crane boom manufacturer's specifications,

(b) the requirements of the applicable design or safety standard specified in section 14.2, and

(c) the requirements of this Regulation.

(2) A crane boom used with a vibratory pile extractor or with a drop hammer or used for dynamic compaction must be inspected at least once a month in accordance with good engineering practice to ensure it meets

(a) the crane boom manufacturer's specifications,

(b) the requirements of the applicable design or safety standard specified in section 14.2, and

(c) the requirements of this Regulation.

(3) A boom must not be used after an inspection under subsection (1) or (2) unless a professional engineer certifies it is safe for use on the basis of that inspection.

(4) A crane used in any operation described in subsection (1) or (2) must not be returned to lifting service unless a professional engineer inspects the crane and certifies that it is safe for such use.

[en. B.C. Reg. 320/2007, App. E, s. 47.]

Sign trucks

14.73 (1) A sign truck must be inspected, maintained and operated according to the requirements for mobile cranes, and for elevating work platforms in Part 13 (Ladders, Scaffolds and Temporary Work Platforms).

(2) When a sign truck is being used, the load rating charts for the configuration in use must be available at the workplace.

[am. B.C. Reg. 320/2007, App. E, s. 48.]

Tower Cranes

Definition

14.73.1 In sections 14.73.2 to 14.93, **"tower crane"** means a tower crane that is erected on site from component parts or that is self erecting.

[en. B.C. Reg. 320/2007, App. E, s. 49.]

Tower crane erection

14.73.2 The erection, climbing and dismantling of a tower crane must be done by qualified persons and in accordance with the instructions of

(a) the crane manufacturer, or

(b) a professional engineer, if the installation varies from the crane manufacturer's instructions.

[en. B.C. Reg. 320/2007, App. E, s. 49.]

Tower crane support

14.74 (1) The foundation for support of a tower crane must be certified by a professional engineer.

(2) The design of shoring and bracing to support a tower crane must be certified by a professional engineer, and the shoring and bracing must be constructed as specified by the design.

(3) If a tower crane is supported partially or fully by, or connected to, a building or structure, the connections to and any bracing or shoring of the building or structure necessary to support the tower crane must be certified by a professional engineer.

(4) The bearing capacity of the supporting surface for a tower crane must be determined by a professional engineer.

(5) The loads from a tower crane must be distributed onto its supporting surface to prevent the bearing capacity of the supporting surface being exceeded.

[am. B.C. Reg. 320/2007, App. E, s. 50.]

Before use

14.75 (1) Before a tower crane is put in service, the erector of the tower crane must verify that the crane has been erected according to

(a) the manufacturer's specifications, or

(b) the specifications of a professional engineer, if the engineer has authorized the crane to be erected otherwise.

(2) If a tower crane is not erected according to the manufacturer's specifications, a professional engineer must certify before the crane is put in service that

(a) the variations from the manufacturer's specifications meet the requirements of the applicable design or safety standard,

(b) the load charts are adjusted as necessary, and

(c) the crane is safe for use.

(3) The erector of a tower crane must adjust the overload prevention system as necessary to meet the load chart for the crane as erected.

(4) Before a tower crane, other than a self erecting tower crane, is put in service after its mast has been repositioned, a professional engineer must certify that the parts of the crane affected by the repositioning process have been properly installed and any required reshoring for, and bracing to, the supporting structure is in place.

(5) Before a tower crane is put in service following its erection or the repositioning of its mast, the person responsible for the erection of the crane or the repositioning of its mast must make available at the workplace where the crane is installed a report verifying that

(a) the certification documents required by section 14.74 and subsections (2) and (4) of this section are available at the workplace, and

(b) the overload prevention system of the crane has been adjusted as required in subsection (3), including specifying the load limits set for the various devices.

[en. B.C. Reg. 320/2007, App. E, s. 51.]

Identification

14.76 The interchangeable structural components of tower cranes must be uniquely identified and that unique identification must be used when referring to structural components in reports for inspection and testing, and certifications for repairs and modifications.

[am. B.C. Reg. 320/2007, App. E, s. 52.]

Structural inspection

14.77 (1) Subject to subsection (4), before the erection of a tower crane, the structural components of the crane must be

(a) inspected to determine their integrity by a qualified person using non-destructive testing (NDT) methods meeting the requirements of the Canadian General Standards Board (CGSB), and

(b) certified by a professional engineer as safe for use after the inspection in paragraph (a) and any necessary repairs.

(2) If a tower crane remains erected at a workplace for more than 12 months,

(a) its structural components must be inspected to determine their integrity by a qualified person using NDT methods meeting the requirements of the CGSB, and

(b) after the inspection required by paragraph (a), the crane, including any necessary repairs, must be certified by a professional engineer as safe for use.

(3) If a tower crane is scheduled to be dismantled within 15 months of its being erected, subsection (2) does not apply provided that a visual inspection, conducted 12 months after erection of the crane and supervised by a professional engineer, shows no evidence of cracking or other structural weakness.

(4) A self erecting tower crane must be

(a) inspected visually by a qualified person each time it is erected, and

(b) inspected and certified under subsection (1) at least once every 12 months.

(5) Subsection (3) does not apply to a self erecting tower crane.

[am. B.C. Regs. 312/2003, App. A, s. 20; 320/2007, App. E, s. 53.]

Structures kept clean

14.78 Tower crane structures must be kept clean and free of concrete and other debris that can hinder inspection and the base area must be clear of debris and the accumulation of water.

Manual and records

14.79 The following documents respecting operation, inspection, maintenance and repair of a tower crane must be kept at the workplace where and while the crane is erected:

(a) the portions of the manufacturer's manual or engineer's instructions required by section 14.12 (3);

(b) all records dated from the date of structural certification under section 14.77, including those specified in section 14.75 (5);

(c) in the case of a self erecting tower crane, all records dated from the date of the last certification of the crane.

[en. B.C. Reg. 320/2007, App. E, s. 54.]

Counterweights and ballasts

14.80 (1) Counterweights and ballasts used on a tower crane must be as specified by the original equipment manufacturer or by a professional engineer.

(2) Each counterweight and ballast element must be accurately weighed and the weight of the counterweight or element must be clearly and durably marked on it.

(3) The weight of counterweight and any ballast installed on a tower crane must be recorded in the report required by section 14.75 (5).

[am. B.C. Reg. 320/2007, App. E, s. 55.]

Limit devices

14.81 (0.1) In this section:

"limit device" means a device on a tower crane that is designed to control the loads or motions of the crane, and includes the switches and devices described in subsections (1) and (5);

"warning device" means a device, such as a visual signal, audio signal or gauge, attached to a limit device that indicates when the limit device malfunctions.

(1) A tower crane must have automatic travel limit switches and automatic overload prevention devices that prevent overloading at any trolley position, the load block from travelling beyond the highest allowable position specified by the manufacturer and the trolley from travelling beyond the allowable limit specified by the manufacturer.

(2) Subject to subsection (4), limit devices on a tower crane must be tested before the crane is first used on each work shift

(a) in accordance with the manufacturer's testing procedures, or

(b) if the manufacturer's testing procedures are not available, in accordance with testing procedures approved by a professional engineer.

(3) Any malfunction of a limit device, warning device or safety device on a tower crane that is discovered after testing or at any other time must be remedied before the crane is used.

(4) If it is not practicable, due to the configuration of the workplace, to position sufficient test weights to test the maximum load limit switch before the crane is first used on each work shift, the maximum load limit switch must

(a) be set to activate at a load of less than 80% of the maximum rated capacity for the crane and tested using test blocks, and

(b) be reset to the maximum load limit for the crane and tested using test blocks before making any lift that is greater than the load limit setting established under paragraph (a).

(5) A tower crane with a luffing boom must have an automatic limit device that prevents the boom being raised beyond the maximum permitted boom angle.

(6) In subsection (5), **"luffing boom"** means a boom that is raised and lowered about a pivot point to change the load radius.

[am. B.C. Regs. 320/2007, App. E, s. 56; 9/2017, App. K.]

Test blocks

14.82 (1) Test blocks for testing overload prevention devices on a tower crane must be available at the tower crane site.

(2) The weights of test blocks required by subsection (1) must be as specified by

(a) the crane manufacturer if the crane is erected in accordance with the manufacturer's instructions, or

(b) a professional engineer if the crane has been erected other than in accordance with the manufacturer's instructions.

(2.1) The weight of each test block required by subsection (1) must be accurately determined and durably and legibly marked on that block.

(3) Test blocks, including the lifting point, must be designed by the crane manufacturer or a professional engineer.

[am. B.C. Reg. 320/2007, App. E, s. 57.]

Operator's cab

14.83 (1) The design, location and method of attaching a tower crane operator's cab must be approved by the crane manufacturer or by a professional engineer.

(2) The rated capacity of a tower crane must be adjusted as necessary if using a cab type and location not approved by the crane manufacturer.

Monitoring jib swing

14.84 (1) The operator of a tower crane must have a clear view of the jib of the crane whenever the jib is being slewed.

(2) Subsection (1) does not apply if a signaller or a rigger who is able to see the jib of the crane is in communication with the operator of the crane and provides directions to the operator.

[en. B.C. Reg. 320/2007, App. E, s. 58.]

Overlapping operating zones

14.84.1 (1) In this section:

"operating zone" means,

(a) in the case of a tower crane, the complete circular area covered by the swing of the tower crane's jib as it rotates, and

(b) in the case of any other equipment, the area covered by the swing or movement of the equipment;

"overlapping operating zone" means the area where the operating zone of a tower crane intersects the operating zone of another tower crane or other piece of equipment.

(2) If practicable, tower cranes must be erected to avoid the overlapping of their operating zones.

(3) If it is not practicable to comply with subsection (2), the following procedures apply:

(a) the cranes must be erected and maintained so that the lowest point of any component of the higher crane is at least 3 m (10 ft.) above the highest component of the lower crane that crosses into the overlapping operating zone;

(b) the boundaries of the overlapping operating zone must be marked so the boundaries are visible to the operators of all the affected cranes;

(c) any load suspended by the higher crane must be positioned at a location that ensures at least 3 m (10 ft.) lateral clearance between it and an operator's cab on the jib of the lower crane;

(d) written operating procedures must be developed and implemented to coordinate lifting tasks in the overlapping operating zone to prevent collision or interference between a component or suspended load of one crane with a component or suspended load of another crane.

(4) The procedures required in subsection (3) (d) must do the following:

(a) minimize the time each crane spends in the overlapping operating zone;

(b) establish that the lower crane has priority for working in the overlapping operating zone;

(c) establish that the operator of the lower crane must give temporary permission to the operator of the higher crane for each lifting sequence in the overlapping operating zone;

(d) establish a means and protocol for communication between the crane operators when a crane operates in the overlapping zone, including a requirement for the operator of the higher crane to contact the operator of the lower crane when the higher crane is required to enter the overlapping operating zone;

(e) establish that the lateral clearance of the load of the higher crane will be at least 3 m (10 ft.) from

(i) the occupied cab of the lower crane, and

(ii) the space above it;

(f) establish that when the lower crane is being operated or when a person is on the lower crane, the higher crane will not pass a load over the lower crane unless

(i) the activity follows work procedures acceptable to the Board, and

(ii) either

(A) the higher crane is being used to erect, service or dismantle the lower crane, or

(B) there is a minimum of 18 m (60 ft.) clearance between the underside of the jib of the higher crane and the highest point on the lower crane that is within the tip radius of the higher crane.

(5) If the operating zone of a tower crane overlaps the operating zone of another piece of equipment with a reach capable of interfering with the movement of the crane or hoist, or the load being lifted,

(a) written operating procedures must be developed and implemented to coordinate lifting tasks in the overlapping operating zone to prevent collision or interference between a component or suspended load of the tower crane with a component or suspended load of the other equipment, and

(b) the boundaries of the overlapping operating zone must be marked so the boundaries are visible to the operators of all affected cranes and equipment.

[en. B.C. Reg. 320/2007, App. E, s. 59.]

Clearance and freedom to slew

14.85 (1) Except as otherwise required by this Regulation, at all times and under all load conditions, a tower crane must have vertical and lateral clearances, between any component of the tower crane jib and counter jib and any obstruction, that are the greater of

(a) the vertical and lateral clearances specified by the crane manufacturer, and

(b) a vertical clearance of 1 m (3.3 ft.) and a lateral clearance of 30 cm (1 ft.).

(2) At all times and unless otherwise specified by the crane manufacturer, a tower crane must be able to slew 360 degrees.

[en. B.C. Reg. 320/2007, App. E, s. 60.]

14.86 Repealed. [B.C. Reg. 312/2003, App. J, s. 4.]

14.87 Repealed. [B.C. Reg. 320/2007, App. E, s. 61.]

Access

14.88 (1) A tower crane must have a fixed ladder installed in or on the mast to provide access to the jib and crown of the crane.

(2) The ladder under subsection (1) must meet the following requirements:

(a) the ladder must be able to support two 1.1 kN (250 lbs.) point loads between any two consecutive points where the ladder is attached to the crane;

(b) there must be a minimum horizontal distance of 15 cm (6 in.) between the rungs and the object to which the ladder is attached;

(c) landing platforms must be provided at least every 9 m (30 ft.) on the ladder;

(d) each section of the ladder must be offset horizontally from adjacent sections or the landing platforms must have trap doors;

(e) if a section of the ladder has a climb exceeding 6 m (20 ft.) in length, that section of ladder must have a ladder safety cage 68 cm to 76 cm (27 in. to 30 in.) in diameter or a ladder safety device must be used.

(3) Each tower crane jib must have a continuous walkway from the mast to the tip.

(4) The walkway referred to in subsection (3) must meet the following requirements:

(a) the walkway must be at least 30 cm (12 in.) wide and constructed with a non-skid surface;

(b) a handline, which is approximately 1 m (39 in.) above the level of the walkway, and a midline must be provided on both sides of the walkway not more than 30 cm (12 in.) out from the edge of the walkway and supported at intervals not exceeding 3 m (10 ft.);

(c) the handline and midline referred to in paragraph (b) must be wire rope of at least 1 cm (3/8 in.) diameter;

(d) if it is not practicable to provide handlines in accordance with paragraph (b), alternative means of fall protection, such as a horizontal lifeline system, must be provided in accordance with the requirements of Part 11 (Fall Protection) and must be set out in the fall protection plan.

(5) If, due to the design or size of the tower crane, it is not practicable to meet the requirements set out in subsections (1) to (4), alternative safe means of access must be provided.

(6) The climbing space of a tower crane mast must be clear of protruding objects and must provide a safe and unobstructed passage.

(7) A written fall protection plan, which addresses the requirements of fall protection when a person is operating, inspecting, servicing and maintaining the tower crane, must be developed and implemented.

[en. B.C. Reg. 320/2007, App. E, s. 61.]

14.89 and **14.90** Repealed. [B.C. Reg. 320/2007, App. E, s. 61.]

Hoisting ropes

14.91 (1) A rotation resistant hoisting rope on a tower crane must be shortened by the removal of 3 m (10 ft) of rope at the dead end after every 500 hours of use unless

(a) otherwise specified by the rope manufacturer,

(b) the rope has 14 or more outer strands, or

(c) the rope has a plastic coated inner core.

(2) The hoisting rope on a tower crane must be properly seized before cutting.

(3) The equipment records for a tower crane must contain the following information about the hoisting rope installed on the crane:

(a) the name of the manufacturer or supplier of the rope;

(b) the type of rope installed as described by the rope construction, number of outer strands, type of lay, direction of lay and type of core;

(c) the diameter and the length of the rope;

(d) the nominal or minimum rated breaking strength of the rope;

(e) the rated working load limit for the rope;

(f) the date the rope was installed;

(g) if the rope was not new at the time of installation, the name of the qualified person who inspected the rope before installation on the crane to ensure that the rope was in a suitable condition for use as the hoist line on the crane;

(h) the name of the qualified person who installed the rope.

[am. B.C. Regs. 243/2006, s. 10; 320/2007, App. E, s. 62.]

Wind limitations

14.92 (1) An anemometer must be mounted on the crown, apex or operator's cab of each tower crane.

(2) The readout for the anemometer required by subsection (1) must be readable by the operator while at the crane controls.

(3) Tower crane operations must stop when a load cannot be handled safely because of wind.

(4) In the absence of the manufacturer's specifications for maximum permitted wind speed during crane operation, the maximum allowable wind speed in which a tower crane may be used is 50 km/h (30 mph), or less if a load cannot be handled safely because of wind.

(5) A sign or other item that would increase the surface area of a crane structure exposed to wind must not be installed unless authorized by the crane manufacturer or a professional engineer.

(6) A tower crane must not be erected, operated or dismantled when the wind speed exceeds the upper limit specified by the crane manufacturer for erection, operation or dismantling of the crane.

[am. B.C. Regs. 312/2003, App. B, s. 25; 320/2007, App. E, s. 63.]

Temperature limitations

14.93 Tower crane operations must stop when the ambient temperature drops below -18°C (0°F) or as otherwise specified by the crane manufacturer or a professional engineer.

14.94 and **14.95** Repealed. [B.C. Reg. 320/2007, App. E, s. 64.]

Construction Material Hoists

Certifications and instructions

14.96 (1) Before a construction material hoist is put into use, a professional engineer must certify that

(a) the hoist is safe for use, and

(b) the installation of the hoist complies with

(i) the design criteria for that installation,

(ii) the hoist manufacturer's specifications,

(iii) the requirements of *CSA Standard CAN/CSA-Z256-M87, Safety Code for Material Hoists*, and

(iv) the requirements of this Regulation.

(2) If, after certification under subsection (1), a modification is made to the structure, mechanical components or control system of a construction material hoist or it is changed through the addition or removal of a support section of the hoist, the hoist must not be used until it is recertified as safe for use by a professional engineer.

(3) Subsections (1) and (2) do not apply to a light duty portable material hoist installed and operated in accordance with the hoist manufacturer's instructions.

(4) A copy of the certifications required in subsections (1) and (2) or the manufacturer's instructions referred to in subsection (3) must be available at the workplace where the hoist is installed.

[en. B.C. Reg. 320/2007, App. E, s. 65.]

Rider restriction

14.97 A worker must not ride on a construction material hoist unless it is necessary to do so for inspection and maintenance of the hoist.

[am. B.C. Reg. 320/2007, App. E, s. 66.]

Notices

14.98 (1) The net rated capacity of each construction material hoist must be clearly and durably marked upon the hoist structure in letters or figures at least 5 cm (2 in) high in a location which is visible to persons involved with operation of the hoist.

(2) Each construction material hoist must prominently display a notice stating that no person may ride on the equipment.

14.99 to **14.115** Repealed. [B.C. Reg. 320/2007, App. E, s. 67.]

Chimney Hoists

Permission to use

14.116 If it is not practicable to provide safe access to a work platform on a chimney or similar structure using stairs or other means acceptable under the *BC Building Code* or this Regulation, a chimney hoist meeting the requirements of WorkSafeBC Standard 14.116 – Chimney Hoists, set out in Schedule 14-A, may be used to provide access for any person.

[en. B.C. Reg. 320/2007, App. E, s. 67; am. B.C. Reg. 188/2011, App. L, s. 3.]

Certification

14.117 (1) Before a chimney hoist is used, a professional engineer must certify that

(a) the chimney hoist is safe for use, and

(b) the installation of the hoist complies with

(i) the design criteria for that installation,

(ii) the hoist manufacturer's specifications,

(iii) the requirements of WorkSafeBC Standard 14.116 – Chimney Hoists, set out in Schedule 14-A, and

(iv) the requirements of this Regulation.

(2) A copy of the certification required in subsection (1) must be available at the workplace where the chimney hoist is installed.

[en. B.C. Reg. 320/2007, App. E, s. 67; am. B.C. Reg. 188/2011, App. L, s. 4.]

Support structures

14.118 The structure supporting a chimney hoist, together with all hoisting gear and equipment, must be well constructed, accurately aligned, securely anchored and have the required strength and stability to safely withstand the loads imposed.

Load rating

14.119 The rated capacity of the hoist of a chimney hoist must be conspicuously marked on the hoist and must not be exceeded.

[en. B.C. Reg. 188/2011, App. L, s. 5.]

14.120 to **14.132** Repealed. [B.C. Reg. 320/2007, App. E, s. 69.]

SCHEDULE 14-A

[en. B.C. Reg. 188/2011, App. L, s. 6.]

(sections 14.2 (9), 14.116 and 14.117)

WORKSAFEBC STANDARD 14.116 – CHIMNEY HOISTS

Scope

1 This standard sets out the minimum requirements that are in addition to those set out in sections 14.116 to 14.119 of this Regulation for the design and use of a chimney hoist to transport personnel to a fixed work platform on a chimney or similar structure.

Definitions and interpretation

2 (1) In this standard:

"cage" means the fully enclosed platform of a chimney hoist, which platform is used to raise or lower one or more persons to a fixed work platform on a chimney or similar structure;

"hoist", in respect of a chimney hoist, means the apparatus that is used to raise or lower the cage;

"rated capacity", in respect of a cage or a hoist, means the maximum weight the cage or hoist is rated by its manufacturer to carry.

(2) The definitions set out in *ANSI/ASSE Standard A10.22-2007, Safety Requirements for Rope-Guided and Non-Guided Workers' Hoists*, apply in this standard.

General requirements

3 (1) A chimney hoist must

(a) be designed, constructed, erected, disassembled, inspected, maintained and operated as specified by the manufacturer or a professional engineer, and

(b) meet the requirements of *ANSI/ASSE Standard A10.22-2007, Safety Requirements for Rope-Guided and Non-Guided Workers' Hoists*, except as otherwise specified in this standard.

(2) A chimney hoist must have a cage.

Certification after alteration

4 (1) Following any alteration to a chimney hoist, other than ordinary adjustments or repairs,

(a) the chimney hoist must be tested by a professional engineer and certified as required under section 14.117 of this Regulation, and

(b) the design documents and operating instructions must be updated by the professional engineer as necessary to ensure the documentation is complete and allows for safe use of the chimney hoist.

(2) A copy of the certification required under subsection (1) must be available at the workplace where the chimney hoist is installed.

Emergency stopping devices

5 A chimney hoist must be outfitted with emergency stopping devices on at least two separate guide wire ropes that will apply automatically to prevent the cage from falling if a wire rope fails.

Safety factors

6 Suspension and guide wire ropes, supporting structures, slings and metal fittings used on a chimney hoist must have a safety factor of 10.

Drive restrictions

7 A hoist must have a positive drive and there must not be a clutch between the transmission and the hoist drum.

Brakes

8 A hoist must have two independent braking systems: one that applies automatically when the controls are in the neutral position, and one that applies automatically in the event of loss of power.

Terminal stopping devices

9 A chimney hoist must have upper and lower terminal stopping devices that automatically stop the cage from normal travel speed, within the top and bottom travel limits.

Speed governor

10 A hoist must have a governing device that will effectively prevent the drum speed from exceeding 110% of the design speed.

Equipment condition

11 The hoist, wire ropes and cage of a chimney hoist must be in good working order with all components, controls and functions meeting, and operating in accordance with, the manufacturer's specifications, the professional engineer's design specifications and this Regulation.

Cage markings

12 The cage must be legibly marked to show

(a) the name of the manufacturer or certifying professional engineer,

(b) a unique identification number or code that links to the design and certification documentation for the chimney hoist from the certifying professional engineer,

(c) the weight of the cage, and

(d) the rated capacity of the cage.

Load restrictions

13 (1) The rated capacity of the cage must not be exceeded.

(2) A chimney hoist must not use a hoist with a rated capacity that is less than the rated capacity of its cage.

Cage layout and guarding

14 The cage must be constructed so that

(a) it does not cause a hazard to the occupants, and

(b) the occupants cannot reach any hazard created by movement of the cage or the hoisting mechanism.

Fall protection at landings

15 A landing that is 3 m (10 ft) or more above grade must have gates, hinged guardrails, hinged covers or other effective guarding that protects persons who are at or near the landing from the hazard of falling off of or through the landing platform when the cage is not at that landing.

Guarding at the lower landing

16 The lower landing for a chimney hoist must be guarded by perimeter guards or guardrails and a gate.

Instructions for use and maintenance

17 The instructions from the professional engineer who designed the chimney hoist and from the manufacturers of its component parts, relating to safe use and maintenance of the chimney hoist, must be available in the workplace.

Chimney hoist must be in good condition

18 The chimney hoist, including its cage, must be in good condition at the beginning of each shift and during use.

Operator training and authorization

19 (1) A chimney hoist operator must not operate a chimney hoist unless authorized by the employer.

(2) A chimney hoist operator must not be authorized under subsection (1) unless the operator has demonstrated

(a) competency in the operation of the chimney hoist, and

(b) familiarity with the operating instructions required under section 17 and the communication systems required under sections 22 and 23.

Daily testing

20 Before the first use on each work shift, the cage of the chimney hoist must be raised to its maximum operating height and lowered back to the ground or base to ensure that

(a) all functions are operating correctly,

(b) all limit devices are functioning properly, and

(c) there is adequate clearance between the cage and any surrounding object such as a structure, overhead obstruction, storage rack, or scaffold, and any hazard such as energized electrical wires and equipment.

Attending the controls

21 The operator of a chimney hoist must not leave the hoist controls unattended or engage in any other tasks unless the cage is at the lowest landing level, which is usually at ground or grade level, and no persons are in the cage.

Communication with the operator

22 (1) There must be effective voice communication, using single channel two-way radios, among the chimney hoist operator, occupants of the cage and people at each hoist landing.

(2) If there is more than one occupant in a cage, one person in the cage must be designated to be the primary person to signal the chimney hoist operator regarding cage movement requests.

Backup communication plan

23 (1) An effective signalling system must be developed and implemented as an alternative in the event the primary voice communication system becomes ineffective while the chimney hoist is in use.

(2) If the voice communication system becomes ineffective while the chimney hoist is in use, the signalling system required under subsection (1) must be used to bring the cage down to the lowest landing and the hoist must not be used until the voice communication system is effectively restored.

Persons or materials

24 Materials, equipment or supplies must not be raised or lowered by the chimney hoist with a person in the cage.

Getting in or out of the cage

25 The cage must be at a designated landing before a person gets into or out of the cage.

Hoisting speed

26 A cage must not be raised or lowered at a speed greater than 76 m/min (250 fpm).

Position of gates

27 All the gates of a chimney hoist must be kept closed, except at a landing designated for loading and unloading the cage.

Emergency evacuation

28 (1) Before a chimney hoist is used, a plan must be developed for the evacuation of personnel from the cage in the event of loss of power or equipment malfunction.

(2) While a chimney hoist is in use, personnel and equipment must be immediately available to implement the plan required under subsection (1).

PART 15 – RIGGING

Definitions

15.1 In this Part:

"design factor" means the theoretical reserve capability of a product, usually determined by dividing the breaking strength by the working load limit;

"proof test" means a test applied to a product to determine material or manufacturing defects;

"rigging" means fibre ropes, wire ropes, chains, slings, attachments, connecting fittings and associated components.

[am. B.C. Reg. 312/2003, App. C, s. 5.]

General Requirements

Qualified riggers

15.2 Rigging and slinging work must be done by or under the direct supervision of qualified workers familiar with the rigging to be used and with the code of signals authorized by the Board for controlling hoisting operations.

Detaching loads

15.3 Loads to be unhooked by a worker must be safely landed and supported before the rigging is detached.

Use of rigging

15.4 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 26.]

(2) The load applied to any rigging or rigging assembly must not exceed the working load limit.

[am. B.C. Reg. 312/2003, App. B, s. 26.]

Component identification

15.5 (1) Rigging fittings must be marked with the manufacturer's identification, product identifier and the working load limit or sufficient information to readily determine the WLL.

(2) The WLL of existing fittings not identified as specified in subsection (1) must be determined by a qualified person, marked on the fitting and such fittings must be removed from service by January 1, 2001.

Design factors

15.6 (1) The design factors based on breaking strengths for rigging components must be at least equal to the values given in Table 15-1, except as otherwise specified in this Regulation.

Table 15-1: Minimum design factors for rigging

Item	Component	Minimum design factor
1	Nylon fibre rope sling	5
2	Polyester rope sling	5
3	Polypropylene rope sling	5
4	Alloy steel chain sling	4
5	Wire rope sling	5
6	Metal mesh sling	5
7	Synthetic web sling	5
8	Synthetic roundsling	5
9	Chain fittings	4
10	Wire rope sling fittings	5
11	Other fittings	as specified by manufacturer
12	Non-rotating wire rope	as specified by manufacturer but not less than 5
13	Conventional wire rope	5

(2) The design factors specified by subsection (1) may be reduced for a dedicated rigging assembly designed and certified by a professional engineer for a specific lift, but the dedicated assembly must be re-rated according to the requirements of subsection (1) for continued use.

(3) The design factor for any rigging assembly used to support workers must be at least 10.

[am. B.C. Reg. 312/2010, App. K, s. 1.]

Wire rope on mobile cranes

15.7 The minimum design factor based on breaking strength for wire rope on a mobile crane, unless otherwise specified by the crane or wire rope manufacturer, is

(a) for conventional wire rope

(i) 2.5 for pendant lines, 3 for boom hoist reeving and 3.5 for load lines, during erection, and

(ii) 3 for pendant lines, 3.5 for boom hoist reeving and 3.5 for load lines, at all times except during erection, and

(b) 5 for wire rope of nonrotating construction.

Natural fibre rope

15.8 Natural fibre rope must not be used for hoisting with a powered hoist.

Wedge socket connections

15.9 If a wedge socket is used as a wire rope termination, the dead end of the rope must be secured to prevent release of the wedge or rope slippage at the socket.

[am. B.C. Regs. 381/2004, s. 5; 312/2010, App. K, s. 2.]

Open hook restriction

15.10 (1) A hook must have a safety latch or other means that will retain slings, chains, or other similar parts, under slack conditions.

(2) A hook used in an application where manipulation of a safety latch or other retaining means may cause a hazard to a worker or where there is no hazard to a worker if the load becomes dislodged is exempt from the requirements of subsection (1).

Securing pins

15.11 (1) A shackle-pin, heel-pin and similar device must be secured against dislodgment.

(2) The pin in a screw-pin type shackle must be wired or otherwise secured against rotation when used in applications that may cause the pin to loosen.

Replacing pins

15.12 A shackle-pin must not be replaced with a bolt or other makeshift fitting.

15.13 Repealed. [B.C. Reg. 312/2003, App. B, s. 27.]

Securing ropes to drums

15.14 (1) A rope must be secured to its winding drum, unless the line is required to automatically disengage from the drum.

(2) A rope must not be fastened to a drum by a knot tied in the rope.

Wraps required

15.15 At least 2 full wraps of rope must remain on winding drums when the load hook is in the lowest position.

Reeving lines

15.16 Pulling and pulled lines must be connected by a suitable splice, or a cable pulling sock must fully enclose both line ends whenever a worker may be endangered by failure of the connection between the two lines while reeving lines through sheaves or blocks.

Sheaves

15.17 A sheave must

(a) be correctly sized for the rope,

(b) have a device to retain the rope within the groove, and

(c) be removed from service if it has a damaged groove or flange.

Guylines

15.18 (1) The strength of each guyline and its anchor must exceed the breaking strength of the load-line rigging arrangement.

(2) A guyline anchor must be placed so that the interior angle, between the guyline and the horizontal plane, does not exceed 45°.

(3) Guylines must be arranged so that the hoisting line pull in any direction is shared by 2 or more guys.

(4) Guylines and anchor systems, if certified by a professional engineer, may deviate from the requirements of subsections (1) to (3).

Spooling rope

15.19 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 28 (a).]

(2) Except as provided in subsection (3), workers must not use their hands or feet or any hand held object to guide the rope when spooling the rope onto the drum.

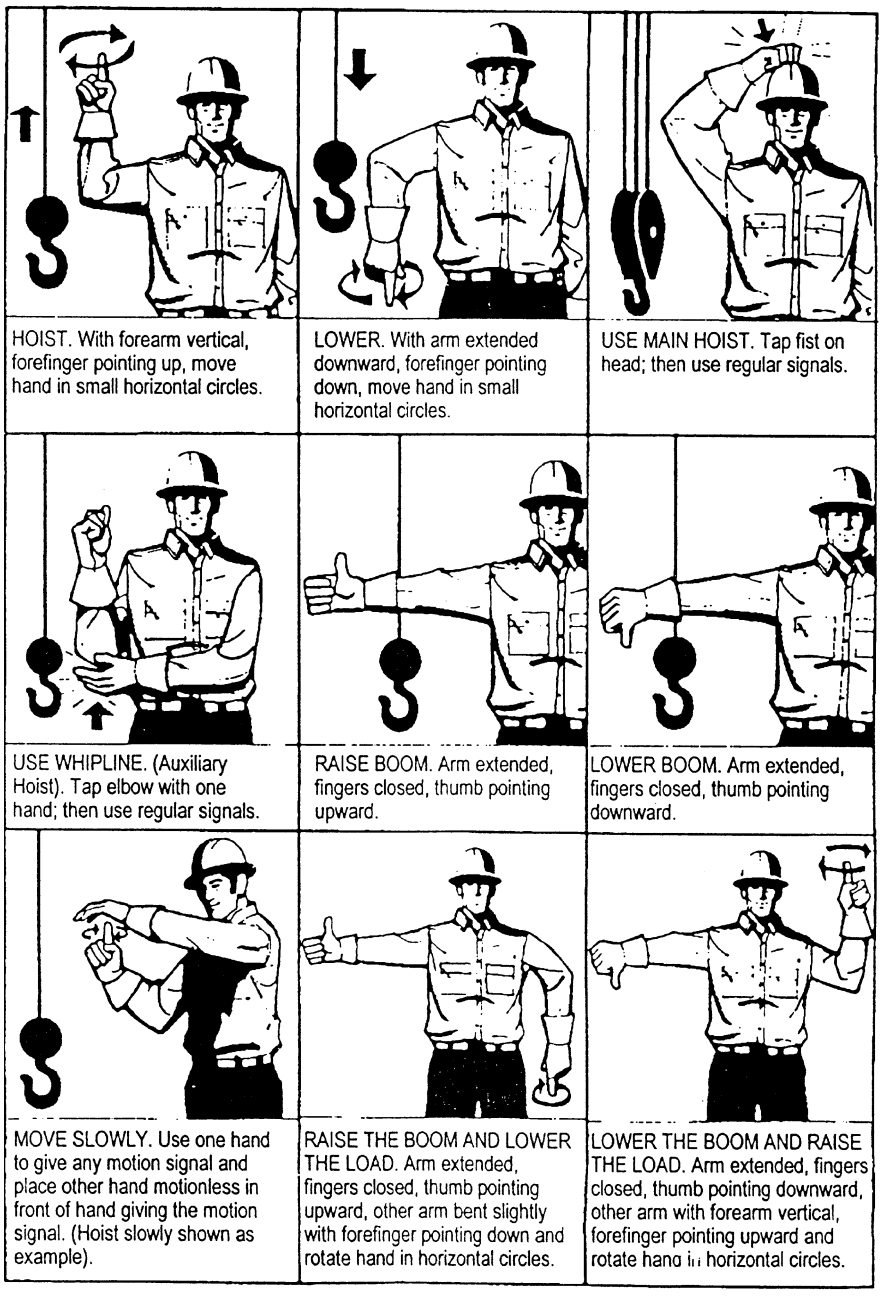
(3) In an emergency a steel guide bar of acceptable design may be used to guide the rope onto the drum, but the line speed must be kept as low as practicable and the worker must be positioned to be clear of the drum.

[am. B.C. Reg. 312/2003, App. B, s. 28.]

Hand signals

15.20 If hand signals are used between a signaller and the operator of a crane or hoist to control hoisting operations, the signals shown in Figure 15-1 must be used.

Figure 15-1: Standard hand signals for controlling crane operations-crawler, locomotive and truck cranes



HOIST. With forearm vertical, forefinger pointing up, move hand in small horizontal circles.	LOWER. With arm extended downward, forefinger pointing down, move hand in small horizontal circles.	USE MAIN HOIST. Tap fist on head; then use regular signals.
USE WHIPLINE. (Auxiliary Hoist). Tap elbow with one hand; then use regular signals.	RAISE BOOM. Arm extended, fingers closed, thumb pointing upward.	LOWER BOOM. Arm extended, fingers closed, thumb pointing downward.
MOVE SLOWLY. Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example).	RAISE THE BOOM AND LOWER THE LOAD. Arm extended, fingers closed, thumb pointing upward, other arm bent slightly with forefinger pointing down and rotate hand in horizontal circles.	LOWER THE BOOM AND RAISE THE LOAD. Arm extended, fingers closed, thumb pointing downward, other arm with forearm vertical, forefinger pointing upward and rotate hand in horizontal circles.

Figure 15-1 (continued): Standard hand signals for controlling crane operations-crawler, locomotive and truck cranes

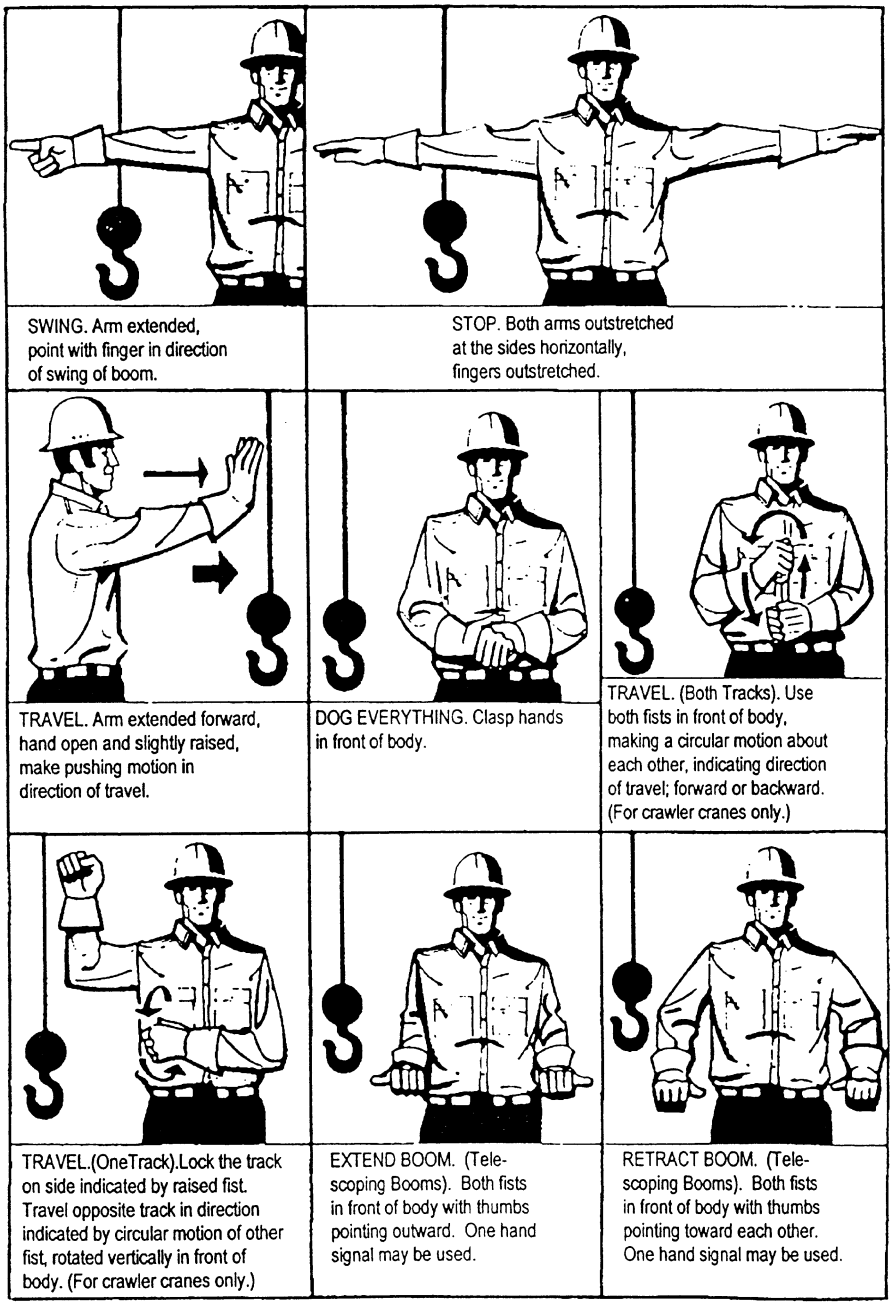


Figure 15-1 (continued): Standard hand signals for controlling crane operations-crawler, locomotive and truck cranes

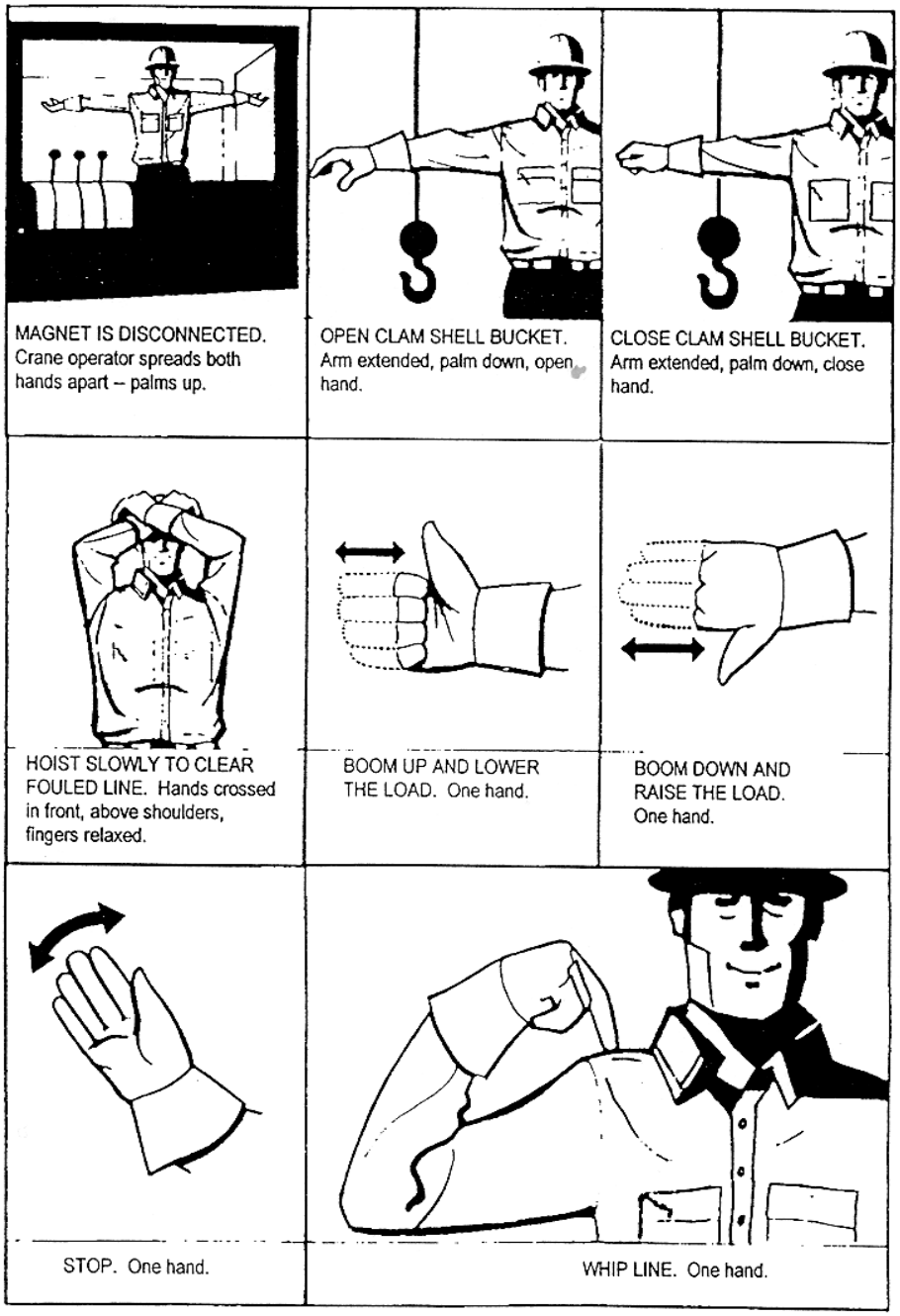
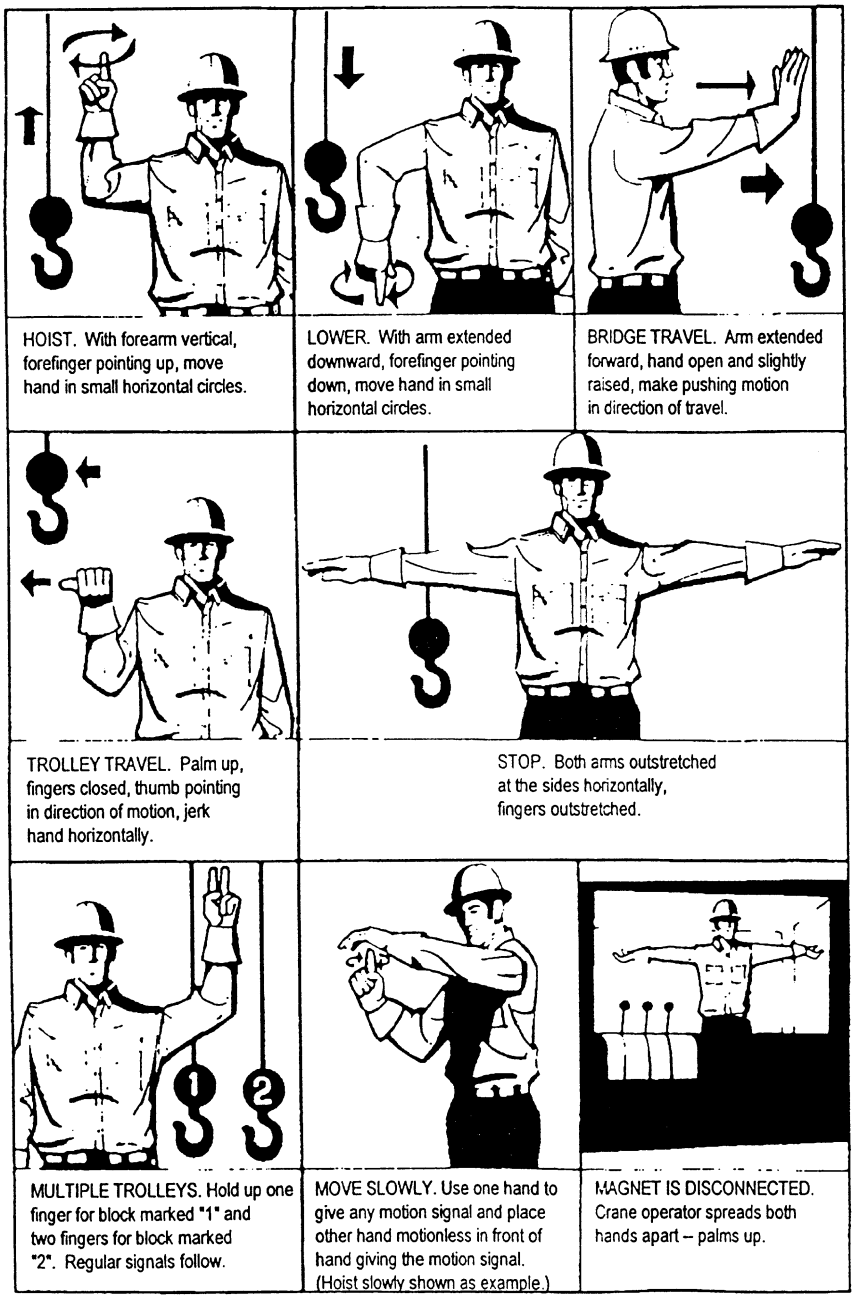


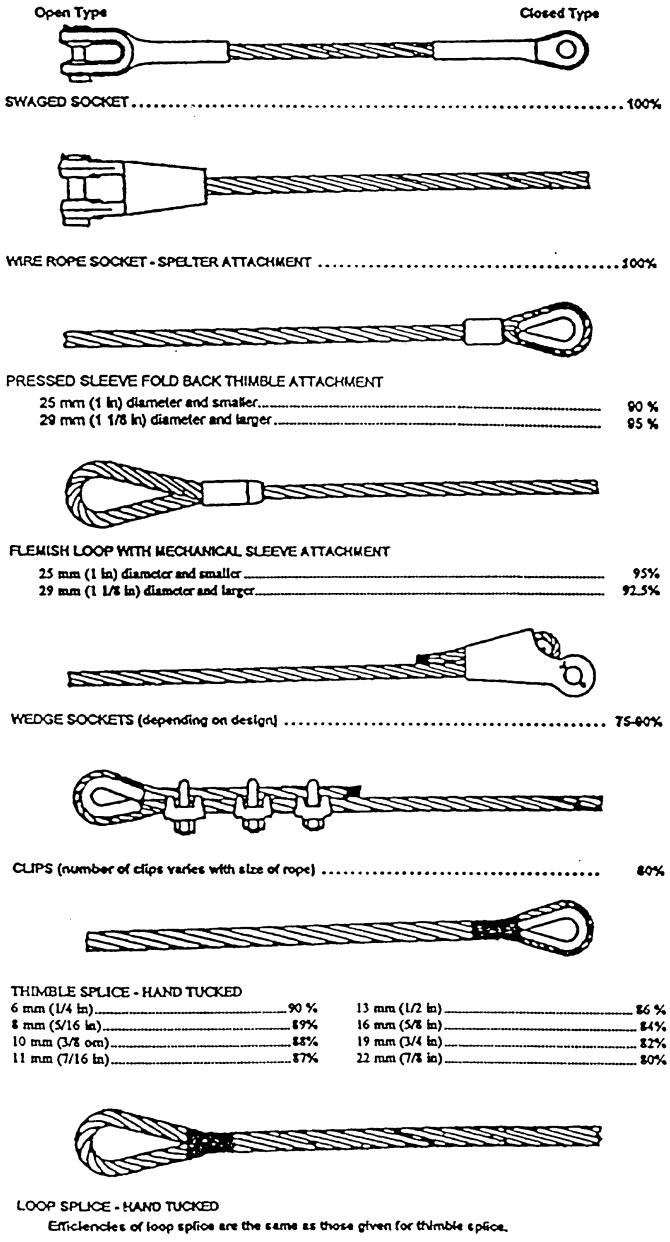
Figure 15-1 (continued): Standard hand signals for controlling crane operations-overhead and gantry cranes



Termination efficiencies

15.21 The working load limit must be reduced in accordance with the efficiency rating for the type of termination specified in Figure 15-2, unless otherwise permitted by the manufacturer.

Figure 15-2: Termination efficiencies



Wire rope clips

15.22 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 29 (a).]

(2) If the manufacturer's specifications for installing and using wire rope clips cannot be determined, the number of clips and the installation torque must be as shown in Table 15-2.

(3) The U-bolt part of a wire rope clip must be installed so that it bears on the unloaded end of the wire rope.

(4) Malleable cast iron wire rope clips must not be used for hoisting or other critical applications unless approved by the manufacturer for that purpose.

[am. B.C. Reg. 312/2003, App. B, s. 29.]

Wire rope splices

15.23 (1) A turnback eye splice made using wire rope clips must use the number of clips

(a) specified by the manufacturer for each turnback eye termination, or

(b) if not specified by the manufacturer, specified in Table 15-2.

(2) A lap splice made using wire rope clips must use double the number of clips

(a) specified by the manufacturer for a turnback eye termination, or

(b) if not specified by the manufacturer, specified in Table 15-2.

[am. B.C. Reg. 188/2011, App. G, s. 1.]

Table 15-2: Installation and use of wire rope clips

Diameter of rope		Number of clips	Spacing between clips (centre to centre)		Torque	
millimetres	inches		**millimetres**	inches	**newton metres**	foot pounds
6	1/4	**2**	**38**	1 1/2	**20**	15
8	5/16	**2**	**51**	2	**41**	30
10	3/8	**2**	**57**	2 1/4	**61**	45
11	7/16	**2**	**64**	2 1/2	**88**	65
13	1/2	**3**	**76**	3	**88**	65
16	5/8	**3**	**102**	4	**129**	95
19	3/4	**4**	**114**	4 1/2	**176**	130
22	7/8	**4**	**133**	5 1/4	**305**	225
25	1	**4**	**152**	6	**305**	225
29	1 1/8	**5**	**178**	7	**305**	225
32	1 1/4	**5**	**203**	8	**488**	360
38	1 1/2	**6**	**229**	9	**488**	360
44	1 3/4	**7**	**267**	10 1/2	**630**	465
51	2	**8**	**305**	12	**881**	650
54	2 1/8	**8**	**330**	13	**881**	650
57	2 1/4	**8**	**356**	14	**881**	650

Restriction on fold back eyes

15.24 (1) A wire rope termination using a swaged fold back eye must be identified with a serial number or other unique identification code, proof tested before being placed in service, and a record of the proof test kept available for the service life of the termination.

(2) Repealed. [B.C. Reg. 312/2003, App. B, s. 30.]

(3) A swaged fold back eye termination must be identified with the WLL as required by section 15.42.

[am. B.C. Reg. 312/2003, App. B, s. 30.]

Wire rope rejection criteria

15.25 Wire rope must be permanently removed from service if

(a) in running wire ropes, there are 6 or more randomly distributed wires broken in one rope lay or 3 or more wires are broken in one strand in one lay,

(b) in stationary wire ropes, such as guylines, there are 3 or more broken wires in one lay in sections between end connections, or more than one broken wire within one lay of an end connection,

(c) wear, or the effects of corrosion, exceed 1/3 of the original diameter of outside individual wires,

(d) there is evidence of kinking, bird-caging or any other damage resulting in distortion of the rope structure,

(e) there is evidence of heat or arc damage, or

(f) there are reductions of normal rope diameter, from any cause, in excess of

(i) 0.4 mm (1/64 in.) for diameters up to and including 8 mm (5/16 in.),

(ii) 1 mm (3/64 in.) for diameters greater than 8 mm (5/16 in.) up to and including 19 mm (3/4 in.),

(iii) 2 mm (1/16 in.) for diameters greater than 19 mm (3/4 in.) up to and including 29 mm (1 1/8 in.), or

(iv) 3 mm (3/32 in.) for diameters greater than 29 mm (1 1/8 in.).

Nonrotating wire rope

15.26 Wire rope with nonrotating construction must be removed from service if

(a) the rejection criteria in section 15.25 are met,

(b) there are 2 randomly distributed broken wires in 6 rope diameters, or

(c) there are 4 randomly distributed broken wires in 30 rope diameters.

Contact with electric arc

15.27 A rigging component or a wire rope that has been contacted by an electric arc must be removed from service until certified safe for continued use by a professional engineer.

Welding

15.28 (1) Rigging and fittings which have been repaired by welding must not be placed in service until certified safe for continued use by a professional engineer.

(2) Alloy steel chain must not be welded or annealed.

Hook rejection criteria

15.29 A worn or damaged hook must be permanently removed from service if

(a) the throat opening, measured at the narrowest point, has increased by more than 15% of the original opening,

(b) the hook has twisted more than 10° from the original plane of the hook,

(c) the hook has lost 10% or more of its cross-sectional area,

(d) the hook is cracked or otherwise defective, or

(e) wear or damage exceeds any criteria specified by the manufacturer.

Slings

Standards

15.30 Unless otherwise required by this Regulation, wire rope, alloy steel chain, metal mesh, synthetic fibre rope, synthetic roundslings and synthetic fibre web slings must meet the requirements of *ASME B30.9-2006 Slings*.

[en. B.C. Reg. 312/2003, App. A, s. 21; am. B.C. Reg. 312/2010, App. K, s. 3.]

Inspection before use

15.31 Slings and attachments must be visually inspected before use on each shift, and defective equipment must be immediately removed from service.

Makeshift fitting prohibition

15.32 Makeshift couplers, shorteners, hooks or other load bearing attachments for slings, including those made from concrete reinforcing steel, must not be used unless the working load limit has been determined and certified by a professional engineer.

WLL of slings

15.33 (1) The determination of the working load limit of a sling assembly must ensure that the WLL of any individual component of the assembly is not exceeded.

(2) The WLL of a sling with more than 3 legs is limited to the WLL of any 3 legs of the sling.

(3) The load carried by any single leg of a bridle sling must not be greater than the WLL of the leg.

Sling angles

15.34 If a sling is used to lift at any angle from the vertical

(a) the design factors required by this Part must be maintained, and

(b) a qualified person or the manufacturer must determine the required reduction of the WLL of the sling, or it must be reduced according to Table 15-3.

Table 15-3: WLL reductions for slings at an angle

Angle between the sling leg and vertical	Reduce WLL to
up to 30°	90%
over 30° up to 45°	70%
over 45° up to 60°	50%
over 60°	not permitted unless part of an engineered lift

15.35 Repealed. [B.C. Reg. 312/2003, App. B, s. 31.]

Proof-testing slings

15.36 Before being placed in service any new, repaired or altered sling having welded couplers or other welded load bearing attachments must be proof tested by the manufacturer, or the manufacturer's representative or an agency acceptable to the Board in the manner specified by the manufacturer.

Storage

15.37 A sling must be stored to prevent damage when not in use.

Knots

15.38 A sling with a knot must not be used.

Sharp edges

15.39 When a sling is applied to a sharp edge of a load, the edge or the sling must be protected to prevent damage to the sling.

Slinging loads

15.40 (1) A sling must be selected and used to prevent slipping or overstressing the sling or the load.

(2) A load consisting of 2 or more pieces of material over 3 m (10 ft) long must be slung using a 2 legged sling arrangement positioned to keep the load horizontal during the lift, and each sling must be choked around the load with a double wrap.

Multiple piece lifts

15.41 For a multiple piece lift

(a) each member of the lift that is being delivered to a different spot must be independently slung back to the main load hook or master link using graduated length slings,

(b) a lifted member must not support another lifted member, and

(c) a crane with power controlled lowering must be used.

Wire Rope Slings

Sling identification

15.42 A wire rope sling with a swaged or poured socket or a pressed fitting must be permanently identified with

(a) its working load limit,

(b) the angle upon which the WLL is based, and

(c) the name or mark of the sling manufacturer.

Rejection criteria

15.43 (1) A wire rope sling must be permanently removed from service when the applicable rejection criteria of section 15.25 are found.

(2) A sling with damaged end fittings must not be used.

Prohibited slings

15.44 Wire rope of nonrotating type construction or of Lang's lay type construction must not be used in a sling.

Temperature restrictions

15.45 (1) A wire core rope sling must not be exposed to or used at a temperature above 205°C (400°F) unless otherwise specified by the manufacturer.

(2) A fibre core wire rope sling must not be exposed to or used at a temperature above 100°C (212°F) unless otherwise specified by the manufacturer.

Alloy Steel Chain Slings

Sling identification

15.46 An alloy steel chain sling must be permanently identified with

(a) the size,

(b) the manufacturer's grade and the WLL,

(c) the length and number of legs, and

(d) the name or mark of the sling manufacturer.

Chain for hoisting

15.47 (1) Chain used for hoisting must be approved by the chain manufacturer for hoisting.

(2) Proof coil and transport chain must not be used for hoisting.

Chain removal criteria

15.48 A chain sling must be permanently removed from service or repaired by a qualified person to the original manufacturer's specification or to the specifications of a professional engineer if the chain has defects such as stretch or deformation, cracks, nicks or gouges, corrosion pits or burned links.

Chain wear

15.49 (1) A chain sling must be permanently removed from service when the chain link wear is more than the maximum allowed by the manufacturer.

(2) If the manufacturer does not specify removal criteria for use in subsection (1), the chain must be permanently removed from service when the chain size at any point of the link is reduced to the values given in Table 15-4.

Table 15-4: Allowable chain wear

Chain size		**Minimum allowable chain size at any point of link**	
millimetres	inches	**millimetres**	inches
6.3	1/4	**5.9**	15/64
10	3/8	**8**	19/64
13	1/2	**10**	25/64
16	5/8	**12**	31/64
19	3/4	**15**	19/32
22	7/8	**18**	45/64
25	1	**21**	13/16
29	1 1/8	**23**	29/32
32	1 1/4	**25**	1
35	1 3/8	**28**	1 3/32
38	1 1/2	**30**	1 3/16
44	1 3/4	**36**	1 13/32

Periodic inspection

15.50 A chain sling must be thoroughly inspected at least once each year and a record of the inspection must be kept.

Temperature restriction

15.51 A chain sling must not be exposed to a temperature above 260°C (500°F) unless otherwise permitted by the manufacturer.

Synthetic Web Slings

Sling identification

15.52 Synthetic fibre web slings must be permanently identified with the

(a) manufacturer's name or mark,

(b) manufacturer's code or stock number,

(c) working load limits for the types of hitches permitted, and

(d) type of synthetic web material.

Temperature restriction

15.53 Synthetic fibre web slings must not be exposed to a temperature above 82°C (180°F) unless otherwise permitted by the manufacturer.

Synthetic web sling rejection criteria

15.54 A synthetic fibre web sling must be removed from service when any of the following circumstances occurs:

(a) the length of an edge cut exceeds the web thickness;

(b) the penetration of abrasion exceeds 15% of the webbing thickness taken as a proportion of all plies;

(c) abrasion occurs on both sides of the webbing and the sum of the abrasion on both sides exceeds 15% of the webbing thickness taken as a proportion of all plies;

(d) warp thread damage up to 50% of the sling thickness extends to within 1/4 of the sling width of the edge or exceeds 1/4 the width of the sling;

(e) warp thread damage to the full depth of the sling thickness extends to within 1/4 of the sling width of the edge or the width of damage exceeds 1/8 the width of the sling;

(f) weft thread damage allows warp thread separation exceeding 1/4 the width of the sling and extends in length more than twice the sling width;

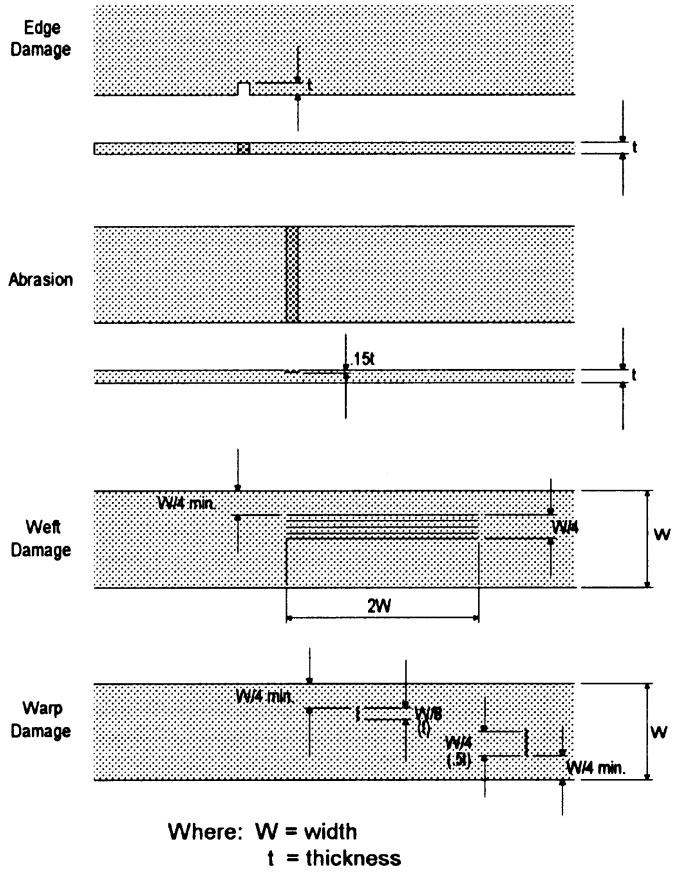
(g) any part of the sling is melted or charred, or is damaged by acid or caustic;

(h) stitches in load bearing splices are broken or worn;

(i) end fittings are excessively pitted or corroded, cracked, distorted or broken;

(j) a combination of the above types of damage of approximately equal total effect are present.

Figure 15-3: Examples of synthetic web sling rejection criteria



Metal Mesh Slings

Sling identification

15.55 A metal mesh sling must be permanently identified with

(a) the manufacturer's name or mark, and

(b) the WLL for vertical basket hitch and choker hitch configurations.

Rejection criteria

15.56 A metal mesh sling must be removed from service if any of the following damage is visible:

(a) a broken weld or a broken brazed joint along the sling edge;

(b) a broken wire in any part of the mesh;

(c) reduction in wire diameter of 25% due to abrasion or 15% due to corrosion;

(d) lack of flexibility due to distortion of the mesh;

(e) distortion of the choker fitting so that the depth of the slot is increased by more than 10%;

(f) distortion of either end fitting so that the width of the eye opening is decreased by more than 10%;

(g) a 15% reduction of the original cross-sectional area of metal at any point around the hook opening or end fitting;

(h) visible distortion of either end fitting;

(i) a cracked end fitting.

Below-the-hook Lifting Devices

Standards

15.57 Spreader bars and other specialized below-the-hook lifting devices must be constructed, inspected, installed, tested, maintained and operated according to the requirements of *ASME B30.20-1993, Below-the-Hook Lifting Devices*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

WLL

15.58 Spreader bars and other specialized below-the-hook lifting devices must have their working load limit certified by a professional engineer or established by the lifting device manufacturer.

Identification

15.59 A nameplate or other permanent marking must be on a spreader bar or specialized below-the-hook lifting device and display the

(a) manufacturer's name and address,

(b) serial number,

(c) weight of the device, if more than 45 kg (100 lbs), and

(d) working load limit.

Part of lifted load

15.60 A spreader bar and any other specialized below-the-hook lifting device must be considered part of the lifted load.

PART 16 – MOBILE EQUIPMENT

Definitions

16.1 In this Part:

"all-terrain cycle" means a motorized vehicle designed to travel on 3 low pressure tires, with a seat designed to be straddled by the operator and handlebars for steering;

"all-terrain vehicle" or **"ATV"** means a motorized vehicle, designed to travel on 4 or more low pressure tires with or without endless tracks added, with a seat designed to be straddled by the operator and handlebars for steering, but does not include an all-terrain cycle or a utility terrain vehicle;

"earth-mover" means a machine that is designed to perform excavation, loading, transportation, drilling, spreading, compacting or trenching of earth, rock and other materials;

"excavator" means a machine that is used or designed to perform excavation and has a platform that rotates 360°, with a cab and an articulating or telescoping boom;

"excluded ground machine" means, in respect of a prime mover, one of the following components, vehicles or machines:

(a) a towed component, unless the towed component generates the propulsive power for the prime mover;

(b) a machine operated on a fixed pedestal or on rails or fixed tracks as in a runway;

(c) a walk-behind, offboard-operated or remotely controlled version of the following machines:

(i) stump grinder;

(ii) trencher;

(iii) tractor, tiller, hoe or turf care machine;

(iv) mechanical harvester;

(v) snowblower;

(vi) concrete saw;

(vii) buggy for concrete or gravel;

(viii) track carrier;

(ix) pavement marker or pavement grinder;

(x) pallet jack;

(xi) floor maintainer;

(d) a tugger or a pusher;

(e) an elevating work platform not designed for travel on a highway;

"mobile equipment" means a prime mover, or a prime mover with a towed component, which towed component moves relative to the ground, or has a rider, for its work function, but does not include

(a) a prime mover, or a towed component, that is carried as a load,

(b) a commercial passenger vehicle under the *Passenger Transportation Act*, including a bus or a taxi, or

(c) a motor assisted cycle, scooter, minibike, skateboard or other miniature vehicle;

"pedestrians" includes workers and other persons;

"prime mover" means a self-propelled ground machine, with wheels or endless tracks, that is designed or used for work, including any attachment, but does not include an excluded ground machine;

"utility terrain vehicle" or **"UTV"** means a motorized vehicle designed to travel on 4 or more low pressure tires with or without endless tracks added, with one or more seats not designed to be straddled and a steering wheel or steering stick, but does not include a golf cart or other low-speed vehicle.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Application

16.2 (1) This Part applies to mobile equipment.

(2) In respect of a matter that specifically applies to mobile equipment, if there is any conflict between the requirements of this Part and the requirements of any other Part of this Regulation, then that other Part takes precedence over the provisions of this Part to the extent of the conflict, except section 16.21, which prevails.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Division 1 – General Operating Requirements

Pre-operational inspection and monitoring

16.3 (1) Before mobile equipment is first operated on a shift, the operator must inspect the mobile equipment and report any unsafe, or potentially unsafe, defects to the supervisor or employer.

(2) During operation, the operator must continuously monitor the performance of the mobile equipment and report any unsafe, or potentially unsafe, defects to the supervisor or employer.

(3) The employer of the operator must ensure that a record is kept for at least 2 years of any defect reported under subsection (1) or (2).

(4) The record of defect required by subsection (3) may be

(a) included in a record of maintenance, repair or modification required by section 16.17, or

(b) prepared as a stand-alone record.

(5) Section 4.9 does not apply to the record of defect required by subsection (3) of this section.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Secure objects and clean surfaces

16.4 The controls, cab, floor, deck, steps and similar surfaces on mobile equipment must be maintained to ensure they are free of material, grease, oil, tools and other things that could

(a) create a slipping or tripping hazard,

(b) interfere with the operation of controls, or

(c) be a hazard to the operator or other occupants in the event of an accident.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Seat belt use

16.5 (1) Riders of mobile equipment who are authorized under section 16.8 must use seat belts whenever the mobile equipment is in motion or engaged in an operation that could cause the mobile equipment to become unstable, if the mobile equipment has seat belts

(a) required under this Regulation, another law of British Columbia or a law of Canada, or

(b) installed by the manufacturer of the mobile equipment.

(2) When the operation of a road grader requires an operator to stand, the operator

(a) is not required to use a seat belt, and

(b) must use an enclosed cab with closed cab doors or other effective restraining devices.

(3) Seat belts must be maintained in good condition.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Obstructed views and pedestrians

16.6 (1) Designated walkways or safe work areas must be used to separate pedestrians from areas of operation of mobile equipment, if practical.

(2) If it is impractical to provide designated walkways or safe work areas, at least one of the following means must be used to protect pedestrians:

(a) posted speed limits for mobile equipment;

(b) the pedestrian and the mobile equipment operator must acknowledge each other's presence before the pedestrian proceeds through the hazardous area;

(c) another effective means.

(3) Subject to subsection (4), if an operator of mobile equipment cannot see the immediate work area where the mobile equipment will be moved, the operator must not move the mobile equipment unless one of the following precautions is taken to protect the operator and any other person from injury:

(a) immediately before the movement, inspection by the operator on foot of the immediate work area for hazards, including overhead hazards;

(b) direction by a signaller who is stationed in a safe position in continuous view of the operator and who has an unobstructed view of the immediate work area;

(c) another effective precaution.

(4) If an operator of mobile equipment cannot see the immediate work area directly behind the mobile equipment where the mobile equipment will be backing up, the operator must not back up the mobile equipment unless

(a) one of the precautions referred to in subsection (3) is taken,

(b) the mobile equipment has an audio warning device that

(i) provides a signal to persons in the vicinity that, if practical, is audible above the ambient noise level, and

(ii) is activated automatically when the mobile equipment controls are positioned to back the mobile equipment up, and

(c) an additional means of protecting pedestrians is used if hazards or conditions would prevent pedestrians hearing the audio warning device referred to in paragraph (b).

(5) Window glazing or window openings, and rear-view mirrors or other visual aids, must be maintained to allow clear vision.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Boarding or leaving

16.7 A person must not board or leave mobile equipment while it is moving, except for operators of rock drills that are designed to be controlled by persons in the standing position.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Rider restrictions

16.8 (1) In this section:

"barricade" means a barricade referred to as a type 1, type 1A, type 2 or type 3 barricade in the Traffic Management Manual;

"buffer vehicle" means a vehicle referred to as a buffer vehicle in the Traffic Management Manual;

"drum" means a traffic control device referred to as a drum in the Traffic Management Manual;

"flashing arrow board" means a traffic sign referred to as a flashing arrow board in the Traffic Management Manual;

"multilane roadway" means a roadway that has 2 or more lanes in which traffic flows in the same direction, including climbing and passing lanes, whether or not there are also lanes in which traffic flows in the opposite direction;

"traffic cone" means a traffic cone or tubular marker referred to in the Traffic Management Manual;

"Traffic Management Manual" means the latest edition of the *Traffic Management Manual for Work on Roadways* issued by the Ministry of Transportation and Infrastructure.

(2) An operator of mobile equipment is the only person authorized to ride on mobile equipment unless

(a) the mobile equipment is a worker transportation vehicle, as defined in section 17.01, that meets the requirements of Part 17, or

(b) subsections (3) to (7) apply.

(3) A person other than the operator may only ride on a ROPS-equipped prime mover for the purpose of training or maintenance and, for that purpose, the prime mover

(a) must not be operated in a rollover hazard area, and

(b) must not be engaged in an operation that could

(i) cause the mobile equipment to become unstable, or

(ii) cause the person to fall or be ejected, pinched or dragged.

(4) Subsection (3) does not apply if the person, other than the operator, who is riding a ROPS-equipped snowcat or a ROPS-equipped UTV is sitting on a seat that meets the requirements of section 16.20.

(5) A person other than the operator of mobile equipment may only ride on a prime mover without a ROPS as part of a job task and

(a) must sit on a seat that meets the requirements of section 16.20, or

(b) must be protected by other safe facilities provided by the manufacturer of the mobile equipment or designed by a professional engineer, that include

(i) a footboard or platform upon which the person stands or sits, located to protect the person from contact with roadside objects or vehicles,

(ii) hand-holds, and

(iii) a safety belt, harness, guardrail or other effective means of restraint, except where the person is a swamper riding on the back of a garbage truck during short pickup runs not exceeding a speed of 20 km/h (12 mph).

(6) Rear-mounted platforms or footboards must not be occupied when the mobile equipment is backing up.

(7) A person who is occupying a rear-mounted platform or footboard on non-ROPS equipped mobile equipment as part of a method of retrieving traffic cones from a closed lane of a multilane roadway is not prohibited under subsection (6) or section 18.3 from occupying the platform or footboard when the mobile equipment is backing up if all of the following conditions are met:

(a) the mobile equipment is backing up in the closed lane;

(b) the employer has

(i) identified the hazards to the persons at the workplace, and

(ii) taken measures

(A) to eliminate the hazards, or

(B) if it is not practicable to eliminate an identified hazard, to minimize the risk to persons from the hazard to the lowest level practicable;

(c) a written safe work procedure has been established by the employer and is being followed, which procedure

(i) relates to that method of retrieving traffic cones, and

(ii) includes a description of the measures referred to in paragraph (b) (ii);

(d) the mobile equipment is not exceeding a speed of 15 km/h (9 mph);

(e) the mobile equipment has both of the following operating devices:

(i) two or more 360° flashing yellow lights;

(ii) a flashing arrow board pointing toward the open lane adjacent to the closed lane;

(f) the mobile equipment has an audio warning device that

(i) makes a distinct sound that is audible, above the ambient noise level in the workplace, to both the operator and the person, and

(ii) operates automatically and continuously while the mobile equipment is backing up;

(g) there is an effective 2-way voice communication system between the operator and the person on the platform;

(h) one of the following requirements is met:

(i) behind the rear of the mobile equipment, barricades are placed across the closed lane or drums are placed in the centre of the closed lane, in accordance with the following:

(A) the barricade or drum closest to the mobile equipment is continuously located not more than 250 m from the rear of the mobile equipment;

(B) the barricades or drums are located along the length and to the end of the closed lane at intervals of not greater than 250 m;

(ii) directly behind and at a safe distance from the rear of the mobile equipment, in the closed lane, there is a buffer vehicle that meets the following requirements:

(A) the buffer vehicle is continuously located not more than 100 m from the rear of the mobile equipment;

(B) the buffer vehicle has 2 or more 360° flashing yellow lights and the lights are operating;

(C) the buffer vehicle has a flashing arrow board pointing toward the open lane adjacent to the closed lane and the flashing arrow board is operating;

(D) there is an effective 3-way voice communication system among the operator of the buffer vehicle, the operator of the mobile equipment and the person on the platform;

(i) the maximum load capacity established for the platform by the manufacturer or by the professional engineer who designed the platform is clearly marked on the platform and is not being exceeded.

(8) Unless otherwise provided in subsection (7), the mobile equipment, arrangements and procedures referred to in that subsection must meet all applicable requirements in respect of the equipment, arrangements and procedures that are set out for traffic control under Part 18.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Unattended mobile equipment

16.9 (1) An operator of mobile equipment must not leave the controls unattended unless the mobile equipment has been secured against inadvertent movement by

(a) engaging at least 2 effective braking or parking systems or devices, including

(i) the parking brake,

(ii) the manufacturer's specified park position for the transmission,

(iii) chocks for the wheels, or

(iv) in the case of 2-wheeled mobile equipment, stands, and

(b) chocking wheels, if necessary.

(2) An operator of mobile equipment must not leave unattended any elevated load, part, extension or machine, unless it has been landed in a safe position or otherwise immobilized and secured against inadvertent movement.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Clearance of swinging loads or parts

16.10 (1) If a hazard is created by the swinging movement of the load, cab, counterweight or any other part of mobile equipment, a person must not be within range of the swinging load or part and the operator must not move the part when any person is so exposed.

(2) Mobile equipment must be positioned so that no swinging part can come within 60 cm (2 ft) of any obstruction in any area accessible to persons or, if it is not practical to position the mobile equipment in that manner, entry to such areas must be prevented by barriers or other effective means.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Loads elevated over cabs

16.11 A person must not remain in a cab of mobile equipment while loads are elevated over the cab unless that cab is protected by an adequate overhead guard.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Securing loads

16.12 (1) A load for transport on mobile equipment must be loaded, secured and unloaded in a manner that prevents a hazard to persons.

(2) If a hazard may be created due to load shift upon deceleration that would endanger the occupants of the cab of

(a) a flatbed truck, or

(b) a truck and flatbed combination

used to haul long steel structural members, poles, pipes, lumber, logs or similar materials, the means used under subsection (1) must include a cab guard, a bulkhead or another effective means to prevent the hazard.

(3) If perimeter pins are used as part of the restraint system for cylindrical objects, the pins must extend above the top of the uppermost layer adjacent to the pin by the diameter of the largest cylindrical object stacked above the uppermost layer adjacent to the pin, and have a minimum height of 46 cm (18 in).

(4) If cylindrical objects are individually blocked or otherwise effectively restrained by specialized dunnage, the perimeter pins specified in subsection (3) are not required.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Securing elevated parts

16.13 (1) If a person works beneath an elevated part of mobile equipment, the elevated part must be blocked in a secure manner.

(2) Hydraulic or pneumatic jacks must not be used for blocking unless fitted with devices to prevent their inadvertent retraction in the event of loss of hydraulic or pneumatic pressure.

(3) A tilt deck, enclosed or otherwise, on a trailer or prime mover must have a device that is capable of blocking the empty tilt deck in the raised position.

(4) A dump truck with a chassis manufactured after January 1, 1999 must have a mechanical device permanently affixed that is capable of blocking the empty dump box in the raised position.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Air brake competency

16.14 (1) A person operating mobile equipment with air brakes must have, as applicable in respect of the mobile equipment, a valid

(a) air brake certificate, or

(b) driver's licence with industrial air brake endorsement.

(2) Subsection (1) does not apply if a trainee operates the mobile equipment under the supervision of a qualified instructor.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Control on grades or slopes

16.15 To maintain adequate control and ensure safety, if the grade or condition of the travel surface may result in insufficient braking capability of mobile equipment,

(a) the mobile equipment must be restrained by a wire rope or by a synthetic rope, which may include webbing, or

(b) another machine that is suitable for the purpose of restraining the mobile equipment must be used.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Tire servicing

16.16 (1) An employer must establish and implement safe work procedures for servicing tires, rims and wheels of mobile equipment, including safe procedures for

(a) inspecting tire, rim and wheel components,

(b) mounting a tire to the rim and wheel,

(c) inflating a tire,

(d) installing and removing tire assemblies, and

(e) demounting tires from the rim and wheel assemblies.

(2) Deflation of a tire must be done in an area where ignition sources are removed or controlled.

(3) Each tire, rim and wheel part must be cleaned and inspected for damage before mounting, and cracked, broken, bent or otherwise damaged parts replaced.

(4) A person inflating a tire must stay out of the potential explosion trajectory, if it is practical to do so, and actively monitor the tire's inflation pressure.

(5) If a bead expander is used to seat the beads of a tire, it must be removed before the tire is inflated to more than 0.35 bar (5 psi).

(6) When a tire mounted on a single piece rim or wheel with a diameter more than 49.5 cm (19.5 in) is being inflated to more than 5.52 bar (80 psi), after the beads are seated, the combination of the tire with the rim or wheel must be

(a) mounted on the mobile equipment,

(b) placed in a cage or other effective restraining device, or

(c) restrained by an effective barrier, other than a chain.

(7) After the components of a multipiece rim or wheel are set in place, a tire must not be inflated to operating pressure until the rim or wheel is mounted onto the

mobile equipment or has been secured in a cage or engineered containment device.

(8) Assembled rim or wheel parts must not be welded or heated, except in a limited manner to facilitate removal of a wheel from a hub after the tire has been deflated by removing the valve core.

(9) Before loosening any wheel nuts or rim clamps, a tire mounted on a multipiece rim or wheel,

(a) if larger than 900R20 (900-20), must be deflated to less than 1.38 bar (20 psi), and

(b) if equal to or smaller than 900R20 (900-20), must be completely deflated to 0 bar (0 psi).

(10) A multipiece tire and rim or wheel assembly that has been used at less than 80% of the recommended inflation pressure for that application must be deflated, disassembled and inspected before reinflation.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Maintenance and records

16.17 (1) Mobile equipment must not be maintained, repaired or modified while in operation unless continued operation is essential to the process of maintenance, repair or modification and measures are taken to eliminate or minimize any risks associated with the process.

(2) Records for any maintenance, repair or modification that affects the safe performance of the mobile equipment must be kept and be reasonably available to the operator and maintenance personnel during work hours.

(3) Section 4.9 does not apply to records required under subsection (2) of this section, except as otherwise provided in sections 13.22, 14.14, 16.43 and 20.29.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

High voltage contact

16.18 (1) In this section, **"high voltage contact"** means contact between mobile equipment and a high voltage electrical source as defined in section 19.1.

(2) If mobile equipment has been subject to high voltage contact, it must be removed from service until a qualified person has conducted an inspection of, and completed any necessary repairs to, the mobile equipment.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Division 2 – General Machine Requirements

Non-slip floors and controls

16.19 Foot controls, cab floors, decks, steps and similar surfaces on mobile equipment where a person walks or stands must be constructed of, or covered with, a suitable non-slip material.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Seats

16.20 (1) A safely located and securely mounted seat must be provided for the operator of mobile equipment and for any other authorized rider who is required to be seated under section 16.8, unless the mobile equipment is designed to be controlled or ridden by persons in the standing position.

(2) The operator's seat must enable the operator to safely operate the mobile equipment with due regard for

(a) the type and intended use of the mobile equipment,

(b) the reach distances to the controls of the mobile equipment, and

(c) the duration of use of the mobile equipment.

(3) Seating for mobile equipment that is operated on rough terrain must provide adequate lateral restraint.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Seat belts

16.21 A ROPS-equipped prime mover must have, at minimum, 2-point lap belts that meet the requirements of one of the following standards or the earlier version of the standard that applied on the date of manufacture of the prime mover:

(a) *Society of Automotive Engineers (SAE) Standard J386 AUG2012, Operator Restraint System for Off-Road Work Machines*;

(b) *SAE J2292 (2016), Combination Pelvic and Upper Torso Operator and Occupant Restraint Systems for Off-Road Work Machines*;

(c) *ISO 6683 (2005) Earth-moving machinery – Seat belts and seat belt anchorages – Performance requirements and tests – Second edition*;

(d) *ISO 3776, Tractors and machinery for agriculture – Seat belts – Part 1 (2006), Part 2 (2013) and Part 3 (2009)*;

(e) *Economic Commission for Europe of the United Nations (UN/ECE) ECE Regulation No. 16, Safety-belts*.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Starter engagement

16.22 (1) Mobile equipment must be protected against starter motor engagement when the engine is coupled to the wheels or tracks.

(2) A dump truck is exempt from subsection (1) only

(a) if it is designed for remotely controlled alignment for coupling with its trailer, and

(b) during such coupling.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Steering wheel knobs

16.23 (1) A steering wheel knob on mobile equipment must not be used or installed if road wheel reaction forces to the steering wheel are hazardous to the operator.

(2) A steering wheel knob must be a low profile or mushroom type and lie completely within the periphery of the steering wheel.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Alternative means of escape from a cab

16.24 (1) If mobile equipment manufactured after January 1, 2000 has a single cab entrance door, the mobile equipment must have an alternative means of escape that is clearly marked both inside and outside the cab and that

(a) is not located on the same surface as the cab entrance door,

(b) is usable regardless of the position of movable components or accessories of the machine,

(c) does not pose additional hazards to the operator,

(d) can be opened from both the inside and outside without the use of tools when the mobile equipment is in use,

(e) requires a force of not more than 135 N (30.3 lbf) to open, and

(f) provides a clear opening, the minimum dimensions of which comply with *ISO Standard 2867-2011(R2016), Earth-moving machinery – Access systems*.

(2) Mobile equipment manufactured before January 1, 2000 with a single cab entrance door must meet the requirements for an alternative means of escape required at the date of manufacture.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Fuel tank fill point or vent

16.25 A fuel tank fill point or vent opening is not permitted within an enclosed cab of mobile equipment.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Mirrors

16.26 (1) Except as provided in this section, mobile equipment must have at least one mirror that provides an operator of the mobile equipment with an undistorted reflected view to the rear.

(2) A lift truck may be equipped with only one parabolic mirror.

(3) A mirror described in subsection (1) is not required if the conditions of use or mobile equipment structure makes the use of mirrors impractical.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Lights

16.27 (1) Mobile equipment must have lights and the lights must be used to adequately illuminate the mobile equipment's direction of travel, the working area within close proximity and the cab instruments, if the mobile equipment is used

(a) during the period from 1/2 hour after sunset to 1/2 hour before sunrise and work area lighting is inadequate, or

(b) when persons or vehicles are not clearly discernible at a distance of 150 m (492 ft).

(2) The lights required under subsection (1) must meet the requirements of the *Society of Automotive Engineers (SAE) J1029 2012, Lighting and Marking of Construction, Earthmoving Machinery* or the earlier version of the standard that applied on the date of manufacture of the mobile equipment.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Warning signal device – extended component

16.28 (1) Dump trucks used to transport any material, and any other mobile equipment used to collect, transport or compact waste material or recyclable material, must, while in transit, have a visual or audio warning device that

(a) provides a signal to the operator when a lifting mechanism, top door cover, body, tilt frame or tailgate component is extended in a manner that

(i) is likely to contact an overhead obstruction, or

(ii) creates a hazard, and

(b) meets the requirements of subsection (2) or (3), as applicable.

(2) If a visual warning device is provided under subsection (1), the visual warning signal from the device must display within the operator's field of vision.

(3) If an audio warning device is provided under subsection (1), the audio warning signal from the device must make a distinct sound that is audible to the operator above the ambient noise level.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Brakes

16.29 (1) Subject to subsection (2), mobile equipment must have

(a) a primary service brake system,

(b) a secondary emergency or supplementary brake system, and

(c) a parking brake, whether or not it is part of the primary or secondary brake system.

(2) Subsection (1) (b) does not apply to the following:

(a) mobile equipment that

(i) has not been equipped with a secondary brake system by the original manufacturer, and

(ii) is licensed under the *Motor Vehicle Act* to operate on a highway;

(b) ATVs;

(c) UTVs;

(d) high and low lift trucks;

(e) skid steers;

(f) golf carts;

(g) ride-on, sit-down turf care equipment.

(3) Except as provided in sections 14.2 (5) and (12), 16.40, 16.41, 17.10 and 26.17.1, the brake systems referred to in subsection (1) of this section must meet the requirements of the following standards, as applicable, or the earlier version of the applicable standard that applied on the date of manufacture of the mobile equipment:

(a) *ISO 3450:2011 Earth-moving machinery – Wheeled or high-speed rubber-tracked machines – Performance requirements and test procedures for brake systems*;

(b) *ISO 10265:2008 Earth-moving machinery – Crawler machines –Performance requirements and test procedures for braking systems*;

(c) *Society of Automotive Engineers (SAE) Standard J2118-2012, Braking Performance – Asphalt Pavers*.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Load handling attachments

16.30 (1) Buckets, forks, booms, hoists and other load-handling attachments must be installed on mobile equipment as specified by the manufacturer of the mobile equipment unless otherwise certified by a professional engineer for use on the mobile equipment.

(2) The design of the attachments referred to in subsection (1) must provide for an evaluation of the stability of the mobile equipment, including the effect of load swing.

(3) The instructions of the manufacturer or professional engineer, as applicable, for the safe use of the mobile equipment with the attachment must be available to the operator.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Load ratings

16.31 (1) Mobile equipment designed and used for lifting, hoisting or similar operations must have a permanently-affixed notation, legible and visible to the operator, stating the rated load of the mobile equipment.

(2) A legible load chart must be displayed in the operator's cab of the mobile equipment, or be otherwise immediately available to the operator, if the rated load varies with the reach of the mobile equipment.

(3) If mobile equipment is modified, the employer must ensure that the rated load and the load chart are changed as necessary to reflect the new load ratings.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Safeguards for moving parts

16.32 (1) An exposed moving part of mobile equipment that is a hazard to the operator of the mobile equipment or to other persons must be guarded so that no person can access the hazard area created by the exposed moving part, unless the part must be exposed for proper functioning, in which case the part must be guarded as much as is practical and consistent with the intended function of the part.

(2) Mobile equipment with a moving part that is close to the operator's compartment must be effectively safeguarded so that no part of a person's body will project into the hazard area created by the moving part.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Safeguards against objects, materials and tipovers

16.33 (1) In this section and section 16.38, **"tipover"**, in respect of mobile equipment, means a roll about the longitudinal axis of up to 90°, or a rear or frontal pitchover about the transverse axis of up to 90°, which roll or pitchover results in the contact of the cab with a surface.

(2) Operators of mobile equipment, and any other riders of mobile equipment authorized by section 16.8, must be protected against any reasonably foreseeable hazards from falling, flying or intruding objects or materials, or tipovers, by means of cabs, windows, screens, grills, shields, deflectors, guards or structures on the mobile equipment that

(a) are designed and installed to provide an adequate view for the operator to safely use the mobile equipment, and

(b) meet the requirements of

(i) at least one of the following standards, if the mobile equipment is in the scope of the standard:

(A) *CSA Standard B352.0-16, Rollover protective structures (ROPS), falling object protective structures (FOPS), operator protective structures (OPS), and tip-over protective structures (TOPS) for mobile machinery – General Canadian requirements*;

(B) *Society of Automotive Engineers (SAE) Recommended Practice J1356 MAR2013, Performance Criteria for Falling Object Guards for Excavators*;

(C) *SAE J2267 APR2007 Minimum Performance Criteria for Operator Front Protective Structures (OFPS) for Certain Equipment*;

(D) *ANSI/UL 752, Standard for Bullet-Resisting Equipment, 11th edition* (with revisions up to and including December 11, 2015);

(E) *WorkSafeBC G601 Standard – Heavy Duty Backstops for Logs and Rocks*, set out in Schedule 16-A of this Part;

(F) *WorkSafeBC G603 Standard – Heavy Duty Guards for Windows*, set out in Schedule 16-B of this Part;

(G) *WorkSafeBC G604 Standard – Light Duty Guards for Windows*, set out in Schedule 16-C of this Part, or

(ii) an earlier version of at least one of the standards set out in subparagraph (i) (A) to (D), if the earlier version applied to the cabs, windows, screens, grills, shields, deflectors, guards or structures on the mobile equipment on the date of manufacture of the mobile equipment.

(3) A window on mobile equipment manufactured after February 1, 2002 or otherwise installed on mobile equipment after that date must be marked to identify the manufacturer, the standard to which the window conforms and, in the case of polycarbonate windows, the thickness and grade of material.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Rollover protective structure (ROPS)

16.34 (1) In this section, **"rollover risk assessment"** means an assessment of the risk that mobile equipment will experience a rollover while it is being operated by an on-board operator, based on the relevant circumstances of the proposed operation, including the following:

(a) the stability of the mobile equipment, taking into account such factors as its configuration and any attachments or towed components;

(b) whether the mobile equipment will be operated in a rollover hazard area;

(c) the nature of the activities to be performed.

(2) Mobile equipment must be used with a ROPS unless

(a) the mobile equipment is

(i) a snowmobile, ATV or any other mobile equipment designed for a standing operator or with a straddle seat, or

(ii) a golf cart, or

(b) a qualified person has completed a rollover risk assessment respecting the mobile equipment and determined there is no, or only a minimal, risk of rollover.

(3) A rollover risk assessment and determination referred to in subsection (2) (b) must be in writing if the assessment and determination pertains to one of the following types of mobile equipment:

(a) tractors, dozers, loaders, skidders, trenchers, graders, scrapers, roller-compactors, pipe layers and rough terrain lift trucks;

(b) rock drills operated by a seated on-board operator;

(c) ride-on turf care equipment heavier than 400 kg (882 lbs) manufactured after September 1, 2021;

(d) UTVs manufactured after September 1, 2021;

(e) excavators manufactured after September 1, 2021 and used in a rollover hazard area.

(4) The written risk assessment and determination referred to in subsection (3) must be available at the worksite.

(5) The Board may require a ROPS to be installed on any mobile equipment if the design of the mobile equipment or circumstances of use indicate the need.

(6) A ROPS must be designed and installed so that it does not obstruct the operator's view or ability to operate the mobile equipment safely.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

ROPS standards

16.35 (1) A ROPS installed on mobile equipment other than

(a) an excavator between 6 tonnes (13 250 lbs) and 50 tonnes (110 231 lbs),

(b) powered ride-on turf care equipment heavier than 400 kg (882 lbs), or

(c) a UTV

must meet the requirements of the *CSA Standard B352.0-16 – Roll-over protective structures (ROPS), falling object protective structures (FOPS), operator protective structures (OPS), and tip-over protective structures (TOPS) for mobile machinery – General Canadian requirements* or the earlier version of the standard that applied on the date of manufacture of the mobile equipment.

(2) A ROPS installed on an excavator between 6 tonnes (13 250 lbs) and 50 tonnes (110 231 lbs) must meet the requirements of the *ISO 12117-2:2008 Earth-moving machinery – Laboratory tests and performance requirements for protective structures of excavators – Part 2: Roll-over protective structures (ROPS) for excavators of over 6 t.*

(3) A ROPS installed on powered ride-on turf care equipment heavier than 400 kg (882 lbs) must meet the requirements of *ISO 21299:2009 Powered ride-on turf care equipment – Roll-over protective structures (ROPS) – Test procedures and acceptance criteria.*

(4) A ROPS installed on a UTV must meet the requirements of section 16.41 (1).

[en. B.C. Reg. 139/2021, App, D, s. 9.]

ROPS certification

16.36 A ROPS must be certified by the ROPS manufacturer or a professional engineer as meeting the applicable standard specified in section 16.35, including after any modification or repair to the ROPS.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

ROPS identification

16.37 A modified or repaired ROPS must be permanently marked with the following information:

(a) an identification of the modifications or repairs effected;

(b) the date of recertification;

(c) the name and address of the recertifying professional engineer or manufacturer, as applicable.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Rollover or tipover and fire

16.38 (1) This section applies to the following mobile equipment:

(a) a feller buncher;

(b) a timber harvester;

(c) a timber processor with a significant risk of rollover or tipover when operating on a sloped forest worksite other than a road or a landing.

(2) In addition to meeting the requirements of section 16.24, the mobile equipment referred to in subsection (1) must be equipped with the following:

(a) attached to the inside of the cab, a powered cutting tool able to effectively cut through steel guard bars and polycarbonate windows in a timely manner to provide an emergency means of escape;

(b) attached to the mobile equipment, in a position that is outside of the cab, a fire extinguisher in good working order with a UL Rating of at least 4-A:60-B:C;

(c) if the mobile equipment is manufactured more than 2 years after September 1, 2021, an effective engine fire suppression system that will discharge when needed in the event of a rollover or tipover.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Division 3 – Additional Requirements for Specific Prime Movers

All-terrain cycles

16.39 An all-terrain cycle must not be used in any workplace.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

ATVs

16.40 (1) An ATV must meet and be used in accordance with *ANSI Standard SVIA-1 2017, American National Standard for Four Wheel All-Terrain Vehicles* or the earlier version of the standard that applied on the date of manufacture of the ATV.

(2) An ATV must be used in accordance with the manufacturer's instructions.

(3) The manufacturer's instructions for an ATV must be kept in a secure place with the ATV or at another location readily accessible to the operator.

(4) If the manufacturer's instructions do not include limits for the operation of the ATV on sloping ground, 5% is the maximum allowable slope unless the employer has developed and implemented written safe work procedures appropriate for any steeper slope on which the mobile equipment is to be used.

(5) The training program for an ATV operator must include training by a qualified person for the following:

(a) operating skills, according to the ATV manufacturer's instructions;

(b) the ATV operator's pre-operational inspection;

(c) basic mechanical requirements;

(d) loading and unloading the ATV for transport, if a job requirement.

(6) Loading and unloading an ATV onto or off a carrier vehicle must be done in a safe manner.

(7) If ramps are used when loading or unloading an ATV, they must be secured at a suitable angle, be sufficiently wide and have a surface finish that provides an adequate grip for the tires of the ATV.

(8) A modification or attachment to an ATV that may affect its stability must be certified by the manufacturer or a professional engineer.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

UTVs

16.41 (1) A UTV must meet and be used in accordance with *ANSI/OPEI B71.9-2016 Multi-purpose Off-Highway Utility Vehicles* or the earlier version of the standard that applied on the date of manufacture of the UTV.

(2) A UTV must be used in accordance with the manufacturer's instructions.

(3) The manufacturer's instructions for a UTV must be kept in a secure place with the UTV or at another location readily accessible to the operator.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Earth-movers

16.42 An earth-mover must meet *ISO Standard 9244:2008 Earth-moving machinery – Machine safety labels – General principles* or the earlier version of the standard that applied on the date of manufacture of the earth-mover.

[en. B.C. Reg. 139/2021, App, D, s. 9.]

Lift trucks

16.43 (1) The design, fabrication, use, inspection, maintenance and repair of a lift truck must meet

(a) *CAN/CSA Standard B335-15 – Safety standard for lift trucks*, or

(b) as applicable,

(i) *ANSI/ITSDF B56.1a-2018, Safety Standard for Low Lift and High Lift Trucks*,

(ii) *ANSI/ITSDF B56.6-2016, Safety Standard for Rough Terrain Forklift Trucks*, or

(iii) *ISO 10896 Rough-Terrain Trucks – Safety Requirements and Verification: Part 1 (2012): Variable-Reach Trucks; Part 2 (2016): Slewing Trucks; Part 4 (2015): Additional Requirements for Variable-Reach Trucks Handling Freely Suspended Loads*

or the earlier version of the applicable standard that applied on the date of manufacture of the lift truck.

(2) Operator training for lift trucks must meet the requirements of Clause 6 of the standard referred to in subsection (1) (a).

(3) In addition to complying with the applicable requirements in this Part, a variable reach rough terrain lift truck, as defined in section 2 of the standard referred to in subsection (1) (b) (ii), must meet and be used in accordance with the requirements of sections 14.5 (3), 14.7, 14.8, 14.12, 14.39, 14.43 and 14.69 of this Regulation.

(4) A record of inspections and maintenance meeting the requirements of section 4.9 must be kept for a variable reach rough terrain lift truck, as defined in section 2 of the standard referred to in subsection (1) (b) (ii).

(5) In areas where lift truck use is separated from pedestrian traffic, a lift truck may travel forward with an elevated load if such operation will improve the operator's view of the path of travel, provided that operating conditions are maintained to ensure vehicle stability and the specifications of the mobile equipment manufacturer are not compromised.

(6) A unitized load being transported on a lift truck must not project a distance greater than half its height above the fork carriage, back rest or back rest extension of the lift truck.

(7) No part of a load of loose objects may project above the fork carriage, back rest or back extension of a lift truck.

(8) A load that could shift during transportation must be restrained if such shifting would result in the load or the lift truck becoming unstable.

(9) Subsections (6) and (7) do not apply if the load is assembled and handled in such a way that there is no possibility of any part of the load falling off.

[en. B.C. Reg. 139/2021, App, D, s. 9; am. B.C. Reg. 116/2022, App. B, s. 11.]

SCHEDULE 16-A

[en. B.C. Reg. 139/2021, App, D, s. 9.]

(section 16.33)

WORKSAFEBC G601 STANDARD – HEAVY DUTY BACKSTOPS FOR LOGS AND ROCKS

Scope, definitions and measurements

1 (1) This standard describes minimum requirements for the design of a framework, grid elements and supports of a protective structure, referred to as a "backstop", over any exposed side of an operator's cab on cable log loaders and log yarders, which backstop is designed to protect the operator from head-on or side-on penetration into, or crushing of, the cab by large logs or rocks without excessive visual interference to the operator.

(2) In this standard:

"framework" means the main structural members of a backstop, consisting of horizontal and vertical edge beams;

"grid element" means a vertical or horizontal member of a backstop inside the framework;

"HSS" means hollow structural section;

"main frame" means the structural part of the undercarriage;

"supports" means the structural members connecting the backstop to the main frame, boom or substructure.

(3) In this standard, common industry practices are followed in expressing numerical measurements.

Design requirements

2 (1) A backstop must be built in accordance with one of the following:

(a) in a manner that is able to protect the operator's cab from penetration or crushing by a log that is 1 m (39.4 in) in diameter at the butt of the log and 12.8 m (42 ft) in length, weighing 4 439 kg (9 786 lbs), travelling 16 km/h (10 mph), or an equivalent combination of mass and speed of one or more rocks or more than one log, and imparting a total kinetic energy to the backstop of 44.2 kilojoules (32 600 foot-pounds);

(b) in accordance with the following minimum structural details, as applicable:

(i) for edge beams

(A) up to 3 ft long, HSS 4 in x 3 in x 1/4 in,

(B) over 3 ft and up to 6 ft long, HSS 6 in x 4 in x 1/4 in, or

(C) over 6 ft and up to 9 ft long, HSS 7 in x 5 in x 1/4 in;

(ii) for grid element sizes

(A) that are vertical grid elements, 1/2 in x 4 in ASTM A36 flat bar, or

(B) that are horizontal grid elements, 1 in diameter mild steel rod or steel elements of equivalent strength.

(2) A backstop must be positioned at least 10 cm (4 in) away from the glazed windows and exterior faces of the cab.

(3) Wire rope is not permitted for use as a grid element in a backstop.

(4) The framework must be secured to the main frame, boom or substructure of the mobile equipment.

(5) The supports, main frame, boom or substructure of the mobile equipment must be adequately designed and constructed to resist the impact loads imposed by the backstop.

(6) Gusset plates must be incorporated into each corner of the backstop if the length of an edge beam of the exterior frame exceeds 3 ft.

(7) Each grid opening must not be greater than 400 cm^2 (62 in^2).

(8) Minimum visual interference to the operator must be one of the governing criteria in the design and positioning of the vertical members of the guard.

(9) If flat bars are used as grid elements, they must be in a radiating pattern in line with the operator's line of sight (see Figures 1 and 2).

(10) Steel must be used for all parts of the backstop and must meet the performance requirements, including the performance requirements for cold temperatures, of the standard *CAN/CSA-M3471-05 (R2015) – Earth-Moving Machinery – Roll-Over Protective Structures – Laboratory Tests and Performance Requirements (Adopted ISO 3471:1994, first edition, 1994-02-01)*.

Certification

3 (1) Subject to subsection (2),

(a) a backstop must be certified by the backstop manufacturer or a professional engineer as meeting this standard, and

(b) any addition, modification, welding or cutting on a backstop must be carried out in accordance with the instructions of, and the backstop must be recertified by, the backstop manufacturer or a professional engineer.

(2) Backstops manufactured prior to September 1, 2021 are exempt from subsection (1) (a) but not from any other part of this standard.

Figure 1
Mainframe-mounted Heavy Duty Backstop

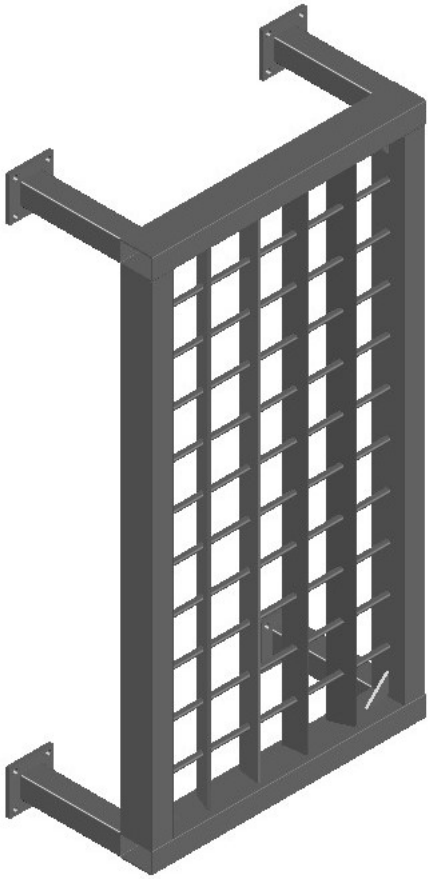
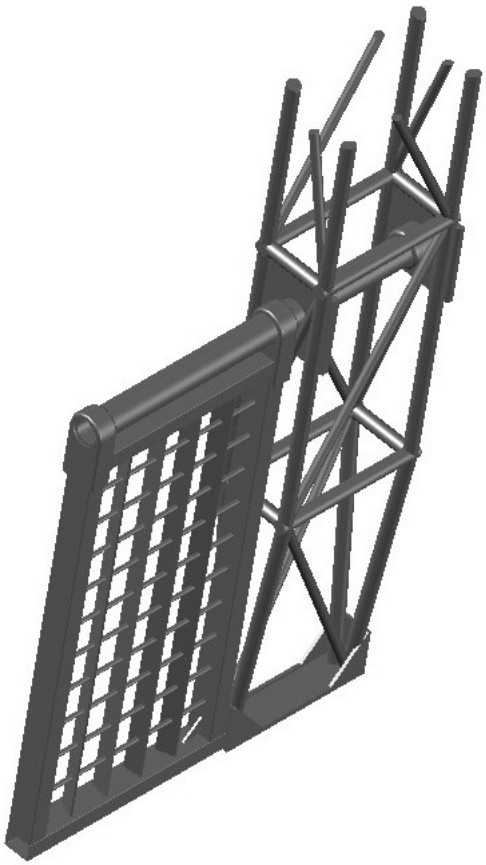


Figure 2
Boom-mounted Heavy Duty Backstop



SCHEDULE 16-B

[en. B.C. Reg. 139/2021, App, D, s. 9.]

(section 16.33)

WORKSAFEBC G603 STANDARD – HEAVY DUTY GUARDS FOR WINDOWS

Scope, definitions and measurements

1 (1) This standard describes minimum requirements for the design of heavy duty guards (see Figure 1) for front, side and rear windows in mobile equipment where the operator is exposed to hazards of intruding or flying objects, such as snapped or whipping cables, logs and tree limbs, falling rocks or concrete, and loose debris.

(2) In this standard:

"grid element" means a vertical or horizontal member of a heavy duty guard inside the framework;

"HSS" means hollow structural section.

(3) In this standard, common industry practices are followed in expressing numerical measurements.

Design requirements

2 (1) A heavy duty guard must be able to protect the operator from one or more objects imparting an absorbed kinetic energy level of 11 526 joules (8 500 foot-pounds).

(2) When steel is used, a heavy duty guard must provide protection for the entire surface area of the window and must be positioned as follows:

(a) to allow for window cleaning, at least 10 cm (4 in) away from the exterior face of the window;

(b) to prevent side intrusion, not more than 20 cm (8 in) away from the exterior face of the window.

(3) When steel is used for a heavy duty guard, it must be suitable for cold temperatures as meeting the requirements of the standard *CAN/CSA-M3471-05 (R2015) – Earth-Moving Machinery – Roll-Over Protective Structures –Laboratory Tests and Performance Requirements (Adopted ISO 3471:1994, first edition, 1994-02-01)*, which may be satisfied by using steel that is equivalent to *ASTM A36, CSA G40.21 33G, 44W* for plates, bars and angles and *CSA G40.21 50W* for HSS.

(4) The exterior frame of a steel heavy duty guard must be secured to the structural parts of the cab, which must be adequately designed and constructed to resist the impact loads imposed by the guard.

(5) The minimum edge beam size of a steel heavy duty guard must not be less than HSS 2.5 in x 1.5 in x 0.125 in.

(6) Gusset plates must be incorporated into each corner of a steel heavy duty guard if the length of an edge beam of the exterior frame exceeds 3 ft.

(7) Each grid opening in a steel heavy duty guard must not be greater than 20 cm x 20 cm (8 in x 8 in).

(8) The minimum size of the grid element in a steel heavy duty guard must be 1.9 cm (3/4 in) mild steel rod or a steel element of equivalent strength.

(9) The minimum mild steel rod diameter or steel element, as applicable, set out in subsection (8) must be proportionately increased if a steel heavy duty guard is longer or wider than 3 ft.

(10) Minimum visual interference to the operator must be one of the governing criteria in the design and positioning of the vertical members of a steel heavy duty guard.

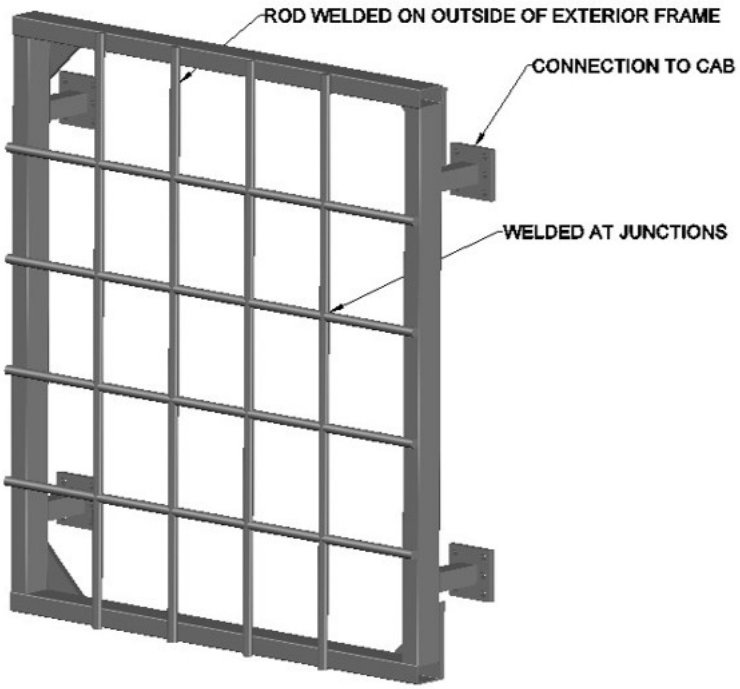
(11) If steel flat bars are used as grid elements, they must be in a radiating pattern in line with the operator's line of sight.

(12) Effective September 1, 2021, wire rope is not permitted for construction of a new steel heavy duty guard.

(13) If nuts and bolts are used in the fabrication of a heavy duty guard, they must be Grade 8, at minimum.

(14) Materials with equal or better properties, including polycarbonate, may be used in place of those stipulated in this standard.

Figure 1
Typical Heavy Duty Guard



SCHEDULE 16-C

[en. B.C. Reg. 139/2021, App, D, s. 9.]

(section 16.33)

WORKSAFEBC G604 STANDARD – LIGHT DUTY GUARDS FOR WINDOWS

Scope, definition and measurements

1 (1) This standard describes minimum requirements for the design of light duty guards for front, side and rear windows in mobile equipment such as dozers,

loaders, skidders, excavators and mulchers, where the operator is exposed to hazards of intruding or flying objects such as jill-pokes, individual brick-sized objects, rock or wood chips, and metal shrapnel.

(2) In this standard, **"HSS"** means hollow structural section.

(3) In this standard, common industry practices are followed in expressing numerical measurements.

Design requirements – general

2 (1) Light duty guards must each be able to protect the operator from one or more objects imparting the equivalent of a static load of 17 800 newtons (4 000 lbf) applied to an area of 64 cm^2 (10 in^2) anywhere on the guard.

(2) If a window is made of tempered glass, a light duty guard must be made of polycarbonate or steel mesh.

(3) If a window opening without glazing requires light duty guarding against metal shrapnel or other objects small enough to pass through steel mesh, the guard must be made of polycarbonate, whether or not there is already a steel mesh guard over the window opening.

(4) Minimum visual interference to the operator must be one of the governing criteria in the design and positioning of the light duty guard.

(5) On ROPS-equipped mobile equipment, a light duty guard may be attached to parts of the ROPS provided that the attachment does not adversely affect the performance of the ROPS and all the attachments must be clamped unless welding is permitted by the ROPS manufacturer or a professional engineer.

Design requirements – polycarbonate guards

3 Polycarbonate guards (see Figure 1) must

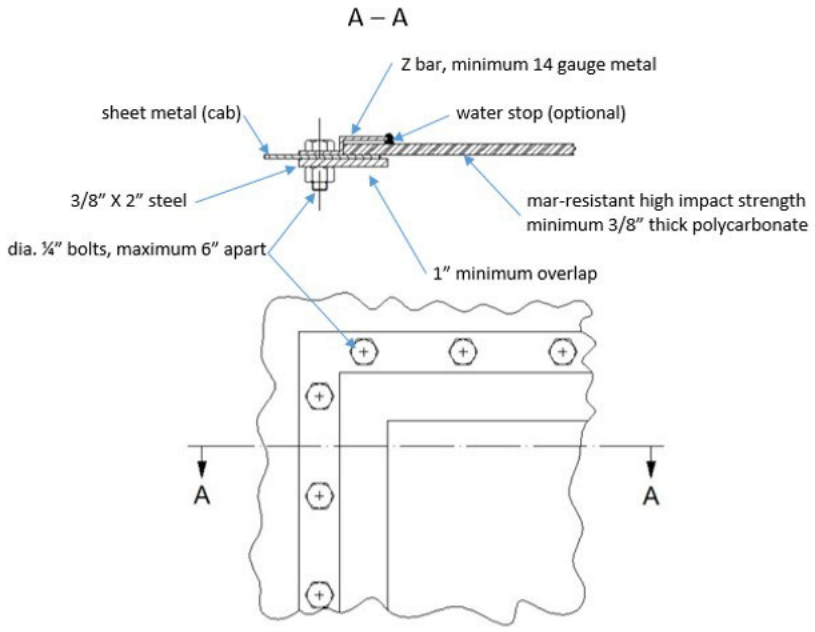
(a) be a minimum of 9.5 mm (3/8 in) thick,

(b) not be drilled into or have been drilled,

(c) overlap the window by 2.54 cm (1 in) all around, and

(d) be mounted to the cab in accordance with Figure 1 and the cab must be adequately designed and constructed to resist the impact loads imposed by the guard.

Figure 1
Mounting Detail for Light Duty Polycarbonate Guard



Design requirements – steel mesh guards

4 (1) Steel mesh guards (see Figure 2) must be suitable for cold temperatures as meeting the requirements of *CAN/CSA-M3471-05 (R2015) – Earth-Moving Machinery – Roll-Over Protective Structures – Laboratory Tests and Performance Requirements (Adopted ISO 3471:1994, first edition, 1994-02-01)*, and may be satisfied by using steel that is equivalent to *ASTM A36, CSA G40.21 33G, 44W* for plates, bars and angles and *CSA G40.21 50W* for HSS.

(2) A steel mesh guard must provide protection for the entire surface area of the window and must be positioned at least 10 cm (4 in) away from the exterior face of the window to allow for window cleaning.

(3) The exterior frame of a steel mesh guard must be secured to the structural parts of the cab, which must be adequately designed and constructed to resist the impact loads imposed by the guard.

(4) Minimum edge beam size of the exterior frame must be at least HSS 1 in x 1 in x 0.125 in.

(5) Wherever there is an unsupported area of mesh greater than 0.5 sq m (5.4 sq ft), an interior intermediate stiffener must be installed to add rigidity and transfer

loads from the mesh to the exterior frame and must be welded to the exterior frame.

(6) The minimum size of intermediate stiffeners must be 1 in x 0.5 in flat steel bar.

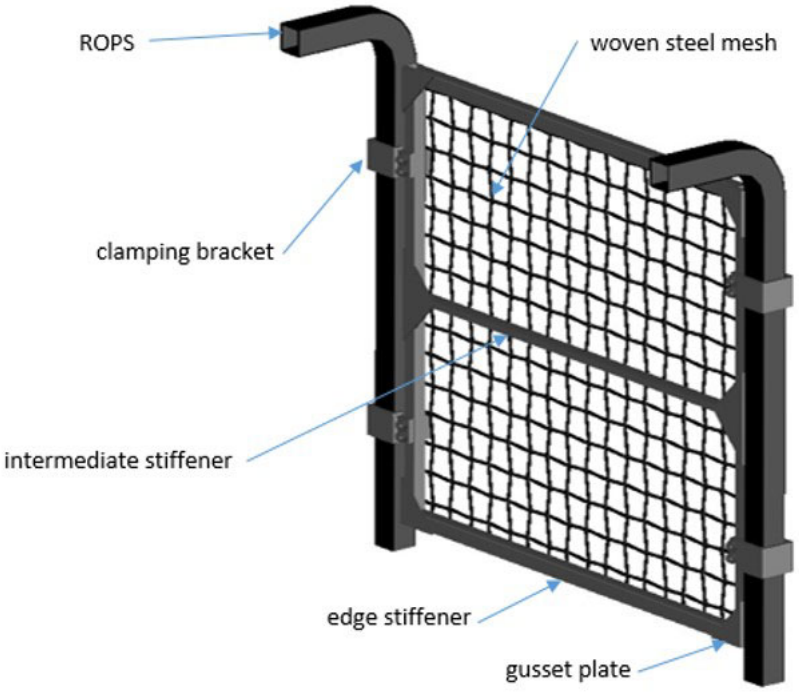
(7) Gusset plates must be incorporated if the length of an edge beam of the exterior frame exceeds 3 ft.

(8) Each opening in the steel mesh must not be greater than 4.5 cm x 4.5 cm (1 3/4 in x 1 3/4 in), and the mesh must be made of a welded or woven wire of a minimum of 6 mm, which is welded to the exterior frame.

(9) If nuts and bolts are used in the fabrication of the guard, they must be Grade 8, at minimum.

(10) Effective September 1, 2021, wire rope is not permitted for use in a steel guard.

Figure 2
Typical Light Duty Steel Mesh Guard



PART 17 – TRANSPORTATION OF WORKERS

General Requirements

Definitions

17.01 In this Part:

"gross vehicle weight rating (GVWR)" means the manufacturer's maximum recommended weight for a vehicle, including the weight of the vehicle itself, fuel and other fluids, passengers, and all cargo;

"highway" has the same meaning as in the *Motor Vehicle Act*;

"worker transportation vehicle" means a motor vehicle provided by or arranged by an employer to transport 3 or more workers to and from, or to or from, a workplace.

[en. B.C. Reg. 258/2008, App. E, s. 1.]

Application

17.1 This Part applies to all persons, including the operator, engaged in transporting workers by any type of conveyance operated on behalf of the employer.

General responsibilities

17.1.1 Vehicles used to transport workers must be designed, maintained and operated in a safe manner.

[en. B.C. Reg. 258/2008, App. E, s. 1.]

Provision for seating and seat belt assemblies

17.1.2 If a worker transportation vehicle is used off a highway, the seating requirements under Division 39 of the Motor Vehicle Act Regulations and the seat belt assembly requirements of Section 220 of the *Motor Vehicle Act* apply as if the vehicle were operated on a highway.

[en. B.C. Reg. 258/2008, App. E, s. 1.]

Employer's responsibility

17.2 If workers are to travel in a worker transportation vehicle, the employer must ensure that

(a) reasonable measures are taken to evaluate road, weather and traffic conditions to ensure the safe transit of the workers,

(b) an inspection of the worker transportation vehicle has been conducted by a qualified person before first use on a work shift, and

(c) any defect which might affect the safety of workers is corrected before the vehicle is used.

[en. B.C. Reg. 258/2008, App. E, s. 2.]

Operator responsibility

17.2.1 (1) The operator of a worker transportation vehicle must ensure that the worker transportation vehicle has been inspected by a qualified person before first use on a work shift.

(2) In addition to the requirements of section 17.1.2, the operator must not operate a vehicle in which there is a worker who occupies a seating position for which a seat belt assembly is provided unless that worker is wearing the complete seat belt assembly in a properly adjusted and securely fastened manner.

[en. B.C. Reg. 258/2008, App. E, s. 2.]

General operation requirements

17.2.2 (1) A vehicle used to transport workers must be operated by a driver properly licensed under the provisions of the *Motor Vehicle Act* and, if required, the *Industrial Roads Act*.

(2) If a vehicle is used to transport workers the following procedures must be in place:

(a) all doors must be closed and latched while the vehicle is in motion;

(b) the parking brake must be engaged when the vehicle is left unattended and the wheels blocked or chocked if the circumstances require.

[en. B.C. Reg. 258/2008, App. E, s. 2.]

Provision for seat belts

17.2.3 An exemption under Division 32, and an exception under Division 39, of the Motor Vehicle Act Regulations apply to the operation of a worker transportation vehicle both on and off a highway.

[en. B.C. Reg. 258/2008, App. E, s. 2.]

17.3 Repealed. [B.C. Reg. 258/2008, App. E, s. 2.]

Riding restrictions

17.4 A worker must not ride in a vehicle

(a) in a standing position, unless protected from being thrown off balance, or

(b) with any part of the body outside the vehicle unless essential to the work process, and then only if the worker is adequately restrained.

Securing equipment

17.5 (1) Materials, goods, tools or equipment carried in a portion or compartment of a vehicle in which workers are riding must be located and secured to prevent injury to the operator or workers.

(2) If materials, goods, tools or equipment are regularly carried in a worker transportation vehicle there must be a designated area in the vehicle for transporting these items.

Gross vehicle weight rating

17.5.1 The gross vehicle weight rating (GVWR) of the worker transportation vehicle must not be exceeded.

[en. B.C. Reg. 258/2008, App. E, s. 3.]

Hazardous materials

17.6 The transportation of hazardous materials in a vehicle transporting workers is restricted as follows:

(a) Repealed. [B.C. Reg. 312/2003, App. D, s. 16.]

(b) if it is necessary to carry volatile, flammable, or otherwise hazardous materials, the materials must be carried in isolated compartments which are

(i) accessible only from outside the vehicle, are securely fastened and are fitted with adequate ventilation and drainage facilities, and

(ii) if internal to the vehicle, separated from the crew compartment by an approved firewall.

[am. B.C. Reg. 312/2003, App. D, s. 16.]

Carrying animals

17.7 An animal must not be carried in the operator's cab or passenger compartment of a vehicle transporting workers unless appropriate facilities are provided for this purpose.

Passenger compartments

17.8 Any enclosed portion or compartment of a vehicle in which workers are transported must have

(a) effective ventilation, independent of doors, providing clean air,

(b) adequate lighting and means for heating and cooling,

(c) an effective means of communication between the operator and passengers, and

(d) more than one means of exit.

Boarding and leaving

17.9 (1) A worker must not board or leave any vehicle while it is in motion, except in case of emergency.

(2) Adequate docking facilities must be provided if necessary to ensure safe worker access and egress to marine craft and float-equipped aircraft.

(3) A walkway on a docking facility must have a surface finish or otherwise be maintained in a manner which minimizes the risk of a worker slipping.

Worker Transportation Vehicles Not Designed for Use on Highways

Vehicle design

17.10 (1) A vehicle operated by or on behalf of the employer primarily to transport workers must

(a) be suited to the type of use, terrain and weather,

(b) have a body of strong and rigid construction that is securely fastened to the vehicle chassis,

(c) have, with the exception of UTVs, rear or side doors with latches operable from inside and outside, with side doors on the right side of the vehicle,

(d) be fitted with at least one emergency exit that is on the left side or rear of the vehicle, operable from both inside and outside, and unlocked while the vehicle is in use,

(e) have safe means of entry and exit with non-slip steps and handholds,

(f) be fitted with adequate service brakes and a mechanical parking brake,

(g) be equipped with appropriate first aid equipment determined under section 3.16 or 3.20, and

(h) be equipped with a fire extinguisher in good working order that has a UL Rating of at least 2A:10 B:C.

(2) A vehicle used to transport workers off road must have

(a) service brakes capable of stopping and holding the fully loaded vehicle on the maximum slope the vehicle can climb or at the maximum specified operating slope,

(b) a primary and secondary braking system with the secondary braking system having at least 50% of the braking capability of the primary braking system,

(c) if components are shared between the primary and secondary braking systems, a design such that failure of any one component will not disable both brake systems,

(d) if the service brake operates on the drive train, a design such that failure of any one component of the drive train will not reduce the braking capability to less than 50% of the primary brake system, and

(e) a mechanical parking brake capable of holding the vehicle in place on a slope of at least 15%.

[am. B.C. Regs. 348/2003, s. 5; 139/2021, App. D, s. 10.]

17.11 Repealed. [B.C. Reg. 258/2008, App. E, s. 4.]

Seating design

17.12 A worker transportation vehicle must be equipped with seats that

(a) are safely located and securely attached to the vehicle, with a width of at least 41 cm (16 in) for each passenger and an upholstered seat and seat back which provide normal and comfortable seating for passengers,

(b) face to the front or rear of the vehicle, unless installed otherwise by the vehicle manufacturer, and

(c) provide a spacing of at least 66 cm (26 in) measured between the face of the seat back at seat level and the back of the seat or other fixed object in front.

Seating capacity

17.13 For vehicles that do not have seat belt assemblies in every seating position, the seating capacity must be determined by the number of 41 cm (16 in) seat widths available, provided the gross vehicle weight rating (GVWR) is not exceeded.

[en. B.C. Reg. 258/2008, App. E, s. 5.]

Aisles

17.14 If a worker transportation vehicle will carry 12 or more passengers, it must have an aisle at least 25 cm (10 in) wide providing access from each seat to a regular entry/exit door, and also to an alternate or emergency exit.

Marine Craft

17.15 Repealed. [B.C. Reg. 312/2003, App. E, s. 9.]

17.16 Repealed. [B.C. Reg. 381/2004, s. 8.]

Safety standards

17.17 A vessel used to transport workers must meet generally accepted standards for safety and capacity based on the use of the vessel and the conditions in which the vessel could be expected to operate.

[en. B.C. Reg. 381/2004, s. 9.]

Operation

17.18 If the operator of a vessel transporting workers is not required to hold a certification under the *Canada Shipping Act*, the operator must

(a) have successfully completed a course on navigation and ship safety acceptable to the Board, or

(b) have other combination of training and experience acceptable to the Board.

[en. B.C. Reg. 381/2004, s. 10.]

17.19 to **17.21** Repealed. [B.C. Reg. 381/2004, s. 11.]

Communication

17.22 (1) A vessel used to transport workers must be equipped with a two-way communication system of a design effective in the area of operation.

(2) The two-way communication system must be maintained in good operating condition, be able to establish contact with persons necessary to effect emergency response, and be immediately accessible in the event of an emergency.

[en. B.C. Reg. 381/2004, s. 12.]

Vessel preparation

17.23 Before transporting workers on a vessel, the operator of the vessel must ensure that the vessel is capable of safely making the passage, considering the

(a) stowage and securing of all cargo, skiffs, equipment, fuel containers and supplies,

(b) ballasting, and

(c) existing and forecast weather conditions.

[en. B.C. Reg. 381/2004, s. 13.]

Maintenance and inspection

17.24 (1) A vessel must be inspected before initial use to ensure that it is fit for safe operation, and after that at intervals that will prevent the development of unsafe conditions.

(2) Defects must be reported immediately, in writing, to the supervisor, employer or owner and those defects which affect the safe operation of the vessel must be remedied before the vessel is put to further use.

[en. B.C. Reg. 381/2004, s. 14.]

Anti-skid covering

17.25 A vessel used by workers wearing caulked boots must be fitted with deck matting or other covering which provides safe footing for workers, and the covering must be maintained in good condition.

[am. B.C. Reg. 381/2004, s. 15.]

Lighting

17.26 Searchlights or floodlights must be provided and used if necessary to facilitate safe operation of a vessel and to illuminate working or boarding areas adjacent to the vessel.

[en. B.C. Reg. 381/2004, s. 16.]

Aircraft

17.27 Repealed. [B.C. Reg. 312/2003, App. H, s. 1.]

PART 18 – TRAFFIC CONTROL

General Requirements

Definitions

18.1 In this Part:

"barrier" means a solid or continuous installation designed to prevent errant vehicles from entering a closed or hazardous work zone;

"brief duration work" means planned work in a work zone that requires 15 minutes or less to complete;

"emergency" means an incident that requires immediate action to protect lives or prevent serious injury;

"emergent work" means quick response work necessitated by an unanticipated occurrence, other than an emergency, if the total time required for workers to complete the quick response work is less than 5 minutes;

"long duration work" means planned work in a work zone that requires

(a) more than one daylight period to complete,

(b) night work, or

(c) mobile work;

"mobile work" means continuously slow-moving work or intermittently moving work with stops of 30 minutes or less;

"risk assessment" means a risk assessment in accordance with section 18.3.1;

"short duration work" means planned work in a work zone that requires more than 15 minutes during a single daylight period to complete;

"temporary traffic control device" means a sign, signal, marking or other device used to regulate, warn or guide traffic through or around a work zone for a limited period of time;

"traffic assistant" means a person who

(a) has completed the training described in section 18.6.3, and

(b) assists or directs motorists within parking or holding areas in a specified workplace, such as a parking lot or roadway terminus used for vehicle holding prior to boarding a vessel;

"traffic control" means the use of temporary traffic control devices, traffic arrangements or layouts and procedures to protect workers and move traffic safely through a work zone;

"traffic control person" means a person who

(a) has completed the training described in section 18.6.2, and

(b) is designated or assigned by the employer to direct traffic;

"traffic control plan" means a workplace-specific plan that documents how traffic control is to be achieved, including

(a) a combination of text, layouts and, if required, drawings that describe specifically the traffic control measures and devices that will be provided to mitigate the risks from hazards identified in the risk assessment,

(b) how the traffic control measures are to be implemented, and

(c) on what schedule the traffic control measures are to be implemented;

"Traffic Management Manual" means the latest edition of the *Traffic Management Manual for Work on Roadways* issued by the Ministry of Transportation and Infrastructure;

"work zone" means an area where a worker is or may be exposed to a moving vehicle, with the exception of

(a) a parking lot, and

(b) a roadway terminus used for vehicle holding prior to boarding a vessel.

[en. B.C. Reg. 242/2006, s. 2; am. B.C. Reg. 222/2021, App. D, s. 1.]

Employer responsibility

18.2 The employer must ensure that effective traffic control is provided and implemented whenever traffic could be hazardous to a worker.

[en. B.C. Reg. 242/2006, s. 2; am. B.C. Reg. 222/2021, App. D, s. 2.]

Standards for traffic control

18.3 (1) The Traffic Management Manual applies to all work zones.

(2) An employer must ensure that traffic control equipment, arrangements or layouts and procedures, to the extent practicable, meet the requirements of the Traffic Management Manual unless otherwise specified in this Regulation or in the Act.

[en. B.C. Reg. 222/2021, App. D, s. 3.]

Risk assessment

18.3.1 (1) An employer must not permit workers to engage in a work activity that may expose workers to traffic unless a risk assessment has first been completed by a qualified person and the risk assessment

(a) meets the requirements of subsection (2) or (3), as applicable, and

(b) takes into account the risks to worker health and safety whenever traffic control is required for

(i) emergent work,

(ii) brief duration work,

(iii) short duration work, or

(iv) long duration work.

(2) An employer responsible for emergent work or brief duration work must

(a) determine that the emergent work or brief duration work can be performed safely in less than 5 minutes or 15 minutes or less, respectively,

(b) develop written work procedures applicable to the emergent work or brief duration work, including specifying

(i) the temporary traffic control devices and layouts required, if applicable, and

(ii) instructions and procedures to follow when a worker encounters an unanticipated occurrence that prevents the work from being completed in the time allocated, and

(c) require workers to follow the written work procedures described in paragraph (b).

(3) An employer responsible for short duration work or long duration work must ensure that the risk assessment is in writing and includes consideration of at least the following:

(a) work duration and time of day the work activity is scheduled to occur;

(b) whether the nature of the work activity is expected to create a hazard;

(c) whether any of the following is expected to create a risk of worker injury:

(i) traffic volume;

(ii) lines of sight;

(iii) vehicles travelling at the posted speed limits;

(iv) configuration of the work zone, including the number of lanes and lane widths;

(v) equipment movement and storage;

(d) environmental conditions or hazards that could present a risk to workers during the installation or removal of temporary traffic control devices, including

(i) avalanche or rock fall areas,

(ii) overhead structures, and

(iii) roadway surface conditions;

(e) coordination of overlapping work activities;

(f) any other reasonably foreseeable hazard;

(g) whether traffic control persons are required, and, if so,

(i) the availability of escape routes for those traffic control persons,

(ii) environmental conditions or hazards,

(iii) the locations at which traffic control persons can be positioned to direct traffic and avoid the risk of being struck by traffic,

(iv) requirements for breaks by those traffic control persons, including hygiene breaks,

(v) shift duration and the number of traffic control persons required for the work, and

(vi) what site-specific orientation and training are required for traffic control persons at the work zone;

(h) the level of supervision required.

(4) An employer referred to in subsection (2) or (3), as applicable, must ensure that the risk assessment is reviewed and updated by a qualified person if

(a) there is reason to believe the risk assessment is no longer valid, or

(b) there has been a significant change in the scope or nature of the work to which the risk assessment relates.

[en. B.C. Reg. 222/2021, App. D, s. 4.]

Traffic control plan

18.3.2 (1) An employer responsible for short duration work or long duration work must ensure that a written traffic control plan is developed based on the risk assessment.

(2) The traffic control plan required under subsection (1) must specify

(a) traffic control measures to mitigate the hazards identified in the risk assessment,

(b) instructions for implementation of the traffic control measures,

(c) clear statements of roles and responsibilities for implementing the traffic control plan, and

(d) a schedule, for the traffic control plan, for

(i) implementation, and

(ii) regular review and updating.

(3) If the risk assessment is updated under section 18.3.1 (4), the employer must ensure that

(a) the traffic control plan is amended to address the changes to the risk assessment, and

(b) the amendments to the traffic control plan are implemented.

(4) The employer must ensure that the traffic control plan is accessible at all times to workers at the work zone.

[en. B.C. Reg. 222/2021, App. D, s. 4.]

Order of control measures

18.3.3 (1) An owner and an employer each must, to the extent practicable, eliminate the risk of worker exposure to traffic in a work zone by isolating the work zone using constructed detours, alternative routes, barriers or other effective measures.

(2) If it is not practicable to eliminate worker exposure to traffic in a work zone by using the measures described in subsection (1), worker exposure to traffic must be minimized by applying control measures that

(a) are appropriate to the work activity,

(b) are consistent with the risk assessment, and

(c) include, in order of priority,

(i) the use of temporary traffic control devices and traffic arrangements or layouts and procedures to effectively protect workers from traffic travelling by or through a work zone without the use of traffic control persons,

(ii) administrative controls that reduce the number of workers exposed to traffic, such as scheduling work during off-peak hours, and

(iii) the use of traffic control persons only after the control measures set out in subparagraphs (i) and (ii), either alone or in combination, have been considered and determined to be insufficient to manage traffic in the circumstances.

[en. B.C. Reg. 222/2021, App. D, s. 4.]

Supervision

18.4 (1) An employer must ensure that a qualified supervisor is designated whenever traffic control is required.

(2) The employer must ensure that the supervisor designated under subsection (1) ensures that the following requirements are met:

(a) traffic arrangements or layouts and procedures are implemented in accordance with the traffic control plan set out in section 18.3.2;

(b) the required temporary traffic control devices are in place before the start of work and are removed or covered immediately when they are no longer required;

(c) the work zone is inspected at intervals appropriate to the risks;

(d) it has been verified that any person assigned to direct traffic can provide evidence of having completed the traffic control training program in accordance with section 18.6.2;

(e) if traffic control persons are assigned, the traffic control persons are, before their first shift, provided orientation and training at the work zone that are

(i) documented or otherwise recorded, and

(ii) consistent with the risks identified in the risk assessment;

(f) if 2 or more traffic control persons are expected to work as a team, responsibility is assigned to one traffic control person to coordinate any changes in traffic flow.

[en. B.C. Reg. 222/2021, App. D, s. 5.]

Placement of temporary traffic control devices

18.5 An employer must ensure that

(a) temporary traffic control devices are positioned and used as specified in the traffic control plan,

(b) temporary traffic control devices are positioned to allow traffic to move by or through the work zone in a safe manner,

(c) temporary traffic control devices are in place before the start of the work and are removed or covered immediately when they are no longer required,

(d) temporary traffic control devices are installed and removed in a sequence that best protects workers during each phase of a traffic control operation, and

(e) the distance between the Traffic Control Person Ahead C-001-1 sign and the first traffic control person does not exceed 150 metres, unless this is not practicable.

[en. B.C. Reg. 222/2021, App. D, s. 5.]

Traffic Control Persons

Prohibitions

18.6 An employer must ensure that

(a) traffic control persons are not used to control traffic when speed limits in effect are greater than 70 km/h,

(b) traffic control persons do not direct traffic contrary to any sign, signal or traffic control device, and

(c) traffic control persons are not positioned in an intersection open to traffic flow or the travelled portion of a roadway.

[en. B.C. Reg. 222/2021, App. D, s. 5.]

Emergency management

18.6.1 (1) In this section, **"emergency responder"** includes, when present at an emergency scene in a work zone, a firefighter, paramedic, highway rescue worker, search and rescue worker, tow truck worker, utility owner's worker, road authority worker and road maintenance worker.

(2) Subject to subsections (3) and (4), emergency responders may be assigned to direct traffic during an emergency.

(3) An emergency responder, other than a peace officer, may not direct traffic under subsection (2) unless the emergency responder has completed training that includes

(a) basic traffic control principles,

(b) instructions on the use, set-up and take down of temporary traffic control devices,

(c) traffic management principles described in the Traffic Management Manual,

(d) use of a buffer vehicle to protect the work zone during an emergency,

(e) safe work procedures, and

(f) appropriate selection, use and maintenance of personal protective clothing and safety equipment.

(4) An emergency responder, other than a peace officer, may not direct traffic under subsection (2) for more than 2 hours after the start of the emergency unless the emergency responder has completed the training described in section 18.6.2.

[en. B.C. Reg. 222/2021, App. D, s. 5.]

Traffic control person training

18.6.2 (1) An employer must ensure that a traffic control person has completed a Board-approved traffic control training program.

(2) On and after December 1, 2023, the traffic control training program must be based on

(a) analysis of the knowledge, skills, abilities and other requirements to perform the job, and

(b) training and competency assessment criteria contained in any one of the following:

(i) *ISO/IEC 17024:2012, Conformity Assessment – General Requirements for Bodies Operating Certification of Persons*;

(ii) *ANSI/ICE 1100: 2019(E), Standard for Assessment-Based Certificate Programs*;

(iii) *ASTM International ASTM E2659-18, Standard Practice for Certificate Programs*;

(iv) *CAN/CSA Z1001-18, Occupational health and safety training*;

(v) another standard acceptable to the Board.

(3) Successful completion of the traffic control training program must include an assessment of the trainee's

(a) knowledge of the subject matter, and

(b) practical competency.

[en. B.C. Reg. 222/2021, App. D, s. 5.]

Traffic assistant training

18.6.3 (1) An employer must ensure that a traffic assistant receives workplace training that addresses the hazards specific to the workplace and that includes coursework and a practical component.

(2) The coursework for a traffic assistant referred to in subsection (1) must include

(a) basic traffic control principles,

(b) instructions on the use, set-up and take down of temporary traffic control devices,

(c) safe work procedures that include identifying an escape route, and

(d) appropriate selection, use and maintenance of personal protective clothing and safety equipment.

[en. B.C. Reg. 222/2021, App. D, s. 5.]

Traffic control person to remain on duty

18.7 The employer must ensure that a traffic control person is on duty at the assigned station whenever a traffic control person is required as part of the traffic control plan for the work.

[en. B.C. Reg. 242/2006, s. 2.]

Location of traffic control persons

18.8 (1) Subject to section 18.6 and subsection (3) of this section, an employer must ensure that a traffic control person is in a position that has been identified in the risk assessment as a safe location.

(2) A safe location referred to in subsection (1) is one that

(a) is

(i) on the shoulder or curb adjacent to the traffic being controlled, or

(ii) in a lane that has been closed by means of barriers or other temporary traffic control devices,

(b) provides the traffic control person with an unobstructed route to escape errant vehicles or traffic,

(c) is 25 metres or more from the work zone, unless circumstances or space requirements, such as working at or near an intersection open to traffic flow or in an urban setting, make this distance not practicable, and

(d) makes the traffic control person stand out against the background or appear as conspicuous as possible to approaching traffic.

(3) If a risk assessment identifies that it is not practicable to position the traffic control person in a location as described in subsection (2), the employer must ensure that the positioning of the traffic control person is based on a written risk assessment of site-specific conditions completed to determine an alternative position to provide safety for the traffic control person.

[en. B.C. Reg. 222/2021, App. D, s. 6.]

Equipment for Traffic Control Persons

Operations during daytime

18.9 Each traffic control person must be provided and must use, when directing traffic, the following:

(a) a traffic control paddle meeting the requirements set out in the Traffic Management Manual and, if determined by a risk assessment as required to control fatigue, an extension pole for the paddle;

(b) a Traffic Control Person Ahead C-001-1 sign, which must be immediately removed or covered when traffic control persons are not actively controlling traffic;

(c) high visibility apparel meeting the requirements for the Class 3 garment criteria of *CSA Standard Z96-15, High-Visibility Safety Apparel* and that

(i) is in fluorescent yellow-green or fluorescent orange-red background colour,

(ii) covers fully, at a minimum, the upper torso,

(iii) has, in a contrasting colour, combination retroreflective-fluorescent stripes/bands that are at least 100 millimetres wide, made up of an at least 50 millimetre-wide retroreflective band with 2 at least 25 millimetre-wide fluorescent stripes in a contrasting colour to the background colour, in fluorescent yellow-green or fluorescent orange-red, on each side of the retroreflective band,

(iv) is worn as a torso vest, jacket or coveralls, with the combination retroreflective-fluorescent stripes/bands described in subparagraph (iii) laid out in the following pattern:

(A) a symmetric X, on the back of the garment, from shoulders to waist;

(B) 2 vertical stripes/bands on the front and extending over the shoulders to the waist;

(C) waist-level, horizontal stripes/bands extending entirely around the circumference of the torso, from the back to the bottom of the vertical stripes/bands on the front where they end at the front garment-fastening mechanism;

(D) with no gaps, in the retroflective-fluorescent material, that exceed 50 millimetres, and

(v) has horizontal combination retroreflective-fluorescent stripes/bands encircling both arms and legs, that are of the measurements set out in subparagraph (iii) and that are placed below the elbows and below the knees, respectively;

(d) safety headgear of a high visibility colour with a strip of retroreflective tape across the top from front to back and a strip of retroreflective tape on each side;

(e) any other equipment required by the risk assessment.

[en. B.C. Reg. 222/2021, App. D, s. 6.]

Operations during darkness or poor visibility

18.10 (0.1) In this section, **"darkness"** means the period from a half hour after sunset to a half hour before sunrise.

(1) During the hours of darkness, or in other conditions of poor visibility, each traffic control person must be provided with and must use, in addition to the equipment required by section 18.9, a flashlight fitted with a red signalling wand.

(2) For the purpose of subsection (1), the traffic control person must have immediate access to spare batteries for the flashlight.

(3) During the hours of darkness, or in other conditions of poor visibility, a location from which a traffic control person directs traffic must be illuminated by

(a) overhead street lighting, or

(b) if overhead street lighting is not available, temporary lighting that does not subject approaching road users to excessive glare.

[en. B.C. Reg. 242/2006, s. 2; am. B.C. Reg. 222/2021, App. D, s. 7.]

Equipment maintenance

18.11 All temporary traffic control equipment and devices, including signs, traffic control paddles and personal protective equipment, must be kept clean and in good working condition.

[en. B.C. Reg. 242/2006, s. 2; am. B.C. Reg. 222/2021, App. D, s. 8.]

Directions and Signals by Traffic Control Persons

Precise motions

18.12 A traffic control person must make all traffic control directions and signals precisely and deliberately so that the meaning can be clearly understood.

[en. B.C. Reg. 242/2006, s. 2.]

Communication between traffic control persons

18.13 If more than one traffic control person is controlling traffic at the same work zone, the employer must ensure that an effective means of communication is provided to and used by those persons for communication between them.

[en. B.C. Reg. 222/2021, App. D, s. 9.]

18.14 Repealed. [B.C. Reg. 222/2021, App. D, s. 10.]

Other Requirements

Dust control

18.15 If traffic causes airborne dust to the extent visibility is reduced and interferes with effective traffic control or creates a hazard to workers, the employer must control the

dust by the periodic application of water or other acceptable material to the grade surface to suppress dust.

[en. B.C. Reg. 242/2006, s. 2.]

18.16 and **18.17** Repealed. [B.C. Reg. 222/2021, App. D, s. 10.]

Figure 18-1

Repealed. [B.C. Reg. 222/2021, App. D, s. 9.]

Figure 18-2

Repealed. [B.C. Reg. 222/2021, App. D, s. 10.]

PART 19 – ELECTRICAL SAFETY

Definitions

19.1 In this Part:

"apprentice utility arborist" means a worker who is not yet a certified utility arborist but has completed a course of instruction recognized by the certifying authority;

"approved" as applied to electrical equipment, means that the equipment meets the requirements of the Electrical Safety Regulation;

"certified utility arborist" means a person who has completed a course of instruction, has a minimum of 1 200 hours of practical experience and is certified by an authority acceptable to the Board;

"conductor" means a wire, cable or other metal component installed for the purpose of conveying electric current from one piece of equipment to another or to ground;

"control system" means a manual, remote, automatic or partially automatic system for controlling the operation of equipment;

"damp location" means an exterior or interior location that is subject to condensation of moisture in, on or adjacent to portable electrical equipment;

"electrical equipment" includes machinery, plant, works, wires, pipes, poles, conduits, apparatus, appliances and equipment, designed or used, or intended for use, for or in connection with generation, transmission, supply, distribution or use of electrical energy for any purpose;

"electrical worker" means a person who meets the requirements of the Electrical Safety Regulation for installing, altering or maintaining electrical equipment;

"electrofishing" means the capture or control of fish by the use of electrical equipment;

"exposed", as applied to electrical equipment or conductors, means that the conductor or a part of the equipment is

(a) electrically connected to a source of voltage difference or electrically charged to have a voltage different from that of earth,

(b) not guarded or insulated in an approved manner, and

(c) in a location where a person or any tool, equipment or material the person is touching or using might come closer than a safe distance away from the conductor or part;

"hardwired" means the electrical connection of components within a system by means of electrical conductors so that the only way the system can be modified is by changing the connections;

"high voltage" means a potential difference (voltage) of more than 750 volts between conductors or between a conductor and ground;

"isolated" means that normal sources of energy have been disconnected by opening and securing all associated switches, and that mechanical equipment has been rendered and secured non-operative by disconnecting, stopping, depressurizing, draining, venting or other effective means;

"low voltage" means a potential difference (voltage) from 31 to 750 volts inclusive, between conductors or between a conductor and ground;

"mimic display" means a symbolic representation of the configuration and status of all or part of a power system, complete with device designations;

"power system" means all plant and equipment essential to the generation, transmission or distribution of electricity, including any plant or equipment that is out of service, being constructed or being installed;

"safety protection guarantee" means an assurance that a power system or part of the power system is isolated and will remain isolated;

"safety watcher" means a qualified person whose sole task is to observe the activity when equipment, vegetation or material will be moved relative to energized electrical equipment or conductors, and signal in a clear and predetermined manner to stop the movement whenever contact with electrical equipment, conductors or guarding appears probable, or whenever conditions prevent the watcher from having a clear view of the movement relative to the electrical equipment;

"service room" means a room or space in a building provided to accommodate building service equipment, and meeting the requirements of the *BC Building Code* or other applicable legislation;

"vault" means an isolated enclosure, either above or below ground, with fire-resisting walls, ceilings and floors for the purpose of housing transformers and other electrical equipment;

"wet location" means an exterior or interior location in which uncontrolled liquid may drip, splash or flow on or against portable electrical equipment.

[am. B.C. Reg. 312/2010, App. M, s. 1.]

General Electrical Requirements

19.2 Repealed. [B.C. Reg. 312/2003, App. E, s. 11.]

Poles and structures

19.3 (1) Before a worker climbs or is supported by a pole or structure, or before any work is done that will affect its stability,

(a) the pole or structure must be tested for soundness and stability, and

(b) if there is any doubt as to soundness or stability, the pole or structure must be effectively supported before any wires or cables are changed, and the supports must be left in place until workers are clear of the pole or structure.

(2) A worker must not climb or be on a pole or structure supported laterally by pike poles only.

Obstructions on poles

19.4 (1) Mailboxes, signs, clotheslines, or other obstructions are prohibited on or close to poles on which workers are required to work.

(2) Tags authorized by the owner which are placed on a pole for identification purposes must be less than 1.7 m (5.5 ft.) above grade, on the side of the pole which a climbing worker will face.

Informing workers

19.5 A worker must be informed of the potential electrical hazards before being permitted to do work in proximity to energized electrical conductors or equipment.

Service rooms

19.6 If practicable, service rooms and electrical vaults must be used only for the purpose for which they were intended.

Space around equipment

19.7 (1) Passageways and working space around electrical equipment must be kept clear of obstructions, be arranged so as to give authorized persons ready access to all parts requiring attention, and not be used for storage.

(2) Flammable material must not be stored or placed close to electrical equipment.

Testing equipment

19.8 (1) Electrical testing equipment may be used if it meets the requirements of

(a) *CSA Standard C22.2 No. 160-M1985 (Reaffirmed 1992), Voltage and Polarity Testers*, or

(b) *CSA Standard CAN/CSA-C22.2 No. 231 Series-M89, CSA Safety Requirements for Electrical and Electronic Measuring and Test Equipment*.

(c) Repealed. [B.C. Reg. 312/2003, App. A, s. 23 (c).]

(2) Electrical testing equipment not meeting a standard specified in subsection (1) may be used if it has

(a) fusing or circuitry designed to protect the operator in the event of a fault resulting from inadvertent misuse of the meter, or a fault on the circuit being tested,

(b) clearly and unambiguously marked measurement ranges,

(c) lead wire insulation rated to the maximum voltage reading of the meter,

(d) lead wires that are not cracked or broken, and having a current carrying capacity (ampacity) that meets or exceeds the maximum current measurement of the meter, and

(e) a minimum exposure of metal on lead wire probes.

(3) Appropriate safe work procedures must be established and followed for testing electrical equipment and circuits.

[am. B.C. Reg. 312/2003, App. A, s. 23.]

Insulated elevating work platform

19.9 (1) In this section, **"elevating work platform"** has the same meaning as in section 13.1.

(2) The employer must ensure that, at least once every 12 months,

(a) an insulated elevating work platform intended for use by a worker is dielectrically tested in accordance with section 5.3.4 of *CSA Standard CAN/CSA-C225-10 Vehicle-mounted aerial devices*, and

(b) the insulating capability of the platform referred to in paragraph (a) is certified by the testing agency.

(3) If an insulated elevating work platform does not pass the testing required by subsection (2),

(a) the platform must be considered non-insulated, and

(b) the employer must ensure that

(i) any markings or identification on the platform indicating insulated capability are removed or effectively covered over,

(ii) the platform's inspection and maintenance records indicate the platform is non-insulated,

(iii) the platform's operation and maintenance manuals are revised to indicate the platform is non-insulated, and

(iv) before using the platform, workers are informed the platform is non-insulated.

[en. B.C. Reg. 312/2012, App. C, s. 2.]

Working on Low Voltage Electrical Equipment

Disconnection and lockout

19.10 (1) Low voltage electrical equipment must be completely disconnected and locked out as required by this Regulation before starting work on it.

(2) Except as specified in subsection (3), if it is not practicable to completely disconnect low voltage electrical equipment, work must be performed by qualified and authorized workers and in accordance with written safe work procedures which

(a) require the use of personal protective equipment and voltage-rated tools, appropriate to the hazards and risks associated with the voltage at which the electrical equipment is operating,

(b) provide that, if practicable, uncontrolled liquid is not permitted close to any worker working on the equipment, and

(c) if applicable, control the use of metal ladders, wooden ladders with wire reinforced side rails, metal scaffolds or metal work platforms.

(3) Work must not be done on energized parts of electrical equipment associated with lighting circuits operating at more than 250 volts-to-ground without the prior written permission of the Board.

[am. B.C. Reg. 312/2012, App. F, s. 1.]

Warning signs

19.11 (1) Before completing installation and after energizing low voltage electrical equipment, conspicuous signs visible to workers must be placed close to the equipment stating "Danger, Energized Equipment".

(2) Repealed. [B.C. Reg. 312/2003, App. E, s. 12.]

[am. B.C. Reg. 312/2003, App. E, s. 12.]

Working close to energized equipment

19.12 (1) Uninsulated, energized parts of low voltage electrical equipment must be guarded by approved cabinets or enclosures unless the energized parts are in a suitable room or similar enclosed area that is only accessible to qualified and authorized persons.

(2) Each entrance to a room and other guarded location containing uninsulated and exposed, energized parts must be marked with a conspicuous warning sign limiting entry to qualified and authorized persons.

(3) If uninsulated energized parts are not guarded with approved cabinets or enclosures

(a) suitable barriers or covers must be provided if a worker unfamiliar with the hazards is working within 1 m (3.3 ft) of the uninsulated, energized parts, or

(b) the worker must be informed of the potential hazards, and provided with and follow appropriate written safe work procedures.

Identification of controls

19.13 Each electrical distribution switch, circuit breaker and control must be clearly marked to indicate the equipment it serves.

Grounding portable equipment

19.14 (1) Repealed. [B.C. Reg. 312/2003, App. E, s. 13.]

(2) Portable electrical equipment having double insulation or equivalent protection, and so marked, need not be grounded.

(3) Portable electrical equipment, required to be grounded and not permanently connected to the wiring system, must be effectively grounded by the use of approved cords and polarized plugs inserted in grounded polarized receptacles.

[am. B.C. Reg. 312/2003, App. E, s. 13.]

Ground fault circuit interrupters

19.15 (1) When used outdoors or in a wet or damp location, portable electrical equipment, including temporary lighting, must be protected by an approved ground fault circuit interrupter of the class A type installed at the receptacle or on the circuit at the panel, unless another acceptable means of protection is provided.

(2) A ground fault circuit interrupter must not be used in place of grounding except as permitted by the Electrical Safety Regulation.

[am. B.C. Reg. 312/2010, App. M, s. 2.]

Working on High Voltage Electrical Equipment

Isolation and lockout

19.16 (1) High voltage electrical equipment must, if practicable, be completely isolated, grounded, and locked out as required by this Regulation before starting work on it.

(2) If it is not practicable to completely isolate high voltage electrical equipment,

(a) written safe work procedures acceptable to the Board must be followed,

(b) two or more qualified and authorized persons must be present while the work is being done, unless the procedures being followed under paragraph (a) specifically permit the work to be done by one person,

(c) appropriate electrical protective equipment, including rubber blankets, hoses, hoods, gloves and live line tools must be selected, used, stored, tested, and maintained in accordance with a standard acceptable to the Board, and

(d) the use of metal ladders, wire reinforced side rail wooden ladders, metal scaffolds or metal work platforms must be in accordance with the procedures established under paragraph (a).

Warning signs

19.17 (1) Before completing installation and after energizing high voltage electrical equipment, conspicuous signs visible to workers must be placed close to the equipment stating "Danger – Energized Equipment".

(2) Repealed. [B.C. Reg. 312/2003, App. E, s. 14.]

[am. B.C. Reg. 312/2003, App. E, s. 14.]

Working on De-energized High Voltage Power Systems

Isolation and lockout

19.18 (1) Before working on a power system that for reasons of safety must be de-energized, the worker in charge must ensure that the part of the system being worked on is isolated and grounded, and locked out as required by this Regulation.

(2) Barriers or distinctive identification must be used to differentiate high voltage electrical equipment which has been de-energized for safety reasons from similar energized equipment at the work location if lack of such identification would result in undue risk to workers.

(3) If it is impracticable to lock out a power system or part of the power system

(a) the boundaries of the power system or part must be clearly defined,

(b) written work procedures governing the issue of safety protection guarantees, and which address the requirements of sections 19.19 to 19.23, must be followed, and

(c) all major equipment used to establish safety protection guarantees must be uniquely identified at a conspicuous place on or near the equipment.

Person in charge

19.19 (1) One person must be assigned at any one time the exclusive authority as the person in charge to establish the conditions for, and to issue safety protection guarantees for, the power system or a part of it.

(2) The person in charge must

(a) ensure that the status of the power system or assigned part of the power system is accurately represented on a mimic display,

(b) maintain a log of switching details, safety protection guarantees and operational events, and

(c) authorize the commencement of any work on the power system or assigned part of it.

(3) There must be an effective communication system between the person in charge and the workers doing the work.

(4) Only a worker specifically authorized by the owner may receive a safety protection guarantee or do work on the power system.

Switching sequences

19.20 If a switching sequence requires the operation of 3 or more devices, a written switching order must be prepared and followed.

Isolating devices

19.21 (1) Isolating devices used for safety protection guarantees must provide for visual verification of the opening of the isolation point.

(2) Lockable isolating devices must be locked in the position or condition required to protect workers before work commences under a safety protection guarantee.

(3) A distinctive "DO NOT OPERATE" tag must be placed securely on each isolating device used for a safety protection guarantee.

Grounding and blocking

19.22 (1) After a safety protection guarantee is in effect, the equipment to be worked on must be tested to verify isolation before grounding and blocking begins.

(2) After testing to verify isolation, the person at the worksite responsible for each crew must verify that required grounding and blocking devices are in place before work begins.

(3) Grounding and blocking of any equipment that may be hazardous to workers must be carried out as close as practicable to the worksite.

(4) If grounding and blocking is not safe or practicable, written safe work procedures acceptable to the Board must be followed.

(5) Grounding and blocking devices may be removed for the purpose of conducting tests.

Multiple authorities

19.23 If a safety protection guarantee involves 2 or more power systems, or 2 or more persons in charge of different parts of a system, appropriate written procedures must be established and followed to ensure that any safety protection guarantee will be effective.

Minimum Separation Distance to be Maintained from Energized High Voltage Electrical Equipment and Conductors

Informing workers about high voltage electrical equipment and conductors

19.24 Before a person starts work close to high voltage electrical equipment or conductors that are exposed or that might become exposed during work at a workplace, the person must be informed of

(a) the existence, location and voltage of the high voltage electrical equipment and conductors, and

(b) the work arrangements and procedures to be followed to ensure compliance with this Part.

[en. B.C. Reg. 312/2010, App. M, s. 3.]

Minimum approach distance when working close to exposed electrical equipment and conductors

19.24.1 Subject to section 19.24.2, or unless otherwise permitted by this Part, if exposed electrical equipment or conductors at a workplace have a voltage within a range set out in column 1 of Table 19-1A, the following must remain at least the distance from the exposed electrical equipment and conductors that is set out in column 2 opposite that range of voltage:

(a) a person working at the workplace;

(b) a tool, a machine, material or equipment at the workplace.

Table 19-1A

Column 1 Voltage	Column 2 Minimum approach distance when working close to exposed electrical equipment or conductors	
Phase to phase	**Metres**	**Feet**
Over 750 V to 75 kV	3	10
Over 75 kV to 250 kV	4.5	15
Over 250 kV to 550 kV	6	20

[en. B.C. Reg. 312/2010, App. M, s. 3.]

Minimum clearance distance when passing under exposed electrical equipment and conductors

19.24.2 (1) This section applies in the circumstance where a person working at a workplace is moving or is involved in moving equipment under exposed electrical equipment or conductors and is not performing any work other than work related to moving the equipment.

(2) Unless otherwise permitted by this Part, in the circumstances set out in subsection (1), if exposed electrical equipment or conductors have a voltage within a range set out in column 1 of Table 19-1B, the following must maintain at least the clearance distance from the exposed electrical equipment and conductors that is set out in column 2 opposite that range of voltage:

(a) a person moving or involved in moving the equipment under the exposed electrical equipment or conductor;

(b) the equipment that a person referred to in paragraph (a) is moving;

(c) the load carried by the equipment referred to in paragraph (b).

Table 19-1B

Column 1 Voltage	Column 2 Minimum clearance distance when passing under exposed electrical equipment or conductors	
Phase to phase	**Metres**	**Feet**
Over 750 V to 75 kV	2	6.5
Over 75 kV to 250 kV	3	10

Column 1 Voltage	Column 2 Minimum clearance distance when passing under exposed electrical equipment or conductors	
Phase to phase	**Metres**	**Feet**
Over 250 kV to 550 kV	4	13

[en. B.C. Reg. 312/2010, App. M, s. 3.]

Assurance in writing

19.25 (1) If the minimum distance in Table 19-1A cannot be maintained because of the circumstances of work or the inadvertent movement of persons or equipment, an assurance in writing on a form acceptable to the Board and signed by a representative of the owner of the power system, must be obtained.

(2) The assurance must state that while the work is being done the electrical equipment and conductors will be displaced or rerouted from the work area, if practicable.

(3) If compliance with subsection (2) is not practicable the assurance must state that the electrical equipment will be isolated and grounded, but if isolation and grounding is not practicable the assurance must state that the electrical equipment will be visually identified and guarded.

(4) The safeguards specified in the assurance must be in place before work commences and effectively maintained while work is taking place.

(5) If guarding is used,

(a) neither equipment nor unqualified persons may touch the guarding, and

(b) a safety watcher must be designated, or range limiting or field detection devices acceptable to the Board must be used.

(6) The assurance must be available for inspection at the workplace, as close as practicable to the area of work, and must be known to all persons with access to the area.

[am. B.C. Reg. 312/2010, App. M, s. 4.]

Assurance not practicable

19.26 (1) If exposed high voltage electrical equipment and conductors cannot be isolated, rerouted or guarded, work must not be done within the minimum distance in Table 19-1A until the following precautions are taken:

(a) the area within which equipment or materials are to be moved must be barricaded and supervised to restrict entry only to those workers necessarily engaged in the work;

(b) a safety watcher must be designated;

(c) a positive means must be provided for the safety watcher to give a clear, understandable stop signal to workers in the area, and the watcher must give the stop signal by no other means.

(2) While equipment is in motion in an area in proximity to energized electrical equipment or conductors, no person other than the equipment operator may touch any part of the equipment or the material being moved by it.

(3) No person may move a load or any rigging line from its position of natural suspension if it is in proximity to an energized electrical conductor or equipment.

[am. B.C. Regs. 312/2010, App. M, s. 4; 188/2011, App. L, s. 7.]

Specially trained

19.27 (1) A worker who has taken a course of instruction approved by the Board may work up to the adjusted limits of approach in Table 19-2 when all the following conditions apply:

(a) the high voltage electrical equipment is energized to a potential of not more than 75 kV;

(b) the Board has determined that rerouting, de-energizing or guarding of the equipment is not practicable for the type of work being performed;

(c) the work is not being done for the owner of the power system;

(d) the work is of a type that must be done regularly;

(e) the worker follows written safe work procedures acceptable to the Board.

(2) A qualified electrical worker may work closer than the limits specified in Table 19-2 provided the worker is authorized by the owner of the power system and uses procedures acceptable to the Board.

Table 19-2: Adjusted limits of approach

Voltage	Minimum distance	
Phase to phase	Metres	Feet
Over 750 V to 20 kV	0.9	3
Over 20 kV to 30 kV	1.2	4
Over 30 kV to 75 kV	1.5	5

Emergency work

19.28 (1) Sections 19.24 to 19.27 do not apply to emergency actions close to energized high voltage electrical equipment or conductors carried out by workers who have undergone a course of instruction approved by the Board.

(2) During emergency actions, all reasonable precautions must be taken to control the hazards including, where practicable,

(a) restricting entry into the area within which equipment or materials are to be moved to workers necessarily engaged in the work,

(b) designating a safety watcher,

(c) when equipment is in motion, preventing a person other than the equipment operator from touching any part of the equipment or the material being moved by it, and

(d) requiring the equipment operator to operate the controls from the seat provided on the equipment, or from a metal stand that is integral with the frame of the equipment and clear of the ground, or from a metallic mat bonded to the frame of the machine and located on the ground beside the machine.

Authorization by owner

19.29 Qualified workers and workers under their direct supervision may work within the minimum distances to energized high voltage electrical equipment and conductors, as specified in Table 19-1A and Table 19-2, when authorized by the owner of the power system and using work procedures acceptable to the Board.

[am. B.C. Reg. 312/2010, App. M, s. 4.]

Tree Pruning and Falling near Energized Conductors

Preliminary inspection

19.30 (1) Before commencing tree pruning or falling close to energized high voltage overhead conductors, the worksite must be inspected by a qualified person, authorized by the owner of the power system, to identify any hazardous areas, including situations where any part of a tree to be pruned or felled is within the applicable minimum distance from an energized conductor as specified in Table 19-1A, or may fall within that distance.

(2) Immediately before commencing work, an inspection must be performed by a qualified person to verify the results of the initial inspection done under subsection (1) are still valid.

[am. B.C. Reg. 312/2010, App. M, s. 4.]

Work in a hazardous area

19.31 Tree pruning or falling must not commence in a hazardous area until

(a) an assurance is issued by the owner of the power system that any reclose feature is disabled, and

(b) workers are informed of the voltages of the conductors.

Qualifications

19.32 Tree pruning or falling within the minimum distances in Table 19-1A from overhead energized high voltage conductors must be carried out by a worker authorized by the owner of the power system to do such work.

[am. B.C. Reg. 312/2010, App. M, s. 4.]

Site crew requirements

19.33 Tree pruning or falling is not permitted within the minimum distances in Table 19-1A from overhead high voltage energized conductors, unless

(a) a certified utility arborist or a qualified electrical worker is present at the site and directing the work, and

(b) at least one additional qualified person, trained in appropriate emergency rescue procedures, is present.

[am. B.C. Reg. 312/2010, App. M, s. 4.]

Limits of approach

19.34 (1) Subject to section 19.34.1, a certified utility arborist and any conductive tool must not be closer to an energized high voltage conductor than the applicable limit of approach in column B of Table 19-3.

(2) An apprentice utility arborist, except as provided in subsection (3), and any tool being used must not be closer to an energized high voltage conductor than the applicable limit of approach in column C of Table 19-3, or to any vegetation that is closer than the column C limit or that could swing closer while being cut.

(3) An apprentice utility arborist may work up to the limit of approach permitted for a certified utility arborist in subsections (1) and (5) if the apprentice utility arborist is in the presence of and under the direct supervision of a certified utility arborist.

(4) Vegetation closer to an energized high voltage conductor than the applicable limit in column B of Table 19-3 must be cut using approved insulated tools.

(5) An insulated tool acceptable to the Board may be used by a certified utility arborist

(a) up to the limit of approach in column A of Table 19-3, and

(b) from an insulated aerial device to remove vegetation closer than the limit of approach in column A of Table 19-3 up to but not touching an energized high voltage conductor of 75 kV or less.

(6) Vegetation touching an energized high voltage conductor or within the applicable limit in column A of Table 19-3 for a conductor at a potential of 75 kV or more may be removed only if

(a) the line is isolated and grounded by a qualified electrical worker, or

(b) the vegetation is removed by a qualified electrical worker who

(i) is authorized by the owner of the power system to remove the vegetation, and

(ii) uses insulated tools and work methods approved under the authorization referred to in subparagraph (i).

(7) Vegetation encroaching past the limits of approach in column B of Table 19-3 that cannot be removed using an insulated aerial device must be restrained from encroaching past the limit of approach in column A before removal.

(8) A tree must be topped before being felled, or other precautions must be taken to prevent the tree or any part of it from falling closer than the limit of approach in column A of Table 19-3.

Table 19-3: Limits of approach for utility arborists

Voltage range	A. Insulated tool limit for certified utility arborists		B. Work limit for certified utility arborists		C. Work limit for apprentice utility arborists	
Phase to phase	**Metres**	Feet	**Metres**	Feet	**Metres**	Feet
Over 750 V to 20 kV	0.3	1	0.9	3	3	10
Over 20 kV to 30 kV	0.5	1.5	1.2	4	3	10
Over 30 kV to 75 kV	0.9	3	1.5	5	3	10
Over 75 kV to 250 kV	2.1	7	3	10	4.5	15
Over 250 kV to 325 kV	2.6	8.5	4.5	15	6	20
Over 325 kV to 550 kV	3.7	12	6	20	6	20

[am. B.C. Reg. 312/2012, App. G, s. 1.]

Crossing the neutral conductor

19.34.1 (1) In this section:

"cross the neutral conductor" means to move the platform of an insulated aerial device through the space between the neutral conductor of a power system and one or more overhead conductors;

"overhead conductor" means an energized high voltage conductor that is immediately above the neutral conductor of a power system.

(2) This section applies if

(a) a certified utility arborist is on the platform of an insulated aerial device and intends to prune or remove vegetation in accordance with section 19.34,

(b) it is not practicable, because of terrain or other obstacles, to position the insulated aerial device in a location that is on the same side of an overhead conductor as the vegetation to be pruned or removed, and

(c) in order to move the platform of the insulated aerial device to the location described in paragraph (b), the certified utility arborist who is on the platform must cross the neutral conductor.

(3) A certified utility arborist who is crossing the neutral conductor in the circumstances set out in subsection (2) may come closer to an overhead conductor than the limits of approach under section 19.34 (1), but only if all of the requirements of this section are met.

(4) A certified utility arborist must not cross the neutral conductor unless

(a) the employer of the certified utility arborist has implemented written safe work procedures to ensure that all of the requirements of this section are met,

(b) the certified utility arborist has been trained in the work procedures referred to in paragraph (a),

(c) the certified utility arborist has demonstrated to the satisfaction of the employer that the certified utility arborist has the knowledge and ability necessary to cross the neutral conductor in accordance with

(i) the work procedures referred to in paragraph (a), and

(ii) the requirements of this section, and

(d) the certified utility arborist is satisfied that the clearance distances under subsection (5) (b) can be maintained at all times during the crossing.

(5) When the certified utility arborist is crossing the neutral conductor,

(a) the certified utility arborist must not perform any work other than work related to crossing the neutral conductor,

(b) if an overhead conductor has a voltage within a range set out in column 1 of Table 19-4, the following must maintain at least the clearance distance from the overhead conductor that is set out in column 2 opposite that range of voltage:

(i) the certified utility arborist;

(ii) the platform and the boom of the insulated aerial device;

(iii) any tool or device that is in or on the platform of the insulated aerial device, and

(c) a safety watcher who meets the requirements of subsection (6) must be present on the ground to assist the certified utility arborist in maintaining the clearance distances required under paragraph (b) of this subsection.

(6) The requirements for the purposes of subsection (5) (c) are as follows:

(a) the safety watcher must be trained in the work procedures referred to in subsection (4) (a);

(b) the safety watcher must have demonstrated to the satisfaction of the employer that the safety watcher knows

(i) the clearance distances that must be maintained under subsection (5) (b),

(ii) how to use the lower controls of the insulated aerial device, and

(iii) the procedure for rescuing a worker from the platform of the insulated aerial device.

(7) An apprentice utility arborist may work up to the limits of approach permitted for a certified utility arborist under this section if

(a) the apprentice utility arborist is in the presence of and under the direct supervision of a certified utility arborist,

(b) the certified utility arborist meets all of the requirements of subsection (4) (b) to (d), and

(c) the apprentice utility arborist complies with all of the requirements of subsections (4) and (5) and for this purpose, those subsections apply as if the apprentice utility arborist were a certified utility arborist.

Table 19-4

Column 1 Voltage	Column 2 Minimum clearance distance from overhead conductor when crossing the neutral conductor	
Phase to phase	**Metres**	**Feet**
Over 750 V to 20 kV	0.60	2.0
Over 20 kV to 30 kV	0.75	2.5
Over 30 kV to 75 kV	0.90	3.0

[en. B.C. Reg. 312/2012, App. G, s. 2.]

Tree pruning and falling equipment

19.35 (1) An insulated tool must be used, stored, tested and maintained as required by section 19.16 (2) (c).

(2) An insulated hand tool and insulated aerial device must be maintained in a clean condition and be dielectrically tested to a standard acceptable to the Board.

Control Systems

General requirements

19.36 (1) A control system must be designed, installed, operated and maintained in accordance with a standard acceptable to the Board.

(2) Only qualified and authorized persons may design, install, operate and maintain a control system.

(3) When designing a control system, the types of potential system failure and the effects of failures on the control system and the controlled equipment must be analysed.

(4) Where practicable and required to minimize risk to workers, a control system must be designed so that

(a) the controlled equipment cannot be inadvertently activated,

(b) an effective basic diagnostic capability is incorporated,

(c) hardwired emergency stop devices are provided at operator stations, and

(d) operator controls other than emergency stop devices can be activated at only one station at a time.

(5) A control system must be used to prevent automatic startup after a power interruption or low voltage occurrence, if automatic startup in such circumstances is likely to create a hazard to workers.

(6) A control system must, where practicable, be designed so that the controlled equipment does not create a hazard to workers if the system fails or is shut down.

(7) Equipment operated by a new or altered control system must not be used until the control system has been thoroughly checked and tested to verify that it will function in the intended manner.

(8) The employer must ensure there is up-to-date documentation which is readily available to affected workers describing the design, installation, operation and maintenance of a control system.

(9) Control system hardware must be protected from circumstances that could adversely affect the performance of the system including mechanical damage, vibration, extreme temperatures or humidity levels, high electromagnetic field levels, and power disturbances.

(10) Written safe work procedures must be developed for the use of equipment operated by a control system, including lockout procedures as required by this Regulation.

Programmable control systems

19.37 (1) The documentation provided for a programmable control system must include a copy of the control program that will allow the equipment to be reprogrammed if necessary to ensure the safe operation of the system.

(2) Only qualified and authorized persons may have access to the installed control system software.

Automatic control systems

19.38 Where practicable and required to prevent a hazard to workers, a control system must be designed so that during an automatic sequence

(a) the operator may make an emergency stop of the controlled equipment,

(b) the operator may, if safe, be allowed manual control of the equipment, and

(c) the sequence will abort when a protective timer completes its assigned time without an expected event occurring.

Remote control systems

19.39 (1) The maximum distance from which the operator may control equipment operated by a remote control system must be specified by the manufacturer.

(2) Written safe work procedures must be established

(a) that specify the maximum distance from which the operator is allowed to remotely control the equipment, and

(b) to ensure that workers remain at a safe distance from remotely controlled moving parts, and any remotely controlled mobile machine.

Wireless remote control

19.40 A wireless remote control system must incorporate

(a) error checking to prevent the controlled equipment from responding to corrupt data, and

(b) identification coding methods to prevent a transmitter other than the designated transmitter from operating the equipment.

Electrofishing

General requirements

19.41 The employer must ensure that

(a) only certified workers trained in a course acceptable to the Board conduct electrofishing operations,

(b) workers are provided with a statement of their responsibilities and written safe work procedures, and

(c) workers are trained in and are knowledgeable of their responsibilities and work procedures.

19.42 Repealed. [B.C. Reg. 381/2004, s. 17.]

Manufacturer's instructions

19.43 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 35.]

(2) Safe operating procedures from the manufacturer must be readily available for electrofishing equipment.

[am. B.C. Reg. 312/2003, App. B, s. 35.]

PART 20 – CONSTRUCTION, EXCAVATION AND DEMOLITION

Definitions

20.1 In this Part:

"adjacent to an excavation" means within a distance less than or equal to the overall depth of the excavation, measured from a vertical line through the toe of the excavation face;

"application drawings", also known as erection drawings, means drawings that contain the information necessary for the erection, use and dismantling of formwork, falsework, reshoring and associated components and equipment of the formwork, falsework and reshoring;

"asbestos-containing material" has the same meaning as in section 6.1;

"construction project" means any erection, alteration, repair, dismantling, demolition, structural or routine maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting, concreting, the installation of any machinery or any other work deemed to be construction by the Board;

"demolition" means tearing down, destruction, breakup, razing or removal of the whole or part of a building or structure, or of free standing machinery or equipment that is directly related to the function of the structure;

"excavation" means any cut, cavity, trench or depression in the earth's surface resulting from rock or soil removal;

"falsework" means a temporary support structure used to support loads during a construction project;

"fill" means any soil or other loose material that is constructed to form an embankment or a part of the foundation of a structure or improvement;

"formwork" means a temporary support system used to contain cast-in-place concrete during a construction project, but does not include falsework;

"reshoring" means a temporary support system used to support a slab or other structure and withstand loads during a construction project after formwork and falsework have been removed;

"stockpile" means any soil or other loose material that is placed in an area for storage but that is not intended to function as fill;

"tilt-up construction" means a system of building construction in which concrete wall panels are placed in position in the permanent structure and temporarily braced or supported;

"trench" means an excavation less than 3.7 m (12 ft) wide at the bottom, over 1.2 m (4 ft) deep, and of any length.

[am. B.C. Regs. 185/99, s. 54; 258/2008, App. F, s. 1; 188/2011, App. B, s. 13; 14/2019, App. C, s. 1.]

General Requirements

Qualified contractor

20.1A If a person agrees with the owner to be the prime contractor as provided in sections 13 and 24 of the *Workers Compensation Act*, then that person must be qualified.

[en. B.C. Reg. 185/99, s. 55; am. B.C. Reg. 279/2019, App. D, s. 3.]

Notice of project

20.2 (1) Subject to subsection (4), either the owner or the person engaged by the owner to be the prime contractor on a construction project must ensure that the Board receives, in writing, a notice of project that contains the information required by subsection (2) at least 24 hours before work on the construction project begins at the worksite if any of the following apply:

(a) the estimated total cost of labour and materials for the construction project exceeds $100 000;

(b) all or part of the construction project, whether a temporary or a permanent aspect of the project, is designed by a professional engineer except for pre-engineered or pre-manufactured building and structural components;

(c) the construction project is a new erection, a major alteration, a structural repair or a demolition of

(i) a building more than 2 storeys or 6 m (20 ft) high,

(ii) a bridge,

(iii) an earth or water retaining structure more than 3 m (10 ft) high, or

(iv) a silo, chimney or other similar structure more than 6 m (20 ft) high;

(d) workers will be working in a cofferdam or in a compressed air environment other than an underground working as defined in section 22.1;

(e) a worker may be required to enter

(i) a trench over 30 m (100 ft) long, or

(ii) an excavation, other than a trench, over 1.2 m (4 ft) deep.

(2) The notice of project must contain the following information:

(a) the name and contact information of the owner and of the person engaged by the owner to be the prime contractor, if any;

(b) the address of the construction project or its location in relation to the nearest highway;

(c) the scope of the construction project, including a list of the items referred to in subsection (1) that apply to the construction project;

(d) the starting date and the estimated duration of the construction project;

(e) the estimated total cost of labour and materials for the construction project;

(f) if the construction project involves construction of a cofferdam, confirmation by the owner or the person engaged by the owner to be the prime

contractor that drawings for all temporary or permanent ground support will be available at the worksite for the duration of the construction project, if ground support is used.

(3) Subject to subsection (4), if a notice of project is required under subsection (1), the owner or the person engaged by the owner to be the prime contractor must ensure that a copy of the notice of project is posted at the worksite before work on the construction project begins at the worksite and is kept posted for the duration of the construction project.

(4) If it is necessary to do immediate work on a construction project to which subsection (1) applies in order to prevent the risk of injury to workers or other persons or damage to property, work on the construction project may begin at the worksite immediately and the owner or the person engaged by the owner to be the prime contractor on the construction project must ensure that

(a) the Board receives, in writing, a notice of project that contains the information required by subsection (2) as soon as possible, and

(b) a copy of the notice of project is posted at the worksite as soon as possible and is kept posted for the duration of the construction project.

(5) If any of the information required by subsection (2) changes significantly, the owner or the person engaged by the owner to be the prime contractor must ensure that

(a) the Board receives, in writing, the new information as soon as possible, and

(b) a copy of the new information is posted at the worksite as soon as possible and is kept posted for the duration of the construction project.

[en. B.C. Reg. 9/2017, App. L.]

Notice of project – hazardous substances

20.2.1 (1) Subject to subsections (3) and (6), if a construction project involves a work activity set out in subsection (2), all employers responsible for the work activity and either the owner or the person engaged by the owner to be the prime contractor on the construction project must ensure that the Board receives, in writing, a notice of project that contains the information required by subsection (4) at least 48 hours before the work activity begins at the worksite.

(2) The following are work activities for the purposes of subsection (1):

(a) a work activity that involves working with or in proximity to asbestos-containing material, as defined in section 6.1, that is a moderate risk work activity or a high risk work activity as defined in that section;

(b) the alteration, repair, dismantling or demolition of all or part of a building or structure in which asbestos-containing material has been processed, manufactured or stored;

(c) a work activity that significantly disturbs lead-containing material in buildings or structures;

(d) a work activity that is similar to those described in paragraphs (a) to (c) and that may expose workers to a significant risk of occupational disease from a biological or chemical agent or ionizing radiation.

(3) Subsection (1) does not apply if the work activity is carried out

(a) for the purposes of section 20.112 (2) or (6) *[hazardous materials]*,

(b) during a site inspection conducted to identify hazards,

(c) to determine the types of tasks required for the construction project, or

(d) to estimate the cost of labour and materials for the construction project.

(4) The notice of project must contain the following information:

(a) the name and contact information of all employers responsible for the work activity, of the owner and of the person engaged to be the prime contractor, if any;

(b) the address of the construction project or its location in relation to the nearest highway;

(c) the scope of the construction project and of the work activity;

(d) the starting date and the estimated duration of the construction project and of the work activity;

(e) the safe work procedures specific to the work activity, and the hazardous substance involved in the work activity, that will be used to minimize the risk of occupational disease to the workers;

(f) if section 20.112 applies, a written report made under section 20.112 (3) (e) and, if applicable, section 20.112 (6) (e).

(5) Subject to subsection (6), all employers responsible for the work activity and either the owner or the person engaged by the owner to be the prime contractor must ensure that a copy of the notice of project is posted at the worksite before the work activity begins at the worksite and is kept posted for the duration of the construction project.

(6) If it is necessary to do immediate work in order to prevent the risk of injury to workers or other persons, the risk of occupational disease or damage to property, a work activity referred to in subsection (2) may begin at the worksite immediately, and all employers responsible for the work activity and either the owner or the person engaged by the owner to be the prime contractor must ensure that

(a) the Board receives, in writing, a notice of project that contains the information required by subsection (4) as soon as possible, and

(b) a copy of the notice of project is posted at the worksite as soon as possible and is kept posted for the duration of the construction project.

(7) If any of the information required by subsection (4) changes significantly, all employers responsible for the work activity and either the owner or the person engaged by the owner to be the prime contractor must ensure that

(a) the Board receives, in writing, the new information as soon as possible, and

(b) a copy of the new information is posted at the worksite as soon as possible and is kept posted for the duration of the construction project.

(8) All employers responsible for a work activity to which subsection (1) applies must retain a copy of the notice of project respecting the work activity for at least 10 years from the starting date of the construction project as set out in the notice of project.

[en. B.C. Reg. 9/2017, App. L.]

Coordination of multiple employer workplaces

20.3 (1) If a construction project involves the work of 2 or more employers or their workers, each employer must notify the owner, or the person engaged by the owner to be the prime contractor, in advance of any undertaking likely to create a hazard for a worker of another employer.

(2) If a work location has overlapping or adjoining work activities of 2 or more employers that create a hazard to workers, and the combined workforce at the workplace is more than 5,

(a) the owner, or if the owner engages another person to be the prime contractor, then that person, must

(i) appoint a qualified coordinator for the purpose of ensuring the coordination of health and safety activities for the location, and

(ii) provide up-to-date information as specified in subsection (4), readily available on site, and

(b) each employer must give the coordinator appointed under paragraph (a) (i) the name of a qualified person designated to be responsible for that employer's site health and safety activities.

(3) The duties of the qualified coordinator appointed under subsection (2) (a) (i) include

(a) informing employers and workers of the hazards created, and

(b) ensuring that the hazards are addressed throughout the duration of the work activities.

(4) The information required by subsection (2) (a) (ii) includes

(a) the name of the qualified coordinator appointed under subsection (2) (a) (i),

(b) a site drawing, which must be posted, showing project layout, first aid location, emergency transportation provisions, and the evacuation marshalling station, and

(c) a set of construction procedures designed to protect the health and safety of workers at the workplace, developed in accordance with the requirements of this Regulation.

[am. B.C. Reg. 185/99, s. 57.]

Safe Work Areas and Safe Access

Safe access

20.4 (1) Where practicable, suitable ladders, work platforms and scaffolds meeting the requirements of Part 13 (Ladders, Scaffolds and Temporary Work Platforms) must be provided for and used by a worker for activities requiring positioning at elevations above a floor or grade.

(2) There must be suitable access for the safe delivery of equipment and materials to locations in the workplace where they will be used.

[en. B.C. Reg. 420/2004, s. 7; am. B.C. Reg. 243/2006, s. 11.]

Temporary floors

20.5 (1) During the erection of a building or structure of skeleton construction, a temporary floor, decking or formwork must be installed at the main working level where work is being done.

(2) If compliance with subsection (1) is not practicable, a temporary floor or other effective means of protection must be installed not more than two levels or 8 m (25 ft) below the main working level.

(3) Subsections (1) and (2) do not apply during the initial connection of structural members where it is not practicable to provide a floor or decking.

(4) There must be a safe means of access and egress to each main working level referred to in subsection (1).

(5) A stairway comprised of at least framing, treads and a handrail must be provided to each floor level before construction of the next floor or deck surface is undertaken, and the treads on the stairway must not create a tripping or slipping hazard.

Design loads

20.6 (1) A temporary floor, decking, floor opening cover or formwork must be

(a) capable of supporting a uniformly distributed live load of at least 2 kPa (40 psf), or

(b) designed and installed in accordance with the written instructions of a professional engineer if the anticipated live load will be different than 2 kPa (40 psf) in which case a copy of the engineer's plan and specifications must be available at the workplace.

(2) Workers delivering materials to or working on a temporary floor, decking, floor opening cover or formwork must be aware of the safe carrying capacity of the surface and of precautions necessary to prevent overloading.

20.7 Repealed. [B.C. Reg. 420/2004, s. 8.]

20.8 Repealed. [B.C. Reg. 312/2003, App. D, s. 18.]

Protection from falling materials

20.9 (1) If falling material could endanger workers

(a) the danger area must be barricaded or effectively guarded to prevent entry by workers, and conspicuous warning signs must be displayed on all sides and approaches, or

(b) adequate protective canopies must be installed over the danger area, or

(c) adequate catch platforms or nets must be provided to stop materials from falling into areas accessible to workers.

(2) Temporary washroom facilities, offices and similar structures on a construction site must be

(a) located outside areas where there is the potential of being hit by falling materials, or

(b) covered by adequate protective canopies.

(3) Protective canopies must be designed and constructed to safely support all loads that may reasonably be expected to be applied to them, but in no case less than 2.4 kPa (50 psf).

Chutes

20.10 (1) Chutes must be provided if the free fall of materials or debris being removed exceeds 6 m (20 ft).

(2) Vertical chutes must be completely enclosed and have gates at each point of entry.

(3) The discharge area of a chute must be barricaded or effectively guarded to prevent workers being injured by falling or flying debris and conspicuous signs must be posted near chute outlets to warn of the danger.

20.11 Repealed. [B.C. Reg. 312/2003, App. D, s. 19.]

Glass panels

20.12 Glass panels installed during construction or alterations must be marked to clearly indicate their presence or effectively guarded at the time of installation.

Thrust-out crane landing platforms

20.13 (1) A professional engineer must certify each thrust-out crane landing platform and certify that the building structure can adequately support loads to be imposed by use of the platform.

(2) Thrust-out crane landing platform drawings and certification must be available on site when the platform is in place.

(3) The rated capacity of a thrust-out crane landing platform must be clearly marked on the platform and not be exceeded.

(3.1) Control measures acceptable to the Board must be implemented to ensure all loads placed on a thrust-out crane landing platform

(a) are safely supported, and

(b) can be safely attached to and detached from the rigging.

(4) Thrust-out platform decking and supporting members must be designed to safely support any concentrated loads that may be landed.

(5) Repealed. [B.C. Reg. 420/2004, s. 9 (b).]

[am. B.C. Regs. 420/2004, s. 9; 19/2006, s. 8.]

Temporary support

20.14 During the erection or dismantling of a structure or equipment the employer must ensure that all partially assembled structures or components are supported as necessary to safely withstand any loads likely to be imposed on them.

Fills

20.14.1 A fill must be planned, constructed, used and maintained so that no person working at the workplace is endangered by any failure or instability of the fill.

[en. B.C Reg. 258/2008, App. F, s. 2.]

Stockpiles

20.14.2 A stockpile must be planned, constructed, used and maintained so that no person working at the workplace is endangered by any instability of the stockpiled material.

[en. B.C Reg. 258/2008, App. F, s. 2.]

Unstable face of a stockpile

20.14.3 The height of an unstable face of a stockpile must not exceed the maximum safe reach of the equipment being used to remove material from the stockpile.

[en. B.C Reg. 258/2008, App. F, s. 2.]

Bridges and Similar Structures

Drawings and special procedures

20.15 During the construction of a bridge or a structure involving erection of skeleton structural members, documentation of all construction details that require engineering, including erection procedures, temporary bracing and falsework must be

(a) available at the worksite at all times during such work, and

(b) updated as necessary to show changes in details or site conditions, and each update must be certified by a professional engineer.

Walkways

20.16 A worker must not walk upon the surfaces of structural members that have shear connectors, dowels or other protrusions unless suitable walkways and runways are provided to eliminate the tripping hazard.

Concrete Falsework and Formwork

Definitions

20.16.1 In sections 20.17 to 20.26:

"specified formwork" means formwork of a type listed in section 20.17 (1) (a) to (n);

"worksite-specific plans" means worksite-specific application drawings and any associated specifications and supplementary instructions.

[en. B.C. Reg. 14/2019, App. C, s. 2.]

Application

20.16.2 Sections 20.17 to 20.26 apply only to cast-in-place concrete.

[en. B.C. Reg. 14/2019, App. C, s. 2.]

Worksite-specific plans required for specified formwork

20.17 (1) The employer must ensure that worksite-specific plans are prepared for the following types of formwork and any associated falsework or reshoring:

(a) flyforms;

(b) ganged forms;

(c) jump forms;

(d) vertical slip forms;

(e) formwork over 4 m (13 ft) in height;

(f) suspended forms for beams, slabs, stairs and landings;

(g) single-sided, battered or inclined forms over 2 m (6.5 ft) in height;

(h) cantilever forms;

(i) bridge deck forms;

(j) shaft lining forms;

(k) tunnel lining forms;

(l) formwork into which concrete will be pumped through an injection port below the upper concrete surface;

(m) formwork over 3 m (10 ft) in height into which self-consolidating concrete will be placed;

(n) formwork designated by the designer of the structure.

(2) The employer must ensure that a professional engineer certifies the following in accordance with section 20.18:

(a) worksite-specific plans;

(b) any changes to worksite-specific plans.

(3) The employer must ensure that certified worksite-specific plans are available at the worksite during the erection, use and dismantling of formwork, falsework and reshoring.

(4) The employer must ensure that any changes to certified worksite-specific plans are available at the worksite

(a) as soon as practicable, and

(b) before the inspection required for placement of concrete or other intended loading of formwork, falsework and reshoring.

(5) The employer must ensure that formwork, falsework and reshoring are erected, used and, if applicable, dismantled in accordance with up-to-date certified worksite-specific plans.

[en. B.C. Reg. 14/2019, App. C, s. 3.]

Certification of worksite-specific plans by professional engineer

20.18 For the purposes of section 20.17 (2), a professional engineer must certify that worksite-specific plans, and any changes to worksite-specific plans, meet the requirements of

(a) *CSA Standard S269.1-16, Falsework and formwork*,

(b) section 20.20 of this Regulation, and

(c) if worksite-specific plans are prepared for flyforms and any associated falsework or reshoring, sections 20.21 (1) and (2) and 20.22 (1) and (2) of this Regulation.

[en. B.C. Reg. 14/2019, App. C, s. 3.]

Continuity of engineering

20.19 In the event of a change of professional engineers or if the separate work of 2 or more professional engineers is involved, the continuity of design, construction and inspection of formwork and any associated falsework or reshoring must be ensured by

(a) the employer, or

(b) the owner or prime contractor, if the formwork, falsework or reshoring affects workers of more than one employer.

[en. B.C. Reg. 14/2019, App. C, s. 3.]

Information for worksite-specific plans

20.20 (1) For the purposes of section 20.18 (b), worksite-specific plans must, subject to subsection (2),

(a) clearly show all the information necessary to accurately and safely erect, use and, if applicable, dismantle formwork, falsework and reshoring, and

(b) include the following information:

(i) sufficient plan view, section views and connection details, enlarged where necessary, to clearly describe the formwork, falsework and reshoring and permit accurate erection;

(ii) the quality and grade of materials to be used for the components and their connection;

(iii) an accurate description of proprietary items, including fittings, to permit field identification;

(iv) the load bearing capacity required of the material upon which sills are to be placed and, if necessary, details of procedures to be used to develop and maintain the required capacity;

(v) the minimum dimensions of sills and other foundation members;

(vi) erection, use and dismantling procedures that require special attention including, where applicable, handling multi-use formwork panels;

(vii) details of supports necessary to maintain lateral stability and resist sidesway and racking, specifying the materials, dimensions and locations of external braces, ties and other support devices;

(viii) if structural components connect together, the connection details necessary to prevent accidental displacement or rotation of the components;

(ix) details of the form or mould into which concrete will be placed;

(x) the maximum concrete slump that the form or mould is able to withstand;

(xi) sufficient load and deflection information to permit a professional engineer to understand the design of the formwork and falsework;

(xii) the sequence, method and rate of load placement necessary to prevent overloading of any part of the formwork or falsework.

(2) If any information cannot be provided to meet the requirements of subsection (1), worksite-specific plans must include special notation of the information that is incomplete and that will require further design.

[en. B.C. Reg. 14/2019, App. C, s. 3.]

Application drawings and supplementary instructions for flyforms

20.21 (1) Application drawings for flyforms must be detailed to show

(a) a plan view, a longitudinal section and a cross-section for each type of flyform panel, and

(b) the weight, calculated position of the centre of gravity and the position of the pickup points for each type of flyform panel.

(2) The design on the application drawings and any supplementary instructions for a flyform panel must provide that, as soon as the panel is landed on a supporting surface, before anyone climbs or walks on the panel and before placement of concrete or reinforcing steel on the panel, the panel must

(a) be able to resist a minimum horizontal load of 3.6 kN (800 lbs) applied in any direction on the top edge,

(b) have a minimum safety factor against overturning about any possible axis of

(i) 1.6 when dead load plus most severe live load configuration plus horizontal loads are considered, and

(ii) 2.0 when dead load plus most severe live load configuration or dead load plus horizontal loads are considered,

(c) have a minimum safety factor of 1.5 against the panel sliding against the supporting surface, and

(d) have flyform legs placed as necessary to attain the required safety factor against overturning.

(3) If any of the requirements of subsection (2) cannot be met for a panel, the employer must ensure that the panel, before being unhooked from the crane or hoist, is secured to the permanent structure or an adjacent panel in a manner specified by the designer of the formwork.

[en. B.C. Reg. 14/2019, App. C, s. 3.]

Flyform handling

20.22 (1) Application drawings and any supplementary instructions for flyforms must show a step-by-step procedure for all phases of each cycle of assembly, flying, use, dismantling and reuse of each flyform panel, including special procedures for non-typical floors.

(2) If any flyform panel is not inherently stable for all possible conditions of load, special notation on the flyform application drawings and any supplementary instructions must draw attention to the procedure for obtaining stability.

(3) The employer must ensure that the application drawings and any supplementary instructions required by subsections (1) and (2), including special procedures required for non-typical floors, are made available to workers involved in any part of the assembly, flying, use, dismantling or reuse of each flyform panel.

[en. B.C. Reg. 14/2019, App. C, s. 3.]

Supervision

20.23 The employer must ensure that

(a) a qualified supervisor supervises the erection, use and dismantling of formwork, falsework and reshoring, and

(b) workers are instructed in

(i) the hazards that the workers may be exposed to, and

(ii) the precautions to be taken while around or on formwork, falsework or reshoring.

[en. B.C. Reg. 14/2019, App. C, s. 3.]

Equipment requirements

20.24 The employer must ensure that equipment, materials and hardware used in the erection, use or dismantling of formwork and any associated falsework and reshoring meet the requirements specified in up-to-date worksite-specific plans.

[en. B.C. Reg. 14/2019, App. C, s. 3.]

Concrete placing hazards

20.25 (1) The employer must ensure that protruding objects that create a risk of injury are removed or effectively guarded.

(2) During placement of concrete or other significant loads on the formwork, a person must be restricted from the areas underneath where the loads are placed.

(3) After placement of concrete or other significant loads on the formwork, a person must be restricted from the areas underneath where the loads were placed until it can be confirmed by a qualified person that the formwork is withstanding the loads.

(4) Placement of concrete or other loads

(a) must stop if any of the following occurs:

(i) weakness;

(ii) undue settlement;

(iii) excess distortion of specified formwork or any associated falsework or reshoring;

(iv) an unanticipated or dangerous condition not set out in subparagraph (i), (ii) or (iii), and

(b) may restart only after the formwork, falsework or reshoring has been repaired or strengthened as specified by a professional engineer.

(5) Loads must not be applied to uncured concrete structures except as permitted by the worksite-specific plans.

[en. B.C. Reg. 14/2019, App. C, s. 3.]

Inspections

20.26 (1) Subject to subsection (4), immediately before placement of concrete or other intended loading of specified formwork and any associated falsework or reshoring, the employer must ensure that

(a) the formwork, falsework and reshoring are inspected by a professional engineer, and

(b) the professional engineer issues a certificate that

(i) indicates the specific areas inspected, and

(ii) certifies that the formwork, falsework and reshoring have been erected in accordance with up-to-date worksite-specific plans.

(2) The certificate required by subsection (1) (b) must be available at the worksite for inspection by an officer.

(3) If ganged forms are being reused on the same worksite with any modification to the design or method of erection of the ganged forms, subsection (1) applies in relation to the reuse of the ganged forms.

(4) If ganged forms are being reused on the same worksite without modification to the design or method of erection of the ganged forms certified under subsection (1), immediately before placement of concrete or other intended loading of the ganged forms, the employer must ensure that the ganged forms are inspected by a qualified person who

(a) confirms that the ganged forms have been erected in accordance with up-to-date worksite-specific plans, and

(b) documents the inspection and the confirmation, including the specific location where the ganged forms are being reused and the date of the inspection.

(5) The documents required by subsection (4) (b) must be available at the worksite for inspection by an officer.

[en. B.C. Reg. 14/2019, App. C, s. 3.]

Concrete Pumping

Definition

20.26.1 In sections 20.26.2 to 20.54, **"mast"** means a mounting or support structure, other than a truck or trailer, for a concrete placing boom.

[en. B.C. Reg. 188/2011, App. I, s. 1.]

Application of regulation

20.26.2 Sections 20.31, 20.32, 20.37, 20.38, 20.40 (3), 20.43 (4) and 20.45 do not apply in relation to concrete pumps or placing booms manufactured on or after August 1, 2012.

[en. B.C. Reg. 188/2011, App. I, s. 1.]

Standards

20.26.3 (1) The operation, inspection, testing and maintenance of a concrete pump or placing boom manufactured before August 1, 2012 must meet the requirements of *CSA Standard Z151-09, Concrete pumps and placing booms*, as set out in clauses 1.1 to 3 *[definitions]*, 4.1.9.2.3, 4.1.18.2, 4.1.19.1, 4.2.1.1, 4.2.2, 5.1.1 to 5.3.4, 5.3.7 to 6.3.4 and 6.5.1 to 6.7.3, including any table, figure or annex referred to in those clauses.

(2) The design, manufacture, installation, operation, inspection, testing and maintenance of a concrete pump or placing boom manufactured on or after August 1, 2012 must meet the requirements of *CSA Standard Z151-09, Concrete pumps and placing booms*, as set out in clauses 1.1 to 3 *[definitions]*, 4.1.1.2 to

5.3.4, 5.3.7 to 6.3.4 and 6.5.1 to 6.7.3, including any table, figure or annex referred to in those clauses.

[en. B.C. Reg. 188/2011, App. I, s. 1.]

Duty to ensure operator's competence

20.26.4 (1) The employer must ensure, before a person operates, or supervises a person who operates, a concrete pump or placing boom at a workplace, that the person can operate the concrete pump or placing boom at that workplace in a competent and safe manner, taking into account

(a) the class or type of concrete pump or placing boom being operated, and

(b) the circumstances of the workplace.

(2) The duty imposed on the employer under subsection (1) also applies to the following:

(a) in the case of a multiple-employer workplace, the prime contractor for the workplace;

(b) in any other case, the owner of the workplace.

[en. B.C. Reg. 222/2021, App. E.]

Certification authority

20.26.5 (1) The Board may designate an organization to be the certification authority for the purposes of section 20.26.6 if

(a) the Board has reviewed the certification program proposed by the organization and is satisfied that the certification program meets the requirements of

(i) *ISO/IEC 17024:2012, Conformity assessment – General requirements for bodies operating certification of persons*, or

(ii) *ANSI/ICE 1100:2019, Standard for Assessment-Based Certificate Programs*, and

(b) the Board is satisfied that the organization will be able to provide, throughout British Columbia, the written tests and practical assessments that applicants must take to obtain a concrete pump operator's certificate.

(2) The Board may revoke the designation of an organization as the certification authority if

(a) the Board is satisfied that

(i) the certification program provided by the organization does not meet the certification requirements of either of the standards referred to in subsection (1) (a),

(ii) the organization is not providing, throughout British Columbia, the written tests or practical assessments that applicants must take to obtain a concrete pump operator's certificate, or

(iii) the organization is not performing or exercising the organization's duties and powers with respect to concrete pump operator's certificates in accordance with section 20.26.6, or

(b) the organization requests the revocation.

[en. B.C. Reg. 222/2021, App. E.]

Operator certification

20.26.6 (1) In this section, **"certification authority"** means an organization designated as the certification authority under section 20.26.5 (1).

(2) On and after January 1, 2024, a person must not operate a concrete pump or placing boom at a workplace unless the person

(a) holds a valid concrete pump operator's certificate, issued by the certification authority, for the class or type of concrete pump or placing boom being operated and operates the concrete pump or placing boom in accordance with any conditions set out on the certificate, or

(b) operates the concrete pump or placing boom

(i) under the supervision of a person who holds a valid concrete pump operator's certificate for the class or type of concrete pump or placing boom being operated, and

(ii) in accordance with the directions of the certificate holder.

(3) The employer must ensure that a person who operates a concrete pump or placing boom at a workplace complies with subsection (2).

(4) The duty imposed on the employer under subsection (3) also applies to the following:

(a) in the case of a multiple-employer workplace, the prime contractor for the workplace;

(b) in any other case, the owner of the workplace.

(5) The certification authority must issue a concrete pump operator's certificate to an applicant for a class or type of concrete pump or placing boom if the applicant

(a) has reached the minimum age specified by the certification authority,

(b) takes a written test established by the certification authority and achieves a minimum score established by the certification authority,

(c) takes a practical assessment administered by the certification authority and achieves a minimum score established by the certification authority, and

(d) pays to the certification authority a fee that is established by the certification authority to cover the costs of administering the written test and practical assessment.

(6) The certification authority must determine the term of a concrete pump operator's certificate and must set out on the certificate the date that it expires.

(7) The certification authority must renew a concrete pump operator's certificate if the certificate holder

(a) submits, before the certificate has expired, a completed application, in a form established by the certification authority, to take the written test for the renewal of the certificate,

(b) takes a written test established by the certification authority and achieves a minimum score established by the certification authority,

(c) subject to subsection (8), takes a practical assessment administered by the certification authority and achieves a minimum score established by the certification authority, and

(d) pays to the certification authority a fee that is established by the certification authority to cover the costs of administering the written test and, if the practical assessment is required, the assessment.

(8) The requirement to take the practical assessment under subsection (7) (c) does not apply if the certificate holder has, during the term of the certificate, acquired practical experience of a type and in an amount established by the certification authority.

(9) The certification authority may, at any time, set out conditions on the concrete pump operator's certificate that deal with the following matters:

(a) the classes or types of concrete pumps or placing booms to which the certificate applies;

(b) safety matters applicable to a particular certificate holder.

(10) The certification authority may cancel a concrete pump operator's certificate if the certification authority is satisfied that one or both of the following apply:

(a) the certificate holder has contravened one or more of the conditions of the certificate;

(b) the certificate holder does not have the knowledge or skill to operate the equipment specified in the certificate in a competent and safe manner.

[en. B.C. Reg. 222/2021, App. E.]

Equipment identification

20.27 (1) A mast must bear a legible identification plate specifying

(a) the manufacturer's name,

(b) the year of manufacture,

(c) the model and serial number, and

(d) Repealed. [B.C. Reg. 188/2011, App. I, s. 2 (b).]

(e) the allowable load.

(2) Repealed. [B.C. Reg. 188/2011, App. I, s. 2 (c).]

[am. B.C. Reg. 188/2011, App. I, s. 2.]

Manufacturer's, supplier's or integrator's manual

20.28 (1) The manufacturer's, supplier's or integrator's manual for a concrete pump or placing boom, comprised of the documentation listed in clause 4.1.18.1 of *CSA Standard Z151-09, Concrete pumps and placing booms*, must be readily accessible to the operator and to maintenance personnel.

(2) The manufacturer's

(a) operation and maintenance manual for a mast must be readily accessible to the operator and to maintenance personnel, and

(b) instructions for erection and use of a mast must be readily accessible to the installer, the operator and to maintenance personnel.

[en. B.C. Reg. 188/2011, App. I, s. 3.]

Inspection and maintenance records

20.29 Records of inspection and maintenance as required by Part 4 (General Conditions) of this regulation must be made by the equipment operator and other persons inspecting and maintaining a concrete pump, placing boom or mast.

[am. B.C. Reg. 188/2011, App. I, s. 4.]

Pre-use inspection

20.30 (1) The operator must inspect a concrete pump, placing boom and mast and test its safety and control devices before use on each shift and record the results of the inspection and tests in accordance with section 20.29.

(2) Any defects found in the concrete pump, placing boom or mast must be recorded according to section 20.29 and reported immediately to the supervisor or employer, who must determine the course of action.

(3) If a defect may affect the safe operation of the concrete pump, placing boom or mast, the equipment must not be used until the defect has been remedied.

[am. B.C. Regs. 185/99, s. 58; 188/2011, App. I, s. 5.]

Design and construction

20.30.1 A concrete placing boom, mast and other structural supports must be designed and constructed so that, when this equipment is operated in accordance with the manufacturer's intended use, stresses to the load bearing components do not exceed the components' structural limits and the equipment is capable of carrying out its design function with an adequate margin of safety.

[en. B.C. Reg. 188/2011, App. I, s. 6.]

Controls

20.31 Controls for a concrete pump, placing boom or mast must have their function clearly identified, and be located and maintained to allow safe operation of the concrete pump, placing boom and mast.

[en. B.C. Reg. 188/2011, App. I, s. 7.]

Hydraulic cylinders

20.32 (1) Hydraulic cylinders on a concrete pump, placing boom and mast must have pressure relief valves to prevent cylinder and boom damage due to excess pressure.

(2) Hydraulic holding valves must be used on a concrete pump, placing boom or mast if hydraulic hose or coupling failure could result in uncontrolled movement of mechanisms.

[am. B.C. Reg. 188/2011, App. I, s. 8.]

Marking weight

20.33 A trailer or skid mounted concrete pump must have a permanent, legible notice stating the total weight of the unit.

Lifting a pump

20.34 A concrete pump may only be lifted using the lift points specified by the manufacturer or a professional engineer.

Securing a pump

20.35 The trailer or skid on which a concrete pump is mounted must be secured to prevent movement during pumping.

20.36 Repealed. [B.C. Reg. 188/2011, App. I, s. 9.]

Agitator guarding

20.37 (1) Concrete pump agitator guarding must be maintained to the pump manufacturer's specifications, with reasonable allowance for wear.

(2) Bent bars in a concrete pump agitator grill guard must be repaired.

(3) Concrete pump grill bar spacing may be increased to a maximum bar spacing of 8 cm (3 1/4 in) when pumping concrete mixes with a slump of 5 cm (2 in) or less and provided specific instructions are given to the crew regarding the hazard present due to the larger openings in the grill guard.

(4) The distance from the grill bars to the concrete pump's agitator must be at least 7.5 cm (3 in).

(5) A concrete pump agitator grill guard must be hinged or bolted in place.

(6) A person must not stand on the grill when the concrete pump or agitator is running.

Engine exhaust

20.38 A concrete pump's engine exhaust system must be arranged to prevent exhaust exposure to the operator and hopper area.

Housekeeping

20.39 The deck area of a concrete pump must be kept clean and free of unnecessary objects.

Outriggers

20.40 (1) Outriggers must be used in accordance with the concrete placing boom manufacturer's specifications.

(2) Extendible outriggers for a concrete placing boom must be marked to indicate maximum extension.

(3) A concrete placing boom manufactured after January 1, 1999 must have its outriggers or jacks permanently marked to indicate the maximum load they will transmit to the ground.

[am. B.C. Reg. 188/2011, App. I, s. 10.]

20.41 (1) and (2) Repealed. [B.C. Reg. 312/2003, App. B, s. 37 (b).]

(3) Repealed. [B.C. Reg. 188/2011, App. I, s. 11.]

Pipe diameter and thickness

20.42 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 38 (a).]

(2) The wall thickness of pipe mounted on a concrete placing boom must be sufficient to withstand a pressure greater than the maximum pressure that the concrete pump can produce in the concrete being pumped.

(3) Pipe sections must be replaced when thickness measurements indicate that wall thickness has been reduced to the limits specified by the manufacturer.

[am. B.C. Regs. 312/2003, App. B, s. 38; 188/2011, App. I, s. 10.]

Pipe clamps

20.43 (1) Concrete must not be pumped through pipe with grooved ends, such as those for Victaulic-type couplers.

(2) Pipe clamps used with pipe carrying concrete must have a pressure rating at least equal to the pipe pressure rating.

(3) To ensure proper connection of concrete delivery pipes, pipe and pipe clamp contact surfaces must be free of concrete and other foreign matter when a connection is being made.

(4) Quick connect clamps used on a concrete delivery pipe must be pinned or secured after installation to keep them from inadvertently opening.

Delivery pipe

20.44 Delivery pipe between the concrete pump and the placing system must be supported and anchored to prevent movement and excessive loading on pipe clamps.

Restraining devices

20.45 Restraining devices providing a safety factor of at least 5 must be used on attachments suspended from the placing boom or mast tip.

Concrete pump lines

20.46 (1) Concrete pump discharge line couplings, if located where inadvertent disconnection could cause injury to workers, must be guarded.

(2) The guards on a discharge line coupling must be positioned to effectively deflect in a safe direction any jet of concrete which might result from disconnection of the coupling.

Equipment inspection

20.47 (1) A mast must be inspected in accordance with good engineering practice at intervals not exceeding 12 months, repaired as necessary, and certified safe for use by a professional engineer, the manufacturer or the manufacturer's authorized agent.

(2) A concrete pump and placing boom must be inspected in accordance with good engineering practice at intervals not exceeding 12 months to ensure that they meet

(a) the manufacturer's specifications,

(b) the requirements of the applicable standard referred to in section 20.26.3, and

(c) the requirements of this Regulation.

(3) Without limiting subsection (2), an inspection under that subsection must include an inspection of the structural, mechanical and control system components of the concrete pump and placing boom.

(4) On and after January 1, 2021, a concrete pump and placing boom must not be used after an inspection under subsection (2) unless a professional engineer certifies that, on the basis of that inspection, they are safe for use.

[am. B.C. Regs. 188/2011, App. I, s. 12; 14/2019, App. F, s. 1; 82/2020.]

Repair and modification

20.48 (1) Replacement parts used for repair of a concrete pump, placing boom or mast must meet or exceed the original manufacturer's specifications or be certified by a professional engineer.

(2) If a repair is made to a load bearing component of a concrete pump, placing boom or mast,

(a) the repaired component must meet or exceed the original manufacturer's specifications, or

(b) the repair must be certified by a professional engineer,

before the concrete pump, placing boom or mast may be operated.

(3) If a modification affecting the safe operation of a concrete pump, placing boom or mast is made to

(a) the structure,

(b) one or more mechanical components, or

(c) the control system

of the concrete pump, placing boom or mast, the concrete pump, placing boom or mast must be certified as safe for use by a professional engineer, the manufacturer or the manufacturer's authorized agent before it may be operated.

[en. B.C. Reg. 188/2011, App. I, s. 13.]

Installation of mast

20.48.1 The design and installation of a mast must be

(a) in accordance with the manufacturer's specifications, or

(b) in the absence of manufacturer's specifications, certified by a professional engineer that the mast will safely support an allowable load.

[en. B.C. Reg. 188/2011, App. I, s. 14.]

Boom and mast weight

20.49 The weight of each removable section of a concrete placing boom or mast must be permanently and legibly marked on the section.

20.50 to **20.52** Repealed. [B.C. Reg. 188/2011, App. I, s. 15.]

20.53 Repealed. [B.C. Reg. 312/2003, App. D, s. 20.]

Hopper signal device

20.54 If a concrete placing boom operator cannot see and monitor the hopper on the concrete pump from every location the operator must be at during the pumping activity, there must be a device at the hopper for the concrete delivery truck driver and other workers to signal the pump operator if there is a problem at the pump or hopper.

Tilt-up Building Construction

Specifications and plans

20.55 (1) Before a tilt-up project begins the employer must ensure that a comprehensive set of plans and specifications is prepared, detailing

(a) all erection and bracing procedures,

(b) the type, size and location of all lifting inserts, brace inserts, braces, fittings and anchors for each panel,

(c) the required strength to be reached by the concrete before panel lifting can begin,

(d) the design wind pressure used to determine temporary bracing requirements,

(e) the wind gust speed above which the site must be cleared of workers when panels are supported by the temporary bracing,

(f) the requirements for supplementary reinforcing steel, strongbacks, or other reinforcement to be used during panel erection,

(g) the method of rigging for lifting and handling each panel,

(h) procedures for unique job conditions such as the method of temporary storage on site, and

(i) the weight of each panel.

(2) The plans and specifications for tilt-up panel erection and bracing must be certified by a professional engineer.

(3) Any change to the plans and specifications required by subsection (1), including the use of alternate accessories or erection and rigging procedures, must

(a) provide at least the same margin of safety as required by the original design and specifications, and

(b) be detailed on the documents and be certified by a professional engineer before it is carried out.

(4) One set of up-to-date certified plans and specifications must be maintained on site during lifting and as long as bracing is required to be in place, and the documents must be available for inspection by an officer.

Design requirements

20.56 (1) The plans and specifications for tilt-up panel erection and bracing must ensure that the load to be imposed on each lifting and bracing insert and anchor during panel lifting, moving and bracing will not exceed

(a) if a working load limit for the insert or anchor is not specified by the manufacturer, a maximum working load on the component determined by dividing the manufacturer's guaranteed minimum failure load by the applicable safety factor required by subsection (2) or (3), or

(b) if the working load limit or the manufacturer's guaranteed minimum failure load is not available, a maximum working load determined by calculating the ultimate load capacity in accordance with accepted engineering practice and the *BC Building Code*, and dividing this value by the applicable safety factor required by subsection (2) or (3).

(2) The minimum safety factor for cast-in lifting inserts is 2.5 except as provided in section 20.57 (5); and for lift-points secured by drilled-in anchors, the minimum safety factor is 4.0.

(3) The minimum safety factors for bracing components are

(a) 1.67 for braces, and for the uplift or sliding of an anchor slab,

(b) 2.0 for cast-in brace inserts, and

(c) 2.5 for drilled-in bolt or expansion anchors, or greater if so specified by the manufacturer.

(4) The number of lift inserts for a panel must not be less than the total weight of the panel divided by the working load limit for the inserts in pullout and in shear.

(5) The temporary bracing for a tilt-up panel must be designed to resist the greater of

(a) an unfactored design wind pressure of 700 Pa (15 psf), or

(b) wind pressure calculated in accordance with the *BC Building Code* based on the probability of 1 in 10 of being exceeded in any year, as listed in the *Supplement to the National Building Code of Canada 1990* or as otherwise specified by the local building authority, multiplied by a pressure coefficient of 1.5.

[am. B.C. Reg. 312/2003, App. B, s. 39.]

Panel handling

20.57 (1) Tilt-up panel lifting and bracing operations must be done under the direct supervision of a qualified person.

(2) Tilt-up panel lifting must not start until the specified minimum concrete strength has been achieved, as verified through testing in a manner acceptable to the professional engineer responsible for the lifting and bracing design.

(3) A suitable bond breaker must be used to minimize adhesion of each tilt-up panel to the casting surface and wedges and pry bars must be used to assist in releasing the panel from the casting surface.

(4) Crane positions must, where practicable, be chosen to avoid blind lifts.

(5) If a blind lift is necessary, the crane must be located so that if a lift component fails the tilt-up panel will not contact the crane, and if such a crane position is not possible, the safety factor for the lifting inserts must be at least 4.0.

(6) Workers are not permitted in the danger area of the downside face of a tilt-up panel until all bracing components for the panel have been installed.

(7) If bracing or other attachments are required on the downside face of a tilt-up panel, they may only be installed after the panel is erect and is temporarily braced from the upside face as specified in the erection procedures.

(8) All specified tilt-up panel bracing including knee braces and any welded connection specified for temporary support must be installed as detailed before the hoisting rigging is slackened.

(9) Cross-lacing of knee bracing may be done after the hoisting rigging is disconnected but must be no more than one panel behind the lifting process.

(10) All specified bracing must be installed on erected tilt-up panels before leaving the site at the end of the work day.

(11) Drilled-in expansion bolts may only be used to secure braces if specifically authorized by the engineer responsible for the lift and bracing design.

(12) Tilt-up panel lifting must not be done if wind gust velocities exceed 55 km/h (35 mph).

(13) The job site and areas adjacent to braced tilt-up panels must be cleared of personnel if wind gust velocities exceed 100 km/h (60 mph).

Inspections

20.58 (1) The professional engineer who certified the erection procedure or the engineer's designated representative must inspect the site prior to the start of tilt-up panel lifting to ensure that lift procedures and temporary bracing requirements are understood, and a follow-up inspection must occur on the last day of tilt-up panel lifting to ensure that temporary bracing requirements have been met.

(2) Following each inspection required by subsection (1) the person inspecting must issue an inspection report addressing the matters specified in subsection (1) and a copy of the report must be maintained at the site while the temporary bracing system is in place.

(3) Work must not proceed on tilt-up panel lifting or in proximity to panels which have been temporarily braced until the relevant requirements of subsections (1) and (2) have been met.

Brace removal

20.59 The temporary bracing installed to support tilt-up panels must not be removed until the structural design engineer for the building provides a written statement that the tilt-up panels have been adequately connected into the overall structure and the temporary bracing is no longer needed.

Concrete Pre-stressing and Post-tensioning

General requirements

20.60 (1) Concrete pre-stressing and post-tensioning operations must be done according to the specifications and instructions of a professional engineer, and a copy of such information must be available on site while the work is being done.

(2) Stressing operations must be carried out under the direction of a qualified supervisor.

(3) Workers involved in pre-stressing or post-tensioning must be instructed in and follow safe work procedures.

(4) Appropriate eye protection must be worn by all workers involved in grouting, stressing and cable trimming operations.

(5) Tendons, including bars, strands and wires, used for tensioning purposes must be protected against physical damage and corrosion during handling, transportation and storage.

(6) Strand couplers must not be reused until they have been inspected by a qualified person and determined to be safe for reuse.

(7) Welding, burning or other work must not be permitted on any surface where strands have been strung or tensioned unless proper care is taken to protect the strands from sparks or other heat sources and from stray electric currents.

Signalling devices and restricted areas

20.61 (1) Visual or audible signalling devices, or both, must be provided and used in the area of tensioning operations to warn workers approaching the area.

(2) Workers not directly involved in tensioning or detensioning operations must be kept clear of the danger area and must remain clear until operations are completed and the visual and/or audible signals specified in subsection (1) are turned off or removed.

Strand measuring

20.62 Strand elongation and strand deflection must be measured by a means which does not expose the worker to a risk of injury.

Guarding during pre-stressing operations

20.63 (1) During pre-stressing operations workers must be protected by guards or other suitable devices at the tensioning ends and anchoring points to contain the flying strands and the strand vises in the event of strand failure.

(2) Guards must be fabricated from mild steel plate, not less than 6 mm (1/4 in) thick, or steel mesh with openings 25 mm x 25 mm (1 in x 1 in) or less that provides at least equivalent strength.

Deflecting devices

20.64 Deflecting devices must be designed to prevent slipout and to allow backing off of strands from the deflected position.

Detensioning and strand cutting procedures

20.65 (1) Written detensioning procedures must be prepared by a professional engineer and followed so that workers are not exposed to danger from equipment or strand failure or structural failure.

(2) Written procedures must be developed and implemented to safeguard the operator and other workers from hazards while cutting strands.

Strand vises and hydraulic devices

20.66 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 40.]

(2) Strand vises must not be reused until they have been inspected by a qualified person and determined to be safe for reuse.

(3) Damaged or worn vises and hydraulic equipment must be removed from service.

(4) The supervisor must ensure that operators are given the maximum allowable values for both stretch of the tendon and hydraulic pressure at the pump.

(5) If there is a significant difference between the expected value and the measured value for either stretch of a tendon or hydraulic pressure at the pump, the workers must stop operations on that particular tendon and consult with the professional engineer in charge to obtain instructions on how to proceed.

(6) Each jack pressure gauge must be checked at frequent intervals against a master gauge, and the site engineer must be furnished with a calibration chart.

[am. B.C. Reg. 312/2003, App. B, s. 40.]

Hydraulic equipment

20.67 (1) Only hydraulic pressure hoses with self-seating couplings may be used, and care must be taken to ensure that end connections are not subjected to bending stresses at any time.

(2) Hydraulic equipment must have a bypass valve which is adjusted and maintained to limit the hydraulic pressure so that the tension exerted by the jack on the tendon does not exceed 90% of the minimum specified ultimate strength of the tendon.

(3) Hydraulic hoses must be inspected for flaws, leaks or bubbles after each stressing operation, and any damaged hoses immediately removed from service.

(4) The hydraulic system must be regularly inspected for oil leaks and other damage and necessary corrective action taken.

Platform width

20.68 Where adequate clearance exists, the platform width at jacking locations must be at least 80 cm (32 in).

Blowouts

20.69 (1) Each blowout must be reported to the structural design engineer, investigated and logged.

(2) A copy of the logged entry must be available on site for reference purposes.

Tendon handling

20.70 If there is risk of injury from handling coiled post-tensioning tendons a suitable coil handling device must be used.

Securing jacks

20.71 All jacks must be secured to suitable anchors before they are installed on a cable for tensioning, and must not be unsecured before they are removed from the cable, if a falling jack could endanger workers.

Open Web Joists and Trusses

Erection instructions

20.72 (1) Work must not be undertaken on the erection of premanufactured open web joists and trusses until clear and appropriate written instructions from a professional engineer or the manufacturer of the joists or trusses, detailing safe erection procedures, are available at the worksite.

(2) Erection and temporary bracing of open web joists and trusses must be done in accordance with the written instructions required by subsection (1).

Roof Work

20.73 Repealed. [B.C. Reg. 420/2004, s. 10.]

Crawl boards and ladders

20.74 (1) Crawl boards or ladders used for roof work must be securely fastened over the ridge of the roof, or must be otherwise effectively anchored.

(2) The use of an eavestrough to support a crawl board or ladder on a roof is prohibited.

Steep roof requirements

20.75 If a worker is employed on a roof having a slope ratio of 8 vertical to 12 horizontal or greater, the worker must use a personal fall protection system or personnel safety nets must be used, and 38 mm x 140 mm (2 in x 6 in nominal) toe-holds must be used if the roofing material allows for it.

Chutes and hoists

20.76 The roof edge about a chute, bitumen spout and material hoist must have guardrails meeting the requirements of Part 4 (General Conditions) or barriers of at least equivalent strength to at least 2 m (6.5 ft.) on each side of such a work area.

Mechanical equipment

20.77 Mechanical or powered equipment which has the potential to push or pull a worker over an unguarded edge must not be used unless operated according to procedures acceptable to the Board.

[am. B.C. Reg. 312/2003, App. B, s. 41.]

Excavations

Work standards

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

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

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

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

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

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

(3) The written instructions required by this section must

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

(b) be available at the site, and

(c) specify the support and sloping requirements, and the subsurface conditions expected to be encountered.

[en. B.C. Reg. 258/2008, App. F, s. 3.]

Underground utility services

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

(2) Excavation or drilling work in proximity to an underground utility service must be undertaken in conformity with the requirements of the owner of that utility service.

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

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

[am. B.C. Regs. 312/2003, App. E, s. 15; 312/2010, App. D, s. 3.]

Removing nearby hazards

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

Sloping and shoring requirements

20.81 (1) Subject to section 20.78, before a worker enters any excavation over 1.2 m (4 ft.) in depth or, while in the excavation, approaches closer to the side or bank than a

distance equal to the depth of the excavation, the employer must ensure that the sides of the excavation are

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

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

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

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

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

(f) supported by manufactured or prefabricated trench boxes or shoring cages, or other effective means.

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

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

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

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

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

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

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

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

[am. B.C. Regs. 253/2001, s. 15; 258/2008, App. F, s. 4.]

Timber shoring and grades

20.82 (1) Timber shoring materials must be lumber graded Number 2 or better from the following species groups: Douglas fir-larch, hemlock-fir, spruce-pine-fir or coast-Sitka-spruce.

(2) All lumber must be graded to the National Lumber Grades Authority *Standard Grading Rules for Canadian Lumber*.

[am. B.C. Reg. 312/2003, App. A, s. 24.]

Safe shoring procedures

20.83 (1) Shoring materials must be installed from the top down and removed in reverse order.

(2) Workers must not enter an excavation to remove shoring materials if ground conditions have deteriorated so as to make entry for shoring removal unsafe.

(3) Shoring or manufactured or prefabricated support systems must be installed in firm contact with the faces of the excavation, and in a manner which ensures no loss of soil from behind or below the bottom of the shield or shoring while the excavation is open.

(4) Unless otherwise indicated by the manufacturer or a professional engineer, in writing, voids between the shoring and the excavation face must be backfilled or blocked.

20.84 Repealed. [B.C. Reg. 312/2003, App. B, s. 42.]

Trench support structures

20.85 (1) Trench support structures, other than those designed by a professional engineer, must comply with Table 20-1 for the following relevant soil conditions:

Soil type	Description of soil
A	hard and solid
B	likely to crack or crumble
C	soft, sandy, filled or loose

(2) If Table 20-1 is to be used for a combination of supporting and sloping, the selection of shoring elements must be based on the overall depth of the excavation and the arrangement must conform to Figure 20-3.

(3) Cross braces and trench jacks must be installed in a horizontal position and must be secured against dislodgment.

(4) The minimum number of cross braces at each cross bracing location is determined by the trench depth as follows:

Depth at location	Number of braces
up to 2.4 m (8 ft)	2
2.4 m to 3.7 m (8 ft to 12 ft)	3
3.7 m to 4.6 m (12 ft to 15 ft)	4
4.6 m to 6 m (15 ft to 20 ft)	5

(5) At each cross bracing location the cross braces must be less than 1.2 m (4 ft) apart, and the uppermost cross brace must be within 60 cm (2 ft) of ground level.

(6) Repealed. [B.C. Reg. 312/2003, App. B, s. 43.]

(7) Hydraulic or pneumatic trench jacks must have a means of ensuring that they will not collapse in the event of loss of internal pressure.

(8) Uprights must not spread outwards more than 15 degrees from the vertical when viewed along the trench.

(9) Plywood may be substituted for two inch thick shoring elements provided that

(a) the plywood is not less than 19 mm (3/4 in) thick,

(b) the trench is not over 2.7 m (9 ft) in depth,

(c) uprights are installed at not over 60 cm (2 ft) centres,

(d) cross braces do not bear directly on plywood, and

(e) cross braces bearing on uprights or walers are located at all joints in plywood sheathing.

[am. B.C. Reg. 312/2003, App. B, s. 43.]

Spoil piles

20.86 If the average depth of a spoil pile which is adjacent to a supported excavation exceeds 60 cm (2 ft), the selection of the shoring or shielding must take into account the resulting increase in lateral soil pressure.

Entry and exit

20.87 (1) Safe means of entry and exit must be provided for an excavation a worker enters.

(2) If workers are required to enter a trench over 1.2 m (4 ft) deep, the safe point of entry and exit must be located within 8 m (25 ft) of the workers and the excavation must be safely supported or sloped to the entry and exit location.

(3) Walkways must be secured to prevent dislodgment.

(4) The open side of an access route into an excavation used by mobile equipment must have a curb.

Guarding

20.88 If an excavation is a hazard to workers, it must be effectively covered or guarded.

Excavation crossings

20.89 A walkway across an excavation must be at least 50 cm (20 in) wide, and if crossing an excavation over 1.2 m (4 ft) deep, be equipped with guardrails, meeting the requirements of Part 4 (General Conditions), on both sides.

Excavated materials

20.90 (1) Excavated material must be kept back a minimum distance of 60 cm (2 ft) from the edge of a trench excavation and 1.2 m (4 ft) from any other excavation.

(2) Under no circumstances may excavated material be piled so that it endangers workers.

Use of skips or buckets

20.91 If a skip or bucket is used to remove material from an excavation, horizontal shoring members must be shielded from dislodgment with vertical planking.

Scaling and trimming

20.92 The sides of an excavation must be scaled and trimmed or otherwise stabilized to prevent slides of material or falls of rock which could endanger workers.

Height limitations

20.93 In pits, quarries and similar excavations the height of unstable faces must not exceed the maximum safe reach of the excavating equipment being used.

Positioning equipment

20.94 Whenever possible, power machines excavating banks must be positioned so that the operator is on the side away from the bank and with the boom positioned closest to the side of the excavation.

Water accumulation

20.95 (1) Water must not be allowed to accumulate in an excavation if it might affect the stability of the excavation or might endanger workers.

(2) Erosion of slopes by surface water must be prevented if workers may be endangered.

Table 20-1: Trench support structures Size and spacing of members[1] (metric figures)

Uprights			Walers		Cross Braces			
					Width of trench (metres)		Maximum spacing (metres)	
					Up to 1.8	1.8-3.7		
Trench depth (metres)	Minimum dimensions (millimetres)[2]	Maximum spacing (metres)	Minimum dimensions (millimetres)[2]	Maximum vertical spacing (metres)	Minimum dimensions (millimetres)[2]		Vertical	Horizontal
Type A: Hard and solid soil								
1.2-3[3]	38 x 235	1.8	89 x 140	1.2	89 x 89	140 x 140	1.2	1.8
3-4.6	38 x 235	1.2	140 x 140	1.2	89 x 140	140 x 191	1.2	1.8
4.6-6	38 x 235	Close tight	140 x 140	1.2	140 x 191	191 x 191	1.2	1.8
Type B: Soil likely to crack or crumble								
1.2-3[3]	38 x 235	1.2	89 x 140	1.2	89 x 140	140 x 140	1.2	1.8
3-4.6	38 x 235	0.9	140 x 191	1.2	140 x 140	140 x 191	1.2	1.8
4.6-6	38 x 235	Close tight	140 x 191	1.2	140 x 191	191 x 191	1.2	1.8

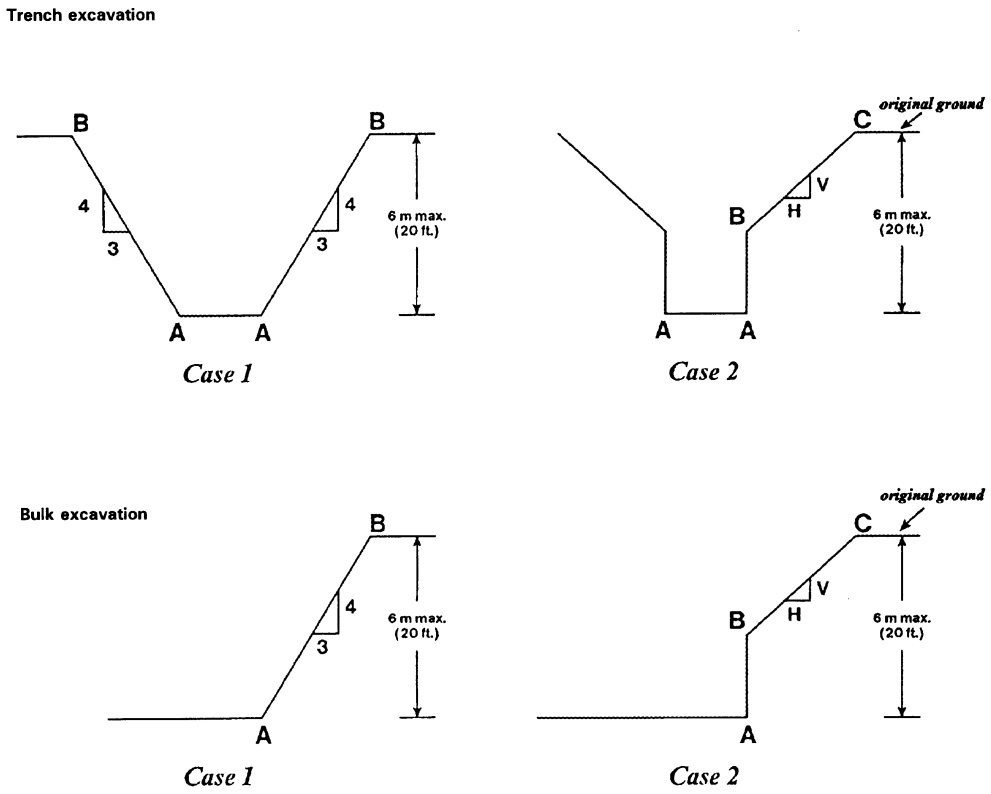
Uprights			Walers		Cross Braces			
					Width of trench (metres)		Maximum spacing (metres)	
Trench depth (metres)	Minimum dimensions (millimetres)[2]	Maximum spacing (metres)	Minimum dimensions (millimetres)[2]	Maximum vertical spacing (metres)	Up to 1.8	1.8-3.7	Vertical	Horizontal
					Minimum dimensions (millimetres)[2]			
Type C: Soft, sandy, filled or loose soil								
1.2-3[3]	38 x 235	Close tight	140 x 191	1.2	140 x 140	140 x 191	1.2	1.8
3-4.6	38 x 235	Close tight	191 x 191	1.2	140 x 191	191 x 191	1.2	1.8
4.6-6	38 x 235	Close tight	191 x 241	1.2	140 x 191	191 x 241	1.2	1.8

Size and spacing of members[1] (imperial figures)

Uprights			Walers		Cross Braces			
					Width of trench (feet)		Maximum spacing (feet)	
Trench depth (feet)	Minimum dimensions (inches)[2]	Maximum spacing (feet)	Minimum dimensions (inches)[2]	Maximum vertical spacing (feet)	Up to 6	6-12	Vertical	Horizontal
					Minimum dimensions (inches)[2]			
Type A: Hard and solid soil								
4-10[3]	2 x 10	6	4 x 6[4]	4	4 x 4	6 x 6	4	6
10-15	2 x 10	4	6 x 6	4	4 x 6	6 x 8	4	6
15-20	2 x 10	Close tight	6 x 6	4	6 x 8	8 x 8	4	6
Type B: Soil likely to crack or crumble								
4-10[3]	2 x 10	4	4 x 6	4	4 x 6	6 x 6	4	6
10-15	2 x 10	3	6 x 8	4	6 x 6	6 x 8	4	6
15-20	2 x 10	Close tight	6 x 8	4	6 x 8	8 x 8	4	6
Type C: Soft, sandy, filled or loose soil								
4-10[3]	2 x 10	Close tight	6 x 8	4	6 x 6	6 x 8	4	6
10-15	2 x 10	Close tight	8 x 8	4	6 x 8	8 x 8	4	6
15-20	2 x 10	Close tight	8 x 10	4	6 x 8	8 x 10	4	6

1 The dimensions shown are minimum and must be increased if necessary to meet job conditions.
2 The dimensions of members in millimetres are actual dimensions for surfaced dry materials. The dimensions in inches are the nominal values for surfaced dry materials.
3 Trenches less than 1.2 m (4 ft) deep must be shored when hazardous ground movement may be expected, as in ground subject to hydrostatic pressure or vibration.
4 Walers may be omitted in trenches not exceeding 2.4 m (8 ft) in depth provided that it has been confirmed that the soil is sufficiently hard and solid to safely permit waler deletion, and provided that the trench is not in proximity to previously excavated ground.

Figure 20-1: Sloping in lieu of shoring



Case 1 (trench or bulk excavation) – maximum slope of excavated face, shown as line AB, in hard and solid soil is 3 horizontal to 4 vertical.

Case 2 (trench or bulk excavation) – maximum height of vertical portion, shown as line AB is 1.2 metres (4 feet).

For Case 2 (trench or bulk excavation) the maximum permissible slope of the excavated face BC for the corresponding height of the lower vertical cut AB is as follows:

Height of line AB		Maximum slope of line BC (in hard and solid soil)
centimetres	feet	
up to 30	up to 1	1 horizontal (H) to 1 vertical (V)
30 to 60	1 to 2	3H to 2V
60 to 90	2 to 3	2H to 1V
90 to 120	3 to 4	3H to 1V

Figure 20-2: Benching in lieu of shoring

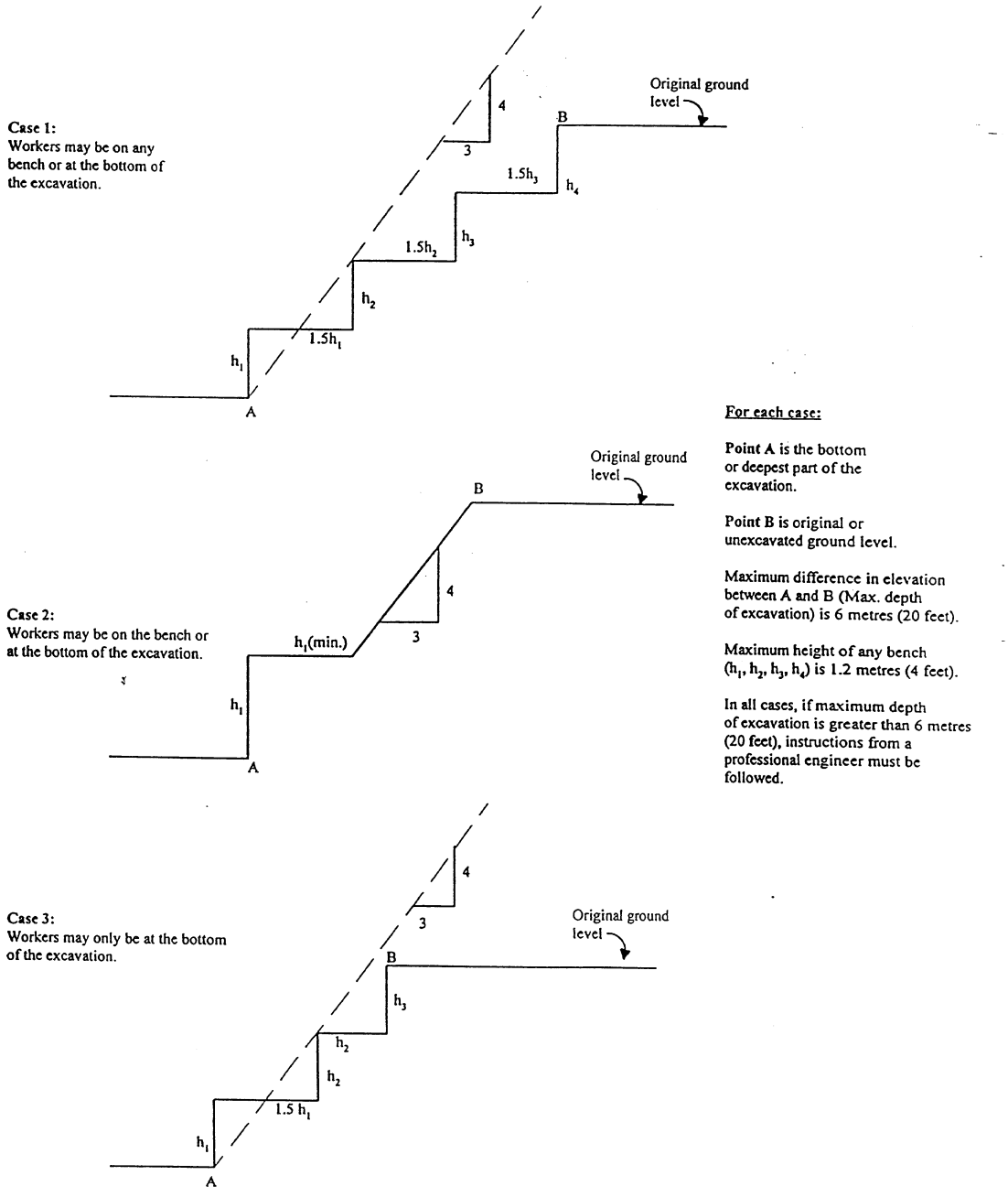
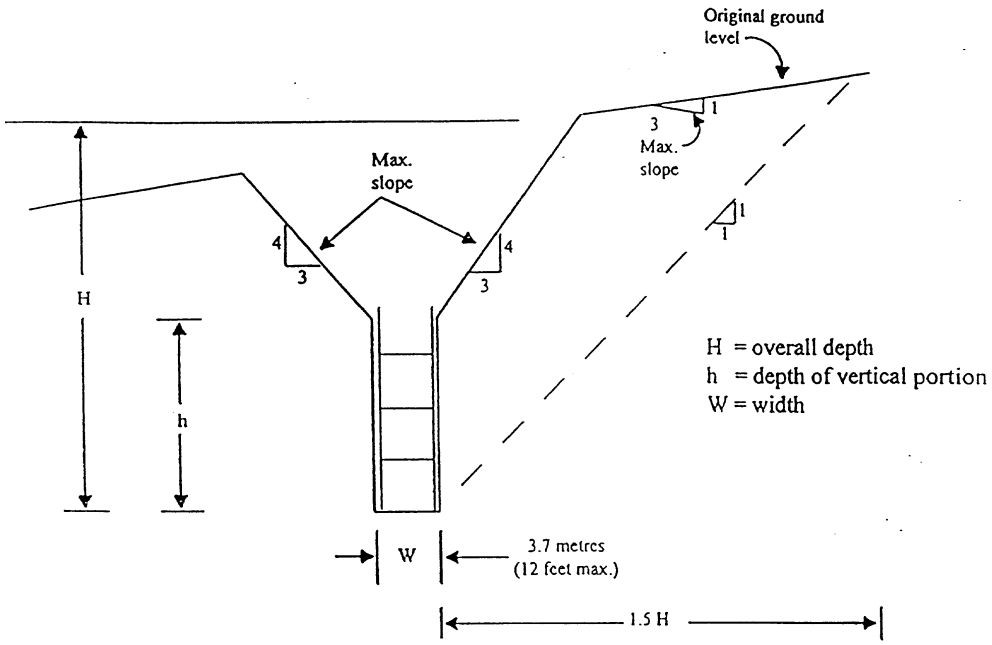


Figure 20-3: Combined supporting and sloping



Shoring must be adequate for excavation depth H.

Depth H cannot exceed 6 metres (20 feet).

Scaling Operations

Definitions

20.96 In sections 20.97 to 20.101:

"rappel" means the method of moving down a face or other steep slope by means of a rope secured above and placed around a controlled descent device secured to a belt or harness worn by a worker, and payed out gradually in the descent;

"sit harness" means a body support device consisting of thigh and waist loops;

"work positioning" means a form of fall restraint that holds a worker in a work position.

Work from top down

20.97 Rock scaling and like work must be undertaken from the top down, and any area into which material will fall must be kept clear of workers and equipment.

Rappelling and work positioning systems

20.98 (1) A worker on a rock face or other steep slope must be protected from falling by a work positioning or rappelling system, or by a fall arrest system as required by Part 11 (Fall Protection).

(2) A single rope work positioning system may be used by a worker to rappel to and remain in work locations on a rock face or other steep slope if tension is maintained in the rappel rope at all times so that the worker is not exposed to a free fall.

(3) If the work practice could result in a slack line in the rappel or work positioning system and a fall could occur, a personal fall arrest system, independently anchored, meeting the requirements of Part 11 (Fall Protection) must be used.

(4) Rappelling techniques must provide for automatic stopping by means of a mechanical fall arrestor, Prusik sling or other device acceptable to the Board.

(5) A rappelling or fall protection system must be used in a manner that minimizes the swing-fall hazard.

Rappelling ropes

20.99 A rappelling rope must

(a) be synthetic fibre rope with a breaking strength specified by the manufacturer of at least 27 kN (6 000 lbs) or be at least 16 mm (5/8 in) diameter wire-cored fibre rope,

(b) be long enough to reach a safe landing spot from which egress without rappelling is possible, and

(c) not be lengthened by tying ropes together.

Anchors and other hardware

20.100 (1) The ultimate load capacity of an anchor for a rappelling or fall protection line must be at least 22 kN (5 000 lbs).

(2) Each rappel line and fall arrest lifeline that is tied to a natural anchor such as a suitable tree, stump or rock outcrop must also be tied to a second anchor of at least equal load capacity.

(3) A rappelling rope must be attached to an anchor and, where practicable, must be positioned to avoid bearing on any sharp edge or surface likely to cause rope damage, and if it is not practicable to avoid sharp edges or surfaces, rope protectors or wire-cored rope must be used.

Harnesses

20.101 A sit harness with rope attachment below waist level may be used for work positioning or rappelling.

Marine Construction, Pile Driving and Dredging

Suspended work platforms

20.102 (1) Suspended work platforms such as gilley boards, small boats and buckets used to support workers must meet the requirements for suspended work platforms in Part 13 (Ladders, Scaffolds and Temporary Work Platforms).

(2) Despite section 13.27 (5), a secondary hoisting line on a crane may be used to suspend workers on a work platform in a marine construction or pile driving operation if

(a) it is not practicable to provide another means for positioning workers to perform work tasks,

(b) all of the crane's hoisting gear that is being used conforms to section 13.29 (1), and

(c) the total load attached to or suspended from all load lines of the crane does not exceed 50% of the rated capacity of the crane for the reach and configuration.

[am. B.C. Reg. 19/2006, s.10.]

Hoisting piles

20.103 When a pile is being hoisted in the leads only workers engaged in that operation may remain on the superstructure or in any area into which the pile could fall.

Operator protection

20.104 Each hoisting winch must have a suitable roof or shelter to protect the operator from falling objects, rigging failures and from the weather.

Exhaust discharge

20.105 Any exhaust gases and any air or steam discharge must be controlled so as not to harm workers or interfere with the ability of the operator or other workers to see the operation as necessary to work safely.

Chocking the hammer

20.106 (1) The pile driver operator must ensure that a suspended hammer is securely chocked when not in use.

(2) On a pile driver with swinging or suspended leads the hammer must not be raised until necessary.

Pile heads

20.107 (1) A head of a wooden pile must be

(a) cut square and cleaned of debris, bark and slivers before being driven, and

(b) trimmed to fit the follower or pile driving cap.

(2) The follower or pile driving cap being used must be of a size and type suitable for the type of piling being driven.

Cracked hammer

20.108 A drop hammer that is cracked must not be used.

Splicing

20.109 Ropes used to support the hammer of a pile driver must not be spliced.

Walkway on discharge line

20.110 (1) A worker must not be on a floating discharge line unless a walkway has been provided.

(2) The walkway on a floating discharge line must be at least 50 cm (20 in.) wide, have guardrails meeting the requirements of Part 4 (General Conditions), and be adequately illuminated during night use.

Demolition

Structural integrity

20.111 (1) If a structure is to be demolished in whole or in part, the structure and any adjoining structures, the integrity of which could be compromised by the demolition, must be supported to the extent and in a manner prescribed by a professional engineer.

(2) Design of the support system described in subsection (1) must include a schedule, based on the stages of demolition, for installation of the components of the support system, and a copy of the support system plan must be available at the demolition site.

(3) While salvage is taking place before or during the demolition process, the integrity of the structure must be maintained.

(4) If the nature and method of demolition will not endanger workers and the stability of adjoining grounds and structures will not be compromised, engineered demolition plans and designs are not required.

Hazardous materials

20.112 (1) In this section:

"hazardous material" means a hazardous substance, or material containing a hazardous substance, including

(a) asbestos-containing material,

(b) lead or any other heavy metal, or

(c) toxic, flammable or explosive material,

that may be handled, disturbed or removed in the course of the demolition or salvage of machinery, equipment, a building or a structure, or the renovation of a building or structure;

"qualified person", except in subsections (7) and (8), means a person who

(a) has, through education and training, knowledge of the management and control of the hazardous materials that the qualified person is made aware of by the employers, and the owner, or that are reasonably foreseeable by the qualified person, as being

(i) on or in the machinery, equipment, building or structure that is the subject of the demolition, salvage or renovation, or

(ii) at the worksite, and

(b) has experience in the management and control of those hazardous materials.

(2) Before work begins on the demolition or salvage of machinery, equipment, a building or a structure, or the renovation of a building or structure, all employers responsible for that work, and the owner, must ensure that a qualified person inspects the machinery, equipment, building or structure and the worksite to identify the hazardous materials, if any.

(3) In conducting an inspection and identifying the hazardous materials, if any, under subsection (2), a qualified person must do the following:

(a) collect representative samples of the material that may be hazardous material;

(b) identify each representative sample and determine whether it is hazardous material;

(c) if the actions under paragraphs (a) and (b) are not practicable, or not appropriate in the circumstances, use other sufficient means to identify the hazardous materials, if any;

(d) based on the actions taken under paragraphs (a) and (b) or (c), determine the location of each of the hazardous materials identified;

(e) make a written report of the inspection, including,

(i) if the actions under paragraphs (a) and (b) were taken,

(A) the location of each representative sample, and

(B) the identity of each representative sample and whether it is hazardous material,

(ii) if the actions under paragraph (c) were taken, the identity of each of the hazardous materials, if any,

(iii) a description of the methods used under paragraph (b) or (c),

(iv) the location, as determined under paragraph (d), of each of the hazardous materials identified, including by using drawings, plans or specifications, and

(v) the approximate quantity of each of the hazardous materials identified.

(4) All employers responsible for work being carried out on the worksite where the demolition or salvage of the machinery, equipment, building or structure, or the renovation of the building or structure is taking place, and the owner, must ensure that the following information is available at the worksite:

(a) a report made under subsection (3) (e);

(b) a report made under subsection (6) (e);

(c) a written confirmation under subsection (8).

(5) All employers responsible for containing or removing any of the hazardous materials identified under subsection (2) or (6) must safely contain or remove those hazardous materials.

(6) If, after written confirmation is provided under subsection (8), a person discovers material that may be hazardous material on or in the machinery, equipment, building or structure or at the worksite, not previously determined to be hazardous material under this section, all employers responsible for the demolition or salvage of the machinery, equipment, building or structure, or the renovation of the building or structure, and the owner, must ensure that a qualified person does the following:

(a) collects representative samples of the material;

(b) identifies each representative sample and determines whether it is hazardous material;

(c) if the actions under paragraphs (a) and (b) are not practicable, or not appropriate in the circumstances, uses other sufficient means to determine if the material is hazardous material;

(d) based on the actions taken under paragraphs (a) and (b) or (c), determines the location of the hazardous material, if any;

(e) makes a written report, including,

(i) if the actions under paragraphs (a) and (b) were taken,

(A) the location of each representative sample, and

(B) the identity of each representative sample and whether it is hazardous material,

(ii) if the actions under paragraph (c) were taken, the identity of the hazardous material, if any, and

(iii) if hazardous material was identified, the location of the hazardous material, including by using drawings, plans or specifications.

(7) All employers responsible for the demolition or salvage of the machinery, equipment, building or structure, or the renovation of the building or structure, and the owner, must ensure that, with respect to the hazardous materials identified under subsection (2) or (6),

(a) no demolition, salvage or renovation work that may disturb the hazardous materials, other than work necessary to safely contain or remove the hazardous materials, is carried out until the hazardous materials are safely contained or removed, and

(b) a qualified person complies with subsection (8).

(8) A qualified person must ensure, and confirm in writing, that the hazardous materials identified under subsection (2) or (6) are safely contained or removed.

[en. B.C. Reg. 199/2014, App. H, s. 1.]

Disconnecting utility services

20.113 Demolition must not proceed until all utility services which may endanger a worker have been disconnected in the manner required by the owner of the applicable utility service.

[en. B.C. Reg. 312/2010, App. D, s. 4.]

Glass removal

20.114 (1) If glass in a building or other structure could endanger workers it must be removed before other demolition commences.

(2) Glass removal must proceed in an orderly manner from the top to the bottom of the structure.

20.115 Repealed. [B.C. Reg. 312/2003, App. C, s. 6.]

Protection from falling materials

20.116 (1) If falling material could endanger a worker, the danger area must be guarded to prevent entry by workers or protected by adequate canopies.

(2) A floor or roof opening through which material may fall and endanger workers must be adequately covered.

Throwing material

20.117 If material is to be dropped or thrown from upper floors, the area into which the material will fall must be barricaded to prevent workers from entering the area and conspicuous warning signs must be displayed to advise of the danger.

Stabilizing walls

20.118 If a dangerous or unstable wall is to be left standing, it must be adequately braced.

Dismantling buildings

20.119 During the dismantling or renovation of a building or structure, materials of a size or weight which may endanger workers must not be loosened or allowed to fall, unless procedures are used that will adequately protect workers.

Housekeeping

20.120 Material and debris must not be allowed to accumulate on floors or on the ground outside the building or structure if workers will be endangered.

Stairways

20.121 Stairways, complete with handrails, must be left intact until access to the level they serve is no longer required.

Work in Compressed Air

Medical fitness

20.122 Whenever work is carried out at an air pressure greater than 7 kPa (1 psi) above atmospheric pressure, the employer must ensure that the workers are medically examined by a physician knowledgeable in hyperbaric medicine, as required by the Board.

Compliance with standards

20.123 The employer must ensure that equipment and work processes carried out at an air pressure greater than 7 kPa (1 psi) above atmospheric pressure meet the requirements of *CSA Standard CAN/CSA-Z275.3-M86, Occupational Safety Code for Construction Work in Compressed Air*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

PART 21 – BLASTING OPERATIONS

Definitions

21.1 In this Part:

"blast site" means an area extending at least 15 m (50 ft) in every direction from a place where

(a) explosives are stored outside of a magazine or are placed or primed, or

(b) a misfire is known or believed to exist;

"blaster" means a person who is the holder of a valid blaster's certificate issued by the Board or acceptable to the Board;

"blaster of record" means the blaster who is designated to be in charge of a blasting operation;

"blasting accessory" means a non-explosive device, product or tool, including a blasting machine, fuse lighter, blasting galvanometer, crimper, powder punch and loading pole;

"blasting log" means a written record that contains the information referred to in section 21.4 (1);

"blasting operation" includes preparing, placing and firing a charge, handling a misfire and destroying or disposing of explosives;

"bootleg" means the remnant of a blast hole which did not properly break when the blast was initiated; also called socket, butt or button;

"charge" means an explosive, whether or not the explosive has a primer, that is placed for the purpose of detonation or deflagration;

"danger area" means an area in which there may be danger to persons or property from flying material or other hazardous condition resulting from a blasting operation;

"dangerous incident" means an accident or near miss occurrence caused by or as a result of the use of explosives, and also includes an unexpected result or problem with explosive products;

"day box" means a container used at a worksite to store and transport explosives that is

(a) weatherproof,

(b) constructed with

(i) an outer surface that is made of non-combustible materials, and

(ii) an inner surface that is made of non-sparking materials, and

(c) equipped with a lock or mechanism to enable locking;

"detonator" means any of the following:

(a) a device containing a primary explosive that is used for initiating detonation in another explosive;

(b) an exploding bridgewire detonator;

(c) an exploding foil initiator;

(d) a deflagration to detonation transition detonator;

"electric detonator" means a detonator, other than an electronic detonator, designed for, and capable of, initiation by means of an electric current, including, for example, a resistorized electric detonator;

"electric igniter" means a device designed for, and capable of, initiating deflagration in another explosive by means of an electric current;

"electronic detonator" means a detonator that uses stored electrical energy as a means of powering a programmable electronic timing delay element, whether or not the detonator is wireless;

"explosive" means a substance, or an item containing a substance, that is made, manufactured or used to produce a detonation or deflagration;

"initiating device" means a blasting machine, non-electric starter, fuse lighter and any other device used to initiate a deflagration or detonation but does not include a detonator or electric igniter;

"isolated location" means an area where people other than the workers involved in the work project are not likely to be, and excludes frequently travelled roads, or a recreation area when it is likely to be used by people;

"magazine" means a licensed magazine within the meaning of the *Explosives Act* (Canada);

"manufacturer-armed perforating gun" means a perforating gun fitted with a detonator if

(a) the detonator is fitted by the manufacturer during the manufacture of the gun, and

(b) the gun as fitted with the detonator is an authorized explosive within the meaning of the *Explosives Act* (Canada);

"misfire" means a charge, or part of a charge, that failed to completely detonate or deflagrate, as applicable, and includes cutoffs and unexploded explosives in the muckpile or debris, but does not include a mislight;

"mislight" means a failure or perceived failure of a pull-wire lighter to ignite the safety fuse assembly;

"perforating gun" means a device that

(a) is used for perforating an oil and gas well in preparation for production, and

(b) contains charges, each of which is shaped to focus the effect of the explosive energy of the charge;

"primer" means an explosive to which a detonator is attached or into which a detonator is inserted;

"radio frequency transmitter" means an AM, CB, FM and VHF radio, TV, radar, cellular telephone, wireless or remote control device, global positioning system, radio navigational beacon and any other electronic transmitting device that radiates radio frequency waves;

"safety fuse assembly" means a manufactured blasting accessory consisting of a precut length of safety fuse, an igniter cord connector and a detonator;

"shunt" means the act of closing an electrical circuit to prevent or minimize the potential for an electrical charge or current to unintentionally reach an explosive by

(a) using an electrically conductive, non-ferrous clip or foil,

(b) twisting together the lead wires or leg wires,

(c) using a shorting pin, or

(d) using other means recommended by the manufacturer;

"springing" means a blasting technique which opens up a pocket at the bottom of a blast hole so that successive larger charges may be loaded and blasted;

"stemming" means placing inert material in the portion between the top of the explosive column and the collar of a blast hole, intended to confine the explosive gases for an effective blast.

[am. B.C. Regs. 185/99, s. 59; 14/2019, App. D, s. 1; 207/2021, App. A, s. 2.]

Division 1 – General Requirements

Employer's responsibility

21.2 Nothing in this Part relieves an employer of the responsibility to provide adequate direction and instruction of workers, and to assign work only to those workers who are competent.

Planning and conducting blasting operations

21.2.1 (1) The employer must ensure that all activities of a blasting operation are planned and conducted in a manner consistent with this Regulation and recognized safe blasting practices.

(2) Every person who has knowledge and control of any particular activity in a blasting operation must ensure that the activity is planned and conducted in a manner consistent with this Regulation and recognized safe blasting practices.

(3) The planning required under this section must

(a) include procedures for identifying and addressing potential misfires,

(b) include any exposure controls required by Part 5 or 6,

(c) identify any work activities or conditions at the workplace where there is a known or reasonably foreseeable risk to persons or property,

(d) be completed before work begins on the relevant activity, and

(e) be documented at the time of planning.

(4) If a change in workplace circumstances, including a change to work activities or conditions at the workplace, poses or creates a known or reasonably foreseeable risk to persons or property that was not previously identified,

(a) the planning documented under subsection (3) (e) must be amended to identify and address the risk and provide for the health and safety of persons at or near the workplace, and

(b) the amendment must be documented as soon as practicable.

(5) The planning documented under subsection (3) (e), and any amendment documented under subsection (4), must be readily available to workers.

[en. B.C. Reg. 207/2021, App. A, s. 4.]

Dangerous incident reports

21.3 (1) If a blasting accident occurs which causes personal injury, or if there is any other dangerous incident involving explosives, whether or not there is personal injury, the employer must

(a) report the incident immediately to the Board, and

(b) forward a written report of the incident to the Board without undue delay.

(2) The written report of the incident must contain

(a) the date, time and location of the incident,

(b) the names and certificate numbers of all blasters involved,

(c) the names and occupations of any persons injured,

(d) the types of explosives, including detonators, and initiating device used,

(d.1) the instrument used to test the electric blasting circuit,

(e) a factual account of events including the blaster's log records,

(f) the names of all employers responsible for workers present at the worksite when the incident occurred, and

(g) the action taken by each employer referred to in paragraph (f).

[am. B.C. Regs. 185/99, s. 60; 14/2019, App. D, s. 2.]

Blasting log

21.4 (1) The blaster of record must record in a blasting log

(a) the following preblast loading details:

(i) the time, date and location of the blast;

(ii) the name of the blaster of record and all other persons handling explosives;

(iii) the type and weight of explosives used;

(iv) the number of detonators used;

(v) the type of initiating device used, and

(b) the results of the postblast site examination required under section 21.71, 21.74 or 21.82 (5).

(2) Blasting logs must be maintained at the worksite, available for inspection by an officer, workers and worker representatives.

(3) The employer must ensure that blasting logs are kept for at least 5 years after completion of the blasting operation.

(4) The blaster must maintain a personal log of all blasting work that the blaster has performed in the immediately preceding 5 years before the current date.

[am. B.C. Reg. 207/2021, App. A, s. 5.]

Authority to blast

21.5 (1) Only the holder of a valid blaster's certificate issued by the Board or acceptable to the Board is permitted to conduct or direct a blasting operation, and then only if the work involved is within the scope of that certificate.

(2) All work within the blast site must be done under the authorization of the designated blaster of record responsible for that area.

(3) A blaster may be assisted by persons who do not hold blaster's certificates, but the blaster must have authority over the assistants and must exercise visual supervision over them and be responsible for their work during explosive loading, priming, fixing or firing.

[am. B.C. Reg. 207/2021, App. A, s. 6.]

21.6 Repealed. [B.C. Reg. 312/2003, App. E, s. 16.]

General – explosives and blasting accessories

21.6.1 Explosives and blasting accessories must be stored, transported, handled and used

(a) in the manner recommended by the manufacturer, and

(b) in accordance with this Regulation.

[en. B.C. Reg. 207/2021, App. A, s. 7.]

Technical data sheets and manufacturer's instructions

21.6.2 The following must be readily available to workers at a worksite where explosives or blasting accessories are used in a blasting operation:

(a) technical data sheets for all explosives;

(b) manufacturer's instructions for all blasting accessories.

[en. B.C. Reg. 207/2021, App. A, s. 7.]

Training

21.7 A worker engaged in loading, unloading, or conveying explosives must be trained in the proper means for handling the explosives, the hazards of fire and mishandling and the procedures to follow in the event of a fire or explosion.

Division 2 – Certification of Blasters

Qualifications

21.8 A candidate for a blaster's certificate must be at least 18 years of age and must forward written proof acceptable to the examining officer that

(a) the candidate has taken a minimum of 8 hours of training relating to the safe handling of explosives,

(b) the candidate has passed a background check, and

(c) the candidate has

(i) at least 6 months of experience in blasting operations as an assistant to a blaster, or

(ii) the knowledge, qualifications and experience to make the candidate competent to handle explosives.

[en. B.C. Reg. 207/2021, App. A, s. 9.]

Continuing professional development – blasters

21.8.1 Every year during the term of a blaster's certificate, the blaster must receive at least 6 hours of continuing professional development relating to blasting best practices.

[en. B.C. Reg. 207/2021, App. A, s. 10.]

Misrepresentation

21.9 A person must not make, or assist in making, any false representation for the purpose of obtaining a blaster's certificate for any person.

Examination

21.10 Only persons authorized by the Board may conduct examinations for blaster's certificates.

Recording certificates

21.11 The employer must ensure that the details on the certificate of a blaster are recorded and understood before permitting the certificate holder to carry out the duties of a blaster.

Custody of certificates

21.12 (1) A blaster must retain the blaster's certificate and must keep it in a safe place at the worksite while carrying out the duties of a blaster.

(2) The blaster's certificate must be produced for inspection on the request of an officer.

(3) A copy of a blaster's certificate is not acceptable as proof of certification.

[am. B.C. Reg. 116/2022, App. B, s. 12.]

Suspension of duties

21.13 If a blaster has failed to comply with any of the blasting requirements in this Regulation, manufacturer's recommendations or recognized safe blasting practices, the employer must immediately investigate the incident and may suspend the blaster from performing the duties of a blaster.

[am. B.C. Regs. 185/99, s. 61; 207/2021, App. A, s. 11.]

Submitting reports

21.14 The employer must submit to the Board a report of the investigation carried out under section 21.13.

[en. B.C. Reg. 185/99, s. 62.]

Suspension of certificates

21.15 An officer may seize and forward to the Board a blaster's certificate if there is reason to believe that the safety of any person may be or has been endangered by the blaster.

[am. B.C. Reg. 185/99, s. 62.]

Division 3 – Storage

Detonators

21.16 (1) Detonators must be stored separately from

(a) other explosives, including detonating cord and electric igniters, and

(b) blasting accessories.

(2) Subsection (1) does not apply in relation to a manufacturer-armed perforating gun.

[en. B.C. Reg. 207/2021, App. A, s. 13.]

Worksite storage

21.17 (1) Explosives at a worksite must be guarded or stored in a locked and secured day box until used or returned to a magazine to prevent unauthorized access or removal.

(2) The quantity of explosives at a worksite, other than explosives in a magazine, must not exceed the quantity reasonably needed for one work shift.

(3) Subsection (2) does not apply to oil and gas downhole explosives operations.

(4) At a loading site, detonators must be stored in a crush-resistant, non-ferrous container that is clearly identified as containing explosives.

(5) Subsection (4) does not apply in relation to a manufacturer-armed perforating gun.

(6) When the specific purpose for which explosives were removed from a magazine has been carried out or is no longer required, any remaining explosives must be stored in a magazine as soon as practicable.

[en. B.C. Reg. 207/2021, App. A, s. 14.]

Communication

21.18 (1) The employer must ensure that the location of a magazine in which explosives are stored, and any restrictions on access or activity around the magazine area, are clearly communicated to all workers.

(2) Signs that indicate the presence of explosives in a day box must be

(a) displayed on the day box in a conspicuous manner when the day box contains explosives, and

(b) removed from the day box when the day box does not contain explosives.

(3) A vehicle containing explosives while in a workplace must display signs indicating the presence of explosives in a conspicuous manner, visible from all sides of the vehicle, and the signs must be removed when the vehicle no longer contains explosives.

[am. B.C. Reg. 207/2021, App. A, s. 15.]

Magazine condition

21.19 (1) The interior of a magazine must be

(a) kept clean, dry and organized,

(b) kept free of grit, combustible or abrasive material, any fire-producing, spark-producing or flame-producing device and any substance that might ignite spontaneously, and

(c) constructed, covered or lined to prevent the exposure of any ferrous metals or gritty materials.

(2) Precautions must be taken to exclude moisture from a magazine.

(3) Any article or substance likely to cause a fire or explosion must be kept out of and at a safe distance from a magazine.

[am. B.C. Reg. 207/2021, App. A, s. 16.]

21.20 Repealed. [B.C. Reg. 207/2021, App. A, s. 17.]

Separate handling

21.21 (1) Detonators must be kept and handled separately from other explosives until the last most practicable moment before assembling the charge.

(2) Subsection (1) does not apply in relation to a manufacturer-armed perforating gun.

[en. B.C. Reg. 207/2021, App. A, s. 18.]

Division 4 – Transportation

Vehicle operation

21.22 (1) A vehicle being used to transport explosives must be

(a) in sound mechanical condition and suitable for and capable of safely transporting explosives, and

(b) inspected and maintained in accordance with the vehicle manufacturer's recommendations.

(2) Passengers, other than those assigned to assist in handling explosives, are not permitted on a vehicle transporting explosives.

(3) The portion of a vehicle that contains explosives must be free of grit, combustible or abrasive material, any fire-producing, spark-producing or flame-producing device and any substance that might ignite spontaneously.

(4) If an iron or steel part of a portion of a vehicle that will contain explosives could come into contact with the explosives or their packaging during transportation so as to increase the likelihood of an ignition, that part must be covered with material that will prevent the contact.

(5) Subsection (4) does not apply to the transportation of perforating guns.

(6) A person who is transporting a perforating gun by vehicle must ensure that

(a) the vehicle has a specially built rack or carrying case designed or constructed so that the perforating gun

(i) is securely held in place during transportation, and

(ii) is not subject to damage by contact with any other object or material carried in the vehicle, and

(b) the perforating gun is kept in the rack or carrying case during transportation.

[am. B.C. Reg. 207/2021, App. A, s. 20.]

Flammable materials

21.23 Reasonable quantities of flammable or combustible materials may be carried by a vehicle transporting explosives at the workplace provided such materials are contained in a manner which will not cause or transmit a fire or explosion, and are adequately separated from any explosives containers in the vehicle.

[am. B.C. Reg. 207/2021, App. A, s. 21.]

Transportation of explosives

21.24 (1) During transportation by vehicle, explosives must be kept

(a) separate from the passenger compartment of the vehicle, and

(b) subject to section 21.22 (6), in a fully-enclosed, locked, fire-resistant container, compartment or day box that is

(i) fixed within or secured to the vehicle to prevent detachment in the event of a rollover,

(ii) located above the vehicle deck in a manner that protects the container, compartment or day box from contact with roadside objects and drilling equipment,

(iii) located so that the contents are not endangered by any heat source,

(iv) locked when outside the worksite, and securely closed when in the worksite, except when opened for depositing or removing the contents of the container, compartment or day box, and

(v) attended by a qualified person at all times when the container, compartment or day box contains explosives.

(2) Detonators and electric igniters must be transported in their original containers, as shipped by the manufacturer.

(3) Detonators and electric igniters, including deflagrating explosives manufactured and packaged as a primer with a shunted electric igniter, must be adequately separated from other explosives during transportation to prevent accidental initiation of the other explosives.

(4) Subsection (3) does not apply in relation to a manufacturer-armed perforating gun.

[am. B.C. Regs. 14/2019, App. D, s. 3; 207/2021, App. A, s. 22.]

Mobile drilling rigs

21.25 The transportation of explosives on a mobile drilling rig is permitted only if detonators and other explosives are stored in separate day boxes or magazines that are

(a) located at least 60 cm (2 ft) apart, with the doors or lids facing at least 90° apart,

(b) located above the vehicle deck in a manner that protects the day boxes or magazines from contact with roadside objects and drilling equipment,

(c) located so that the contents are not endangered by any heat source,

(d) locked when outside the worksite, and securely closed when in the worksite, except when opened for depositing or removing their contents, and

(e) attended by a qualified person at all times when the day boxes or magazines contain explosives.

[en. B.C. Reg. 207/2021, App. A, s. 23.]

21.26 Repealed. [B.C. Reg. 312/2003, App. E, s. 17.]

21.27 Repealed. [B.C. Reg. 207/2021, App. A, s. 24.]

Emergency procedures

21.28 Before explosives are transported, the employer must establish suitable written emergency procedures, and must ensure that all workers who may be affected are adequately instructed in the procedures.

Safe operation

21.29 A person operating a vehicle that is transporting explosives must operate the vehicle in a safe manner, consistent with prevailing road and weather conditions.

(a) and (b) Repealed. [B.C. Reg. 207/2021, App. A. s. 25 (b).]

[en. B.C. Reg. 312/2003, App. E, s. 18; am. B.C. Reg. 207/2021, App. A, s. 25.]

21.30 Repealed. [B.C. Reg. 207/2021, App. A, s. 26.]

Firefighting equipment

21.31 A vehicle transporting explosives must be equipped with at least 2 fire extinguishers that

(a) have a rating of at least 4-A:40-B:C, and

(b) are readily accessible for use.

[en. B.C. Reg. 207/2021, App. A, s. 27.]

Trailer transportation

21.32 Explosives must not be transported in a trailer, or in any type of semitrailer unless it is equipped with power brakes operable from the tractor cab.

Railroad and highway crossings

21.33 The operator of a vehicle transporting explosives must, before crossing

(a) a railroad track protected by an automatic signal device, reduce the speed of the vehicle and establish that the crossing can be made in safety, and

(b) a main highway, or a railroad track that is not protected by an automatic signal device, completely stop the vehicle and only proceed when the way is safely clear.

21.34 Repealed. [B.C. Reg. 207/2021, App. A, s. 28.]

Overnight parking

21.35 (1) When a vehicle carrying or containing explosives is to be parked overnight, the premises in which the vehicle will be parked must not be used for any other purpose which may involve any substance likely to cause explosion or fire.

(2) Such premises must be away from habitation and buildings that contain flammable materials.

(3) Repealed. [B.C. Reg. 312/2003, App. E, s. 19.]

[am. B.C. Reg. 312/2003, App. E, s. 19.]

Division 5 – Handling Explosives

21.36 Repealed. [B.C. Reg. 207/2021, App. A, s. 30.]

Defective explosives

21.37 Explosive or blasting materials or accessories that have deteriorated, or are believed to be defective, must not be used and must be handled and disposed of

(a) in a safe manner, and

(b) in accordance with the *Explosives Act* (Canada) and the regulations under that Act.

[en. B.C. Reg. 207/2021, App. A, s. 31.]

Cold temperatures

21.38 If the sensitivity of an explosive is affected by cold temperatures the explosive may be brought to a working temperature in a manner recommended by the manufacturer, but must not be warmed near an open fire or a steam boiler nor by direct contact with steam or hot water.

Disposal of explosives

21.39 Explosives must not be abandoned and must be placed in suitable storage or disposed of in accordance with the manufacturer's recommendations.

[en. B.C. Reg. 207/2021, App. A, s. 32.]

Ignition sources prohibited

21.40 (1) Smoking is prohibited within 15 m (50 ft) of where explosives are stored, being handled, or are in loaded holes.

(2) Open flame ignition sources must not be permitted within 15 m (50 ft) of where explosives are stored, being handled, or are in loaded holes, unless the blaster of record gives consent.

Containers

21.41 (1) Containers, known or suspected to contain explosives or explosive residue, must be handled with care to prevent undue impact or exposure to excessive heat or flame.

(2) All empty original disposable packaging for explosives must be destroyed safely or as recommended by the manufacturer.

[am. B.C. Reg. 207/2021, App. A, s. 33.]

Division 6 – Drilling

Predrilling requirements

21.42 Before drilling begins

(a) in a previously blasted area, the surface to be drilled must be exposed and examined for misfires,

(b) faces or slopes must be cleared of loose material, or otherwise stabilized to prevent slides or falls of rock, and

(c) the location of utility services must be determined and clearly marked.

[am. B.C. Reg. 207/2021, App. A, s. 35.]

Drilling prohibitions

21.43 Except in accordance with section 21.76.1, drilling must not take place within

(a) 15 cm (6 in) of any part of a bootleg, or

(b) 6 m (20 ft) of any part of a hole containing explosives, unless prior written permission has been obtained from the Board.

[am. B.C. Reg. 207/2021, App. A, s. 36.]

Drill hole size

21.44 Each drill hole to be loaded with explosives must be of sufficient diameter to permit free insertion of the explosives to the bottom of the hole without ramming, pounding, cutting, or undue pressure.

Anomalous drill hole

21.44.1 (1) A detailed report of each anomalous drill hole that requires changes to the blasting plan must be maintained at the worksite.

(2) The anomalous drill hole report must contain

(a) the date, location, burden, spacing, depth, diameter, angle and marking of each drill hole, and

(b) any changes in geology, including

(i) the presence of subsurface water, mud seams or voids, and

(ii) similar details.

(3) The blaster must review the anomalous drill hole report before loading begins.

(4) Each anomalous drill hole referred to in subsection (1) must be clearly marked at the worksite.

[en. B.C. Reg. 207/2021, App. A, s. 37.]

Division 7 – Loading

Priming

21.45 A primer must not be made up until immediately before placing the explosives.

Carrying

21.46 Persons must not carry explosives in their clothing.

[am. B.C. Reg. 207/2021, App. A, s. 39.]

Cartridges

21.47 Wrappers must not be removed from cartridge explosives.

Loading tools

21.48 Explosives must not be loaded into a hole except with a loading tool made of wood, plastic or other non-sparking material.

Electrical storms

21.49 If there is any sign of thunder or lightning storm activity, all blasting activity must be suspended and the danger area must be cleared and guarded if explosives are present at the blast site.

Guarding loaded holes

21.50 (1) Except as permitted by section 21.84, a hole which has been loaded, whether primed or not, but not fired by the end of the working day must not be left unattended.

(2) A worker, whose sole responsibility is the security of the explosives, must be posted to ensure that loaded holes are not tampered with while the work crew is absent from the site.

Vehicles

21.51 Except as permitted by section 21.84, a vehicle or other mechanized equipment must not be driven over a loaded hole.

Springing holes

21.52 After a hole is "sprung" ample time must be left for the hole to cool before further loading or placing of explosives or blasting accessories takes place.

[am. B.C. Reg. 207/2021, App. A, s. 40.]

Connecting detonating cord

21.53 (1) When detonating cords are used, the cords must only be interconnected or attached to trunk cords at the last most practicable moment after all holes are loaded.

(2) When detonating cords are used to prime a charge, the cord must be cut from the supply reel before, or as soon as possible after the charge is placed.

(3) Detonators or detonator connectors must not be attached to a detonating line until everything is in readiness for the blast.

Shock tubes

21.54 (1) Shock tubes loaded into holes must not be pulled or snapped.

(2) Repealed. [B.C. Reg. 207/2021, App. A, s. 41 (b).]

[am. B.C. Reg. 207/2021, App. A, s. 41.]

Pneumatic loading

21.55 (1) Explosives may only be loaded pneumatically if the procedures and equipment used will prevent buildup of static electricity or hazards from stray electric currents.

(2) Prior written permission of the Board must be obtained before any pneumatic loading is carried out at a hole which contains an electric detonator or electronic detonator.

[am. B.C. Reg. 14/2019, App. D, s. 4.]

Division 8 – Safety Fuse Assembly Initiation

Safety fuse assemblies

21.56 (1) Only safety fuse assemblies with antistatic protection may be used for safety fuse blasting.

(2) Safety fuse assemblies less than 1 m (3.3 ft) in length must not be used.

(3) Safety fuse assemblies must be handled with care to avoid pinching or kinking and damaged fuse assemblies must not be used.

Lighting safety fuse assembly

21.57 (1) When lighting a single safety fuse assembly a match may be used.

(2) When multiple safety fuse assemblies are to be lit, a suitable safety fuse lighting device must be used to ensure that a minimum 90 cm (3 ft) fuse length safety factor is maintained.

(3) An igniter cord must not be used for lighting a safety fuse assembly.

[am. B.C. Reg. 207/2021, App. A, s. 43.]

Division 9 – Electrical Initiation

Stray currents

21.58 (1) Precautions must be taken to prevent premature initiation of electric detonators, electronic detonators and electric igniters from sources of electricity.

(2) Electric blasting circuits must be kept on the ground with bare connections sufficiently elevated to prevent current leakage.

[am. B.C. Reg. 14/2019, App. D, s. 5.]

Extraneous currents

21.59 Except as permitted by the manufacturer, electric detonators or electric igniters must not be used when extraneous current exceeds 50 milliamps.

[am. B.C. Regs. 14/2019, App. D, s. 6; 207/2021, App. A, s. 45.]

Static electricity

21.60 (1) Precautions must be taken during handling of electric detonators, electronic detonators and electric igniters to prevent premature initiation caused by static electricity.

(2) Detonator leg wires must not be thrown in the air or dragged along the ground.

[am. B.C. Reg. 14/2019, App. D, s. 7.]

Radio frequency precautions

21.61 (1) If the electric blasting circuit is equipped with an electric detonator, minimum distances from radio frequency transmitters as detailed in *Institute of Makers of Explosives, Safety Guide for the Prevention of Radio Frequency Radiation Hazards in the Use of Commercial Electric Detonators (Blasting Caps) Safety Library Publication No. 20, December 2011* as amended from time to time, must be maintained.

(1.1) If the blasting system is equipped with an electronic detonator or electric igniter, minimum distances from radio frequency transmitters as recommended by the manufacturer must be maintained.

(2) If the minimum distance has not otherwise been determined, electric blasting circuits are not permitted within

(a) 100 m (330 ft) of a CB radio or other mobile or portable radio frequency transmitter, and

(b) 1 000 m (3 300 ft) of an AM or FM radio, TV, or other fixed radio frequency transmitter.

[am. B.C. Reg. 14/2019, App. D, s. 8.]

Mobile transmitters

21.62 (1) If absolute control of radio frequency transmitters cannot be maintained, for example, on public highways, warning signs must be posted to alert vehicle operators to turn off their transmitters.

(2) When electric blasting circuits are being connected, traffic control persons must be posted to instruct vehicle operators to turn radio frequency transmitters off.

[am. B.C. Reg. 14/2019, App. D, s. 9.]

Testing electric blasting circuits

21.63 (1) The blaster of record must ensure that each electric blasting circuit is tested before firing.

(2) In seismic blasting, the blaster of record must ensure that each electric blasting circuit is tested after the blast hole is loaded with explosives and before a plug is placed into the hole.

(3) If the electric blasting circuit is equipped with an electric detonator or electric igniter, the blaster of record must ensure that before firing,

(a) the resistance of the circuit is measured using a blasting galvanometer or another instrument specifically designed for testing electric detonators and circuits containing them, and

(b) the resistance is recorded in the blasting log.

[en. B.C. Reg. 14/2019, App. D, s. 10.]

Confirming electronic detonator integrity

21.63.1 The blaster of record must ensure that before firing with the use of an electronic detonator, the signal integrity of the detonator is confirmed and recorded in the blasting log.

[en. B.C. Reg. 14/2019, App. D, s. 10.]

Capacity of blasting machines

21.64 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 44 (b).]

(2) The capacity of a blasting machine must be clearly marked on the blasting machine and must not be exceeded.

[am. B.C. Reg. 312/2003, App. B, s. 44.]

Firing from power lines

21.65 When firing is done from a power line, an approved blasting safety switch must be used, and the switch kept locked and inaccessible to anyone except the blaster.

Division 10 – Firing

Responsibilities of blasters and employers

21.66 (1) The blaster must take precautions for the protection of persons and property, including proper loading and stemming of holes, and where necessary, the use of cover for the blast or other effective means of controlling the blast or resultant flying material.

(2) The blaster must ensure that the danger area is clear of persons and is kept clear during the blasting period.

(3) The blaster must post workers who have the sole responsibility of guarding against entry into the danger area of the blast site, and the workers must be instructed as to their duties and responsibilities.

(4) Whistles, signs or other signals may not be used in place of the guards required by subsection (3).

(5) Before sounding the warning signals, the blaster must clear the danger area and post guards as required by subsections (2) to (4), and must ensure that all persons have reached a place of safety.

(6) The employer must ensure that the blaster carries out the blaster's responsibilities under subsections (1) to (4).

[am. B.C. Reg. 207/2021, App. A, s. 47.]

Firing lines

21.67 Except in oil and gas downhole explosives operations, the firing lines or lead-in lines must not be attached to the initiating device or blasting circuit until all charges are placed and connected.

[en. B.C. Reg. 207/2021, App. A, s. 48.]

Firing all holes

21.68 (1) Charges must be fired in logical sequence.

(2) If any detonation could affect other charges placed nearby, all of the charges must be fired in one operation.

Blasting signals

21.69 (1) The blaster must ensure that an audible signalling device, distinct from other signalling devices in the area, is used to give the following warning signals:

(a) preceding the blast, 12 short whistle signals must be sounded at one second intervals;

(b) two minutes must elapse after the last warning signal before initiating the blast;

(c) following the blast and after the area has been examined and found safe, one prolonged whistle signal of at least 5 seconds duration must be sounded, to signify that permission is granted to return to the blast site.

(2) Subsection (1) does not apply to oil and gas downhole explosives operations, avalanche control, single underground headings, buried seismic work in isolated locations or other circumstances deemed appropriate by the Board, in which case the blaster must ensure that alternative warning procedures acceptable to the Board are used.

(3) Subsection (1) (b) does not apply with respect to the 2 minute warning in congested areas if alternative warning procedures acceptable to the Board are developed and implemented.

[am. B.C. Regs. 14/2019, App. D, s. 12; 207/2021, App. A, s. 49.]

Posting warning procedures

21.70 The employer must ensure that the warning procedure and blasting signals to be used at the workplace are posted conspicuously at each blasting operation, and workers must be instructed in this information.

Division 11 – After the Blast

After the blast

21.71 After a blast is initiated, the blaster of record must not permit anyone to enter the blast site until

(a) the blast site has been examined by the blaster of record for misfires and other hazards,

(b) the "all clear" has been sounded, and

(c) the blaster of record gives permission for work to proceed.

[am. B.C. Regs. 14/2019, App. D, s. 13; 207/2021, App. A, s. 51.]

Electrical blasting

21.72 After a blast is electrically initiated the blaster must not enter the blast site until

(a) the blaster has disconnected the firing lines from the initiating device and has shunted the lead wires, or

(b) if the blast was initiated from a power line, the blaster has disconnected the firing lines and locked the switch open.

[am. B.C. Regs. 14/2019, App. D, s. 14; 207/2021, App. A, s. 52.]

Division 12 – Misfire Procedures

Misfires

21.73 (1) If there is evidence or suspicion of a misfire after a blast is initiated, the blaster of record must not permit anyone to enter the danger area until the latest of the following:

(a) if an electric detonator or electric igniter was used to initiate the blast, 15 minutes after the blaster of record disconnects the firing lines from the initiating device and shunts the lead wires;

(b) if shock tube initiation was used to initiate the blast, 15 minutes after the blaster of record disconnects the lead-in line from the initiating device;

(c) if an electronic detonator was used to initiate the blast, 30 minutes after the blaster of record disconnects the firing lines from the initiating device and shunts the lead wires;

(d) if a safety fuse assembly was used to initiate the blast, 30 minutes after the estimated time of detonation;

(e) the waiting period stated in the relevant manufacturer's instructions.

(2) If there is evidence or suspicion of a misfire after a blast is initiated and a charge is known or suspected to be burning, the blaster of record must not permit anyone to enter the danger area until the later of the following:

(a) one hour after the smoke clears;

(b) the waiting period stated in the manufacturer's instructions.

[en. B.C. Reg. 14/2019, App. D, s. 15; am. B.C. Reg. 207/2021, App. A, s. 54.]

Blast site examination

21.74 Except as provided in section 21.82 (5), after a blast is initiated, the blaster of record must

(a) examine the blast site to determine if there are any misfires, and

(b) record the results of the examination in the blasting log.

[en. B.C. Reg. 207/2021, App. A, s. 56.]

Misfire marking

21.74.1 Except as provided in section 21.84 or by work procedures accepted by the Board under section 21.85, if a misfire cannot be dealt with immediately, the misfire must be clearly marked and the danger area cordoned off and guarded.

[en. B.C. Reg. 207/2021, App. A, s. 57.]

Extracting explosives

21.74.2 (1) Extracting or attempting to extract a primer or explosive of the nitroglycerine type from a loaded hole is prohibited.

(2) A blaster or a person authorized by the blaster may remove ammonium nitrate, water gel or emulsion type explosives from a blast hole only if

(a) the blast hole does not contain a detonator, and

(b) the removal procedure is carried out with caution, using

(i) moderate air or water pressure or a combination of moderate air and water pressure, and

(ii) a blowpipe made of non-metallic materials.

(3) A blaster or a person authorized by the blaster may remove a device containing high melting explosive (HMX) that has been exposed to a temperature exceeding 150°C from a blast hole only if

(a) safe work procedures have been developed and communicated to workers involved in the removal, and

(b) the removal procedure is carried out with caution.

(4) Until a misfire has been successfully detonated with a fresh primer,

(a) the unexploded charge that contains a primer must not be removed and no attempt to remove it may be made, and

(b) no other work may take place within the danger area.

[en. B.C. Reg. 207/2021, App. A, s. 57.]

Cutoffs and unexploded explosives

21.75 (1) If there is evidence or suspicion of cutoffs or unexploded explosives in the muckpile or debris,

(a) all loose unexploded explosives that do not contain a detonator must be collected and destroyed in a safe manner and in accordance with the manufacturer's recommendations, and

(b) the blaster must direct the hand removal of as much broken material as possible before metallic tools or equipment is used.

(2) Metallic equipment must not be used during misfire procedures unless

(a) the blaster directs the use of the equipment,

(b) the area is adequately illuminated, and

(c) everyone, except the blaster and the equipment operator, is removed from the danger area.

[en. B.C. Reg. 207/2021, App. A, s. 58.]

Excavating and scaling

21.76 (1) Excavation of blast rock must be carried out with caution by a person trained and competent in the recognition of misfires.

(2) Loose rock must be scaled from faces in the worksite and the area stabilized before other work resumes.

[en. B.C. Reg. 207/2021, App. A, s. 58.]

Drilling for refiring

21.76.1 When drilling is necessary to expose a misfire, the blaster must

(a) accurately determine the angle of the hole that contains the misfire,

(b) direct the angle and depth of the hole being drilled, and

(c) ensure that the hole being drilled is at least 60 cm (2 ft) from any part of the misfire.

[en. B.C. Reg. 207/2021, App. A, s. 58.]

21.77 Repealed. [B.C. Reg. 207/2021, App. A, s. 58.]

Safety fuse assembly reblast

21.78 If a misfire that contains a safety fuse assembly is reblasted, persons must not enter the danger area until 30 minutes after the detonation, unless the blaster of record confirms detonation.

[en. B.C. Reg. 207/2021, App. A, s. 59.]

No relighting

21.79 Relighting a safety fuse assembly is prohibited.

[am. B.C. Reg. 207/2021, App. A, s. 60.]

21.80 and **21.81** Repealed. [B.C. Reg. 207/2021, App. A, s. 61.]

Division 13 – Specialized Blasting Operations

Underwater blasting

21.82 (1) Only explosives and blasting accessories recommended by the manufacturer for underwater blasting may be used for underwater blasting.

(2) Whenever explosives are being used in underwater blasting operations, a blasting flag (international code "Bravo", a solid red flag) must be displayed.

(3) Precautions must be taken to prevent damage to structures in the danger area.

(3.1) Underwater blasts must be initiated by the blaster of record.

(4) The blaster of record must not initiate an underwater blast

(a) if a diving operation or water craft is within the danger area, and

(b) without the diving supervisor's permission.

(5) After an underwater blast is initiated, the blast site must be examined for misfires and other hazards by

(a) the blaster of record, or

(b) a competent diver who

(i) has been trained in the recognition of misfires and other blasting related hazards, and

(ii) is under the direction of the blaster of record.

(6) A blaster must ensure that misfires are handled properly and that other blasting related hazards are removed.

[am. B.C. Reg. 207/2021, App. A, s. 63.]

Special effects blasting

21.83 Special effects blasting must be carried out under the direction of a blaster certified in this specialty to a standard acceptable to the Board.

Seismic blasting

21.84 (1) If seismic blasting is carried out in an isolated location, loaded holes may be left unattended only if

(a) the blaster has first ensured that all leg wires are shunted, drill cuttings are spread out and levelled, the leg wires are coiled as close to the ground as possible while never exceeding 15 cm (6 in) above the ground level, and the holes are suitably user identified, and recorded in the blasting log, and

(b) the holes are blasted within 30 days.

(2) Repealed. [B.C. Reg. 207/2021, App. A, s. 64 (a).]

(3) In a seismic blasting operation a misfired or unfired charge may be left unfired only if

(a) it cannot be conventionally and safely detonated,

(b) it is in an isolated location,

(c) it is at a depth sufficient to minimize the risk of injury to workers or other persons,

(d) its location is effectively marked, and

(e) a permanent record of its location is kept.

(4) Seismic water tank trucks having open flame water heaters must not be used to transport explosives unless

(a) the distance between the heat tube and the outside of the tank is at least 35 cm (14 in),

(b) a heater, if woodburning, has a fire box of a type that fully contains the fuel and two dampers mounted in the heat tube, one at the vent end and the other at the fire box, so the flame may be shut in instantly in the event of an accident, and

(c) the detonator storage is located on the opposite side of the vehicle from the explosive magazine, and both are built to type 6 magazine standard.

(d) Repealed. [B.C. Reg. 312/2003, App. D, s. 21 (c).]

(5) In a seismic operation where there is no alternate route, a vehicle may be driven over a loaded hole if

(a) bypassing the hole is not practicable,

(b) operational planning minimizes the requirement to travel through a loaded area,

(c) safe work procedures are developed and communicated to all workers before they start work at the site,

(d) loaded holes are in compliance with subsection (1),

(e) explosive charges are at a minimum depth of 6 m (20 ft), and

(f) all radio transmission equipment is turned off, or the transmission capability is disabled by disconnecting the microphone.

(6) In a seismic blasting operation, the blaster of record must ensure that explosives are initiated by 2 detonators if the total weight of the explosives in the hole is

(a) 4 kg (8.8 lbs) or more, or

(b) more than 0.5 kg (1.1 lbs) and

(i) the hole is less than 5 m (16.4 ft) deep,

(ii) the condition of the soil may compromise the loading of the explosives in the hole, or

(iii) the blasting operation is accessible only by helicopter.

[am. B.C. Regs. 312/2003, App. D, s. 21; 381/2004, s. 18; 14/2019, App. D, s. 16; 207/2021, App. A, s. 64.]

Avalanche control

21.85 (1) Charges must not be placed manually on site by workers or projected by any means for the purpose of avalanche control, until the proposed work procedures have been submitted to and accepted by the Board.

(2) Explosives must not be primed until the last most practicable moment which means that point in time when the explosives are as close to the control route as possible, in a safe, sheltered location excluded from public access.

(2.1) An employer must ensure there is an effective means for a worker to separate the primed charge to be deployed from the other primed charges in order that the

pull-wire lighter is not accidentally placed on the safety fuse assembly of one of the other primed charges.

(3) The pull-wire lighter must not be placed on the safety fuse assembly until immediately before placing the charge.

(4) The employer must ensure that procedures are reviewed annually and that proposed changes to the procedures are submitted to the Board for approval before implementation.

[am. B.C. Regs. 312/2003, App. H, s. 2; 207/2021, App. A, s. 65.]

Division 14 – Close Proximity Blasting

Definitions

21.86 In this Division:

"proximate structure" means a school, hospital, medical clinic or other potentially occupied structure within the applicable proximity zone;

"proximity zone" means, as applicable, a distance that is not more than,

(a) in the case of a school, hospital or medical clinic, 300 m (984 ft) from the blast site, and

(b) in the case of any other potentially occupied structure, 150 m (492 ft) from the blast site;

"written plan", in respect of a blasting operation under this Division, means the plan required under section 21.91.

[en. B.C. Reg. 207/2021, App. A, s. 66.]

Application of Division

21.87 This Division applies to blast sites that have a proximate structure within the applicable proximity zone where explosives are used primarily for rock excavation, boulder breakage or any other purpose that is likely to generate flying material.

[en. B.C. Reg. 207/2021, App. A, s. 66.]

Notice of project

21.88 (1) The owner or the person engaged by the owner to be the prime contractor must ensure that the Board receives a written notice of project at least 24 hours before the beginning of a blasting operation that has an anticipated duration of 3 or more days.

(2) Before blasting begins, a copy of the notice of project must be posted at the blast site.

[en. B.C. Reg. 207/2021, App. A, s. 66.]

Emergency notice

21.89 Despite section 21.88, if in an emergency it is not practicable to comply with that section, the Board must be notified, and a copy of the notice posted, as soon as possible but no later than 24 hours after the blasting operation has begun.

[en. B.C. Reg. 207/2021, App. A, s. 66.]

Notice to occupants of proximate structures

21.90 (1) The employer conducting a blasting operation must ensure that the following persons are notified in writing at least 48 hours before any blasting begins:

(a) the senior administrator or person in charge of each school, hospital or medical clinic within the applicable proximity zone;

(b) the occupants of any other potentially occupied structure within the applicable proximity zone.

(2) The notice required under subsection (1) must include

(a) a description of the work to be done,

(b) the date and approximate time blasting will begin,

(c) the anticipated duration of the blasting operation,

(d) an explanation of the blasting signals to be used and the meaning of those signals, and

(e) the name and phone number of the employer conducting the blasting operation.

[en. B.C. Reg. 207/2021, App. A, s. 66.]

Written plan

21.91 A written plan must

(a) be developed by a blasting professional who

(i) has at least 5 years of experience in blasting operations in an urban environment, including knowledge of and expertise in blast design to control vibration, air overpressure, flying material and other potential hazards, and

(ii) holds a valid blaster's certificate as referred to in Division 2 or is a registered member in good standing of

(A) the Association of Professional Engineers and Geoscientists of the Province of British Columbia,

(B) the Applied Science Technologists and Technicians of British Columbia, or

(C) a similar professional association, in British Columbia or another province in Canada, that requires its members to adhere to a code of ethics,

(b) provide for effective monitoring of ground vibration and air overpressure, and

(c) specify the limits for peak particle velocity, frequency response and air overpressure that are not to be exceeded.

[en. B.C. Reg. 207/2021, App. A, s. 66.]

Suspension of blasting

21.92 If, in respect of peak particle velocity, frequency response or air overpressure, a limit specified under section 21.91 (c) is exceeded, all blasting must be suspended until a person who meets the requirements of paragraph (a) of that section has

(a) determined why the limit was exceeded, and

(b) updated the written plan, if necessary.

[en. B.C. Reg. 207/2021, App. A, s. 66.]

General requirements

21.93 (1) All material to be blasted must be covered by blasting mats in good working condition.

(2) The blast hole diameter must not exceed 75 mm (3 in).

(3) The bench height to burden ratio must be at least 2 to 1.

(4) In respect of blast holes,

(a) all blast holes must be effectively stemmed with small crushed aggregate rock or an energy confinement device, and

(b) the use of drill cuttings alone does not meet the requirements of paragraph (a).

(5) Safety fuse assemblies must not be used.

(6) When using ammonium nitrate/fuel oil, slurries, water gels or other bulk explosives, the employer must ensure that

(a) the work is conducted in accordance with recognized safe blasting practices and manufacturer's instructions,

(b) the critical hole diameter is not smaller than the minimum critical hole diameter recommended by the manufacturer,

(c) the fumes of the detonated product do not affect workers or other persons at or near the blast site, and

(d) additional precautions are taken in fractured ground and in wet holes.

[en. B.C. Reg. 207/2021, App. A, s. 66.]

PART 22 – UNDERGROUND WORKINGS

Definitions

22.1 (1) In this Part:

"caisson" means a casing sunk or constructed below ground or water level;

"cut" means the series of loaded and unloaded holes that are drilled in a face to serve as the location for initiating a blast;

"dump" or **"tip"** means an accumulation of rock fragments or other unconsolidated material formed by pushing or dropping the loose material over the crest and allowing it to come to rest without further handling;

"face" means any part of an underground working where excavating is in progress or was last done;

"gassy underground working" means any underground working in which there exists, or is likely to exist, an atmosphere containing more than 10% of the lower explosive limit (LEL) of naturally-occurring flammable gases or vapours, or any other gas or vapour emanating from the ground surrounding the working in concentrations exceeding the exposure limits listed in this Regulation;

"percussion drill" means an air or hydraulic-driven drill that breaks by impact;

"portable switch" means a movable track resting on top of a regular track upon which a train car may be diverted for passing;

"probe hole" means a borehole drilled ahead of or at an angle to the heading being worked to probe for conditions that lie ahead or around the underground working;

"qualified person" means a person who is

(a) qualified because of knowledge, training and experience to design, organize, supervise and perform the duties for which the person is appointed,

(b) familiar with the requirements that apply to the duties for which the person is appointed, and

(c) capable of identifying any potential or actual danger to health or safety in the workplace;

"raise climber" means a mechanical powered work platform, temporary or permanent, controlled from the cage underneath the platform, used to provide access to the face of a raise or other working area;

"underground working" includes any adit, tunnel, underground excavation, chamber, caisson, raise, shaft, winze or natural entry;

"underground working supervisor" means, in relation to an underground working, a person appointed under section 22.12 (2) as an underground working supervisor for the underground working.

(2) Unless a contrary intention appears, the definitions in section 21.1 apply to this Part.

[am. B.C. Regs. 9/2017, App. M, s. 1; 207/2021, App. A, s. 67.]

General Requirements

Application

22.2 (1) This Part applies to any underground working which is not a mine within the meaning of the *Mines Act*, or the Health, Safety and Reclamation Code for Mines in British Columbia, and which a worker will be required or permitted to enter.

(2) Generally, this Part does not apply to horizontal underground workings that are less than 5 m (16 ft) in length or to permanent facilities in their final structural condition as certified by a professional engineer.

Work methods

22.3 In any underground working, work methods and operations must be in accordance with

(a) standard engineering practices for the type of work being performed,

(b) the requirements of this Part, and all other applicable requirements of this Regulation, and

(c) any additional requirements prescribed by the Board.

New or unusual situations

22.4 (1) If an employer proposes to use methods or equipment which are new or not in accordance with standard practices for underground workings, the employer must, before starting work, submit details of the proposed methods and equipment to the Board for review and acceptance.

(2) A description of the means to ensure the health and safety of workers by engineering or other methods must be part of the submission.

Preconstruction meeting

22.5 (1) Before commencing an underground working, the owner, or if the owner engages another person to be the prime contractor, then that person, must meet with designated officers to review the requirements of this Regulation and other information pertinent to the underground working.

(2) If more than one prime contractor is employed on the project, the owner must attend the pre-construction meeting.

[am. B.C. Reg. 185/99, s. 63.]

Notice of project

22.6 (1) No later than 30 days before commencing an underground project, written notification of the project must be given to the Board by the owner or another person engaged by the owner to be the prime contractor, except that if there is more than

one prime contractor employed on the project the notice must be given by the owner.

(2) The notification must include

(a) the name of the project,

(b) the address or location of the project referenced to the nearest town and public highway,

(c) the name and address of the owner and of any other person engaged to be the prime contractor, and of the bonding company, if appropriate,

(d) the name of the person in charge of the project,

(e) a brief description of the project including

(i) the type of underground working,

(ii) the mining method,

(iii) the type, number of units, and engine horsepower (watts) of the mining equipment,

(iv) the starting date and approximate duration of the project,

(v) the approximate peak labour force, and

(vi) the proposed hours of work,

(f) the details of proposed temporary or permanent ground support, including the proposed timing of such support, and whether the owner or another person engaged to be the prime contractor will be responsible for its design and installation,

(g) the plans, drawings and fan specifications for the ventilation systems that will be used during construction, and

(h) a report produced by a professional engineer or professional geoscientist that provides

(i) a description of the geological hazards associated with the work,

(ii) drawings showing profiles, transverse sections and plans for the proposed underground workings, including the potential for encountering gassy ground, explosive dusts, rock falls, running ground or rock bursts, and

(iii) a detailed statement from the owner or another person engaged to be the prime contractor as to how geological hazards will be dealt with.

(3) Any hazards discovered during the work which were not included in the report required by subsection (2) (h) must be reported immediately to the Board.

[am. B.C. Regs. 185/99, s. 64; 253/2001, s. 16; 258/2008, App. F, s. 5.]

Underground record

22.7 (1) The employer must ensure that a daily log titled "The Underground Record" is provided and that appropriate information is recorded in it.

(2) Required entries in the Underground Record include

(a) daily atmospheric tests with the date, time and location, concentrations of contaminants, and any unusual finding and action taken,

(b) communication system examinations and any action taken,

(c) ground control examinations and any action taken,

(d) any incident required to be reported by the OHS provisions of the *Workers Compensation Act* or by this Regulation, and

(e) records of

(i) rescue proficiency drills,

(ii) maintenance of self-contained breathing apparatus,

(iii) ventilation test results, and

(iv) calibration and maintenance of testing equipment.

(3) Each record must be clear as to who made the entry, and signed by the worker making the entry as a true record of the conditions found.

(4) The Underground Record must be read and countersigned by the corresponding supervisor on the oncoming shift, and any unusual or hazardous conditions must be discussed with the workers coming on shift before they are permitted to work in the areas indicated in the record.

(5) The employer must ensure that the Underground Record is

(a) kept at the jobsite for the duration of the project,

(b) available for inspection by an officer, and

(c) retained for 5 years after completion of the project.

[am. B.C. Regs. 185/99, s. 65; 279/2019, App. D, s. 4.]

Hours of work

22.8 (1) The employer must not permit the employment of a worker in an underground working for a period longer than 8 hours in any 24 hours.

(2) Subsection (1) does not apply when

(a) there are emergencies where life or property is in danger, or

(b) urgent work is essential to the continuation of the ordinary operation of an underground working, provided it is only on an infrequent basis, or to accommodate shift changes within a 24 hour period, provided there is an 8 hour rest period between shifts.

(3) Work performed pursuant to the exceptions in subsection (2) must not exceed 16 hours in any 24 hour period.

(4) If it is impractical to restrict routine underground work to a maximum of 8 hours, the employer must submit written procedures to the Board, as part of the notice of project, and must obtain prior written permission from the Board to work longer hours.

Additional first aid

22.9 In addition to the requirements of sections 3.14 to 3.21, if an underground working has progressed more than 300 m (1 000 ft) underground, a first aid attendant must be available in proximity to the main underground work area.

[en. B.C. Reg. 348/2003, s. 6.]

Retroreflective devices

22.10 Underground workers must wear retroreflective devices on their clothing and hard hats.

Self-rescuers

22.11 (1) For non-gassy workings, a minimum of an approved self-rescuer of the air purifying type must be carried by the worker.

(2) For gassy workings, a minimum of a self-contained (air supply) self-rescuer capable of delivering 30 minutes of air must be immediately accessible to each worker underground.

Supervision of Workers

Appointment of underground working supervisor

22.12 (1) In this section, **"mine"** has the same meaning as in the *Mines Act*.

(2) At every underground working, the employer performing the active excavation or rehabilitation of the underground working must appoint, as an underground working supervisor for the underground working, a person who

(a) is knowledgeable of

(i) the duties of supervisors under section 23 of the *Workers Compensation Act* and this Part, and

(ii) the requirements of this Part, and of any other provision of this Regulation, that apply to the active excavation or rehabilitation of the underground working,

(b) is qualified to supervise the active excavation or rehabilitation of the underground working, and

(c) meets the requirements of subsection (3) or (4), as the case may be.

(3) Subject to subsection (4), a person must not be appointed as an underground working supervisor unless

(a) the person holds an underground coal mine fireboss certificate or an underground shiftboss certificate, issued under the Health, Safety and Reclamation Code for Mines in British Columbia,

(b) the person

(i) has been employed full time in underground workings for more than 5 years, including more than 2 years as a supervisor of the active excavation of an underground working other than a mine, and

(ii) holds a valid first aid certificate issued by the Board or by a person recognized by the Board,

(c) the person

(i) has been employed full time in underground workings for more than 7 years, including

(A) more than 2 years of work experience in the active excavation of underground workings, including more than 6 months of work experience in each of ground stabilization and control, underground haulage and transport and general underground servicing work, and

(B) more than 6 months being directly mentored by a supervisor of an underground working other than a mine, and

(ii) holds a valid first aid certificate issued by the Board or by a person recognized by the Board, or

(d) the person

(i) has a degree, diploma or associate diploma in engineering, or an equivalent discipline, from an educational institution accredited by a provincial, state, national or other government body,

(ii) has been employed full time in underground workings for more than 3 years, including

(A) more than 2 years of work experience in the active excavation of underground workings, including more than 6 months of work experience in each of ground stabilization and control, underground haulage and transport and general underground servicing work, and

(B) more than 6 months being directly mentored by a supervisor of an underground working other than a mine, and

(iii) holds a valid first aid certificate issued by the Board or by a person recognized by the Board.

(4) In the case of a gassy underground working, a person must not be appointed as an underground working supervisor unless the person holds an underground coal mine fireboss certificate issued under the Health, Safety and Reclamation Code for Mines in British Columbia.

[en. B.C. Reg. 9/2017, App. M, s. 2; am. B.C. Reg. 279/2019, App. D, s. 10.]

Role of underground working supervisor

22.12.1 (1) The employer must ensure that every worker involved in the active excavation or rehabilitation of an underground working is under the direct supervision of an underground working supervisor.

(2) Workers not involved in the active excavation or rehabilitation of an underground working must be under the direction of an underground working supervisor.

(3) The underground working supervisor must ensure that the work activities of employers, workers and other persons at an underground working are coordinated.

(4) The owner, or the person appointed by the owner to be the prime contractor, must ensure that employers, workers and other persons at an underground working, before entering the underground working, notify the underground working supervisor and obtain authorization to enter.

[en. B.C. Reg. 9/2017, App. M, s. 2.]

Underground worker health and safety representative

22.13 (1) In every underground working there must be a qualified underground worker safety representative on each shift who is regularly employed at the site, and is

(a) chosen by the workers, and

(b) experienced in the work being performed and is familiar with the applicable health and safety requirements.

(2) The worker representative has the right, if there is reasonable cause to believe that a hazardous condition exists, to ask for and attend the investigation of the condition, and verify that any necessary corrective actions have been taken.

(3) The worker representatives must have their names posted in a conspicuous location at the worksite.

[am. B.C. Reg. 185/99, s. 66.]

Impaired persons

22.14 (1) If in the opinion of the supervisor a person's ability is so impaired as to endanger the person's own health and safety or the health and safety of any worker, this person may not enter, remain, or be permitted to enter or remain in any underground working.

(2) No intoxicating liquor or illegal drugs are permitted in or about an underground working.

Working Requirements

Responsibility for ventilation

22.15 If an underground working involves the services of one or more subcontractors or their workers, the person engaged by the owner to be the prime contractor or, if there is no one such person, then the owner, must ensure that the air in all parts of the underground working, where workers may work or travel, is free from injurious or dangerous concentrations of contaminants and contains sufficient oxygen to prevent danger to the health of anyone in the underground working.

[am. B.C. Reg. 185/99, s. 67.]

Prior approval

22.16 (1) The design for an underground working ventilation system must have the prior written approval of the Board before installation commences.

(2) The design submitted to the Board must include

(a) the dimensions of the underground working,

(b) a list of the equipment proposed for use underground and the air flow necessary for each internal combustion engine,

(c) calculations of the system air flow requirements and pressures to be developed in the system,

(d) ductwork dimensions and specifications,

(e) the make, model, horsepower, blade settings and performance curves or tables for all fans,

(f) detailed drawings of any other devices to be installed in the ventilation system,

(g) a cross section of the portal, showing the main exhaust located so that exhausted air will not come back to the portal,

(h) the altitude of the portal,

(i) a statement of air contaminant sources expected and proposed testing points and frequency of tests, and

(j) a schedule of hours of work.

Qualified person

22.17 At every underground working, the employer must appoint a qualified person on site to be responsible for all aspects of ventilation in the underground working.

Mechanical ventilation

22.18 (1) The employer must ensure that every underground working has a mechanical ventilation system that is

(a) designed, installed, and operated in accordance with good engineering practice,

(b) maintained in good working order, and

(c) capable of supplying sufficient fresh air to the underground working.

(2) The exhaust from compressed air machines must not be considered as ventilation.

Air flow

22.19 The main ventilation system must be capable of operating on blowing or exhaust duty and be equipped with a reversing switch, which normally will operate on exhaust, and the air flow must be

(a) at least 15 cubic metres per minute for each square metre (50 cfm for each square foot) of the working face area, and

(b) where internal combustion engines are used underground, the total of the air flows specified on the engine permits.

Portal fan

22.20 The portal fan may be operated on blowing duty for an initial tunnel advance not exceeding 300 m (1 000 ft).

Auxiliary fan

22.21 The work face must be ventilated by means of an auxiliary fan system which

(a) has an air flow of at least 15 cubic metres per minute for each square metre (50 cfm for each square foot) of the working face area, but not more than 90% of the main exhaust system flow,

(b) has its inlet overlapping the inlet of the main exhaust system by at least 30 m (100 ft),

(c) discharges from within 18 m (60 ft) of the face, unless workers are absent from the face, and

(d) has an effective silencer if required by the Board.

Modifications

22.22 If any modifications are made to the ventilation system, the employer must inform the Board immediately.

Malfunction

22.23 If the ventilation system ceases to function, all contaminant producing work must stop immediately, and all engines must be shut down until ventilation is restored.

Unventilated areas

22.24 Any underground area that is not ventilated must be effectively secured to prevent the entry of workers and posted with signs to warn of the hazard.

Duct air testing

22.25 (1) Duct air velocities must be measured at least once a week and any deficiencies must be corrected.

(2) Testing must take place

(a) within 9 m (30 ft) of the main duct inlet and any branch inlets,

(b) at the auxiliary fan duct outlet,

(c) 6 m to 15 m (20 ft to 50 ft) from the portal fan, and

(d) at any other location or interval as directed by an officer.

(3) The results and observations of all testing and any corrective action taken must be recorded in the Underground Record.

Welding fumes

22.26 Fumes from welding activities underground must be controlled at the source by local exhaust ventilation.

Heating underground air

22.27 (1) Before a heating system is installed or used in an underground working, the design, specifications, and operating procedure must be submitted to the Board for approval.

(2) The heating device must be

(a) located at least 25 m (80 ft) outside an entrance to an underground working,

(b) vented to prevent flue gases from entering the underground working,

(c) equipped with an automatic fuel shutoff if the fire goes out, and

(d) manually restarted after an automatic shutdown.

Heating equipment

22.28 (1) The installation of underground heating equipment acceptable to the Board must include provisions for mounting, clearances and air supply, and must meet the applicable requirements of the following standards and codes as amended from time to time:

(a) *CSA Standard CAN/CSA-B139-M91, Installation Code for Oil Burning Equipment*;

(b) *CGA Code CAN/CGA-B149.1-M91, Natural Gas Installation Code*;

(c) *CGA Code CAN/CGA-B149.2-M91, Propane Installation Code*;

(d) *CSA Standard C22.1-94, Canadian Electrical Code*, Part 1;

(e) *CSA Standard B51-M1991, Boiler, Pressure Vessel, and Pressure Piping Code*.

(2) With the exception of embedded pipes or ducts, all parts of the heating system must be readily accessible for inspection, maintenance, repair and cleaning.

(3) The heating system must be protected from freezing.

(4) A carbon monoxide detector, capable of detecting concentrations below 25 ppm and shutting down the heater if this level is exceeded, must be installed 15 m (50 ft) downstream from where the heated air enters the underground working.

(5) Pipelines with gas pressures in excess of 3.5 kPa (0.5 psi) must not be located within 15 m (50 ft) of an underground working.

(6) Pressure regulating stations must be clearly marked and protected from physical damage.

(7) Propane storage tanks must be located so that any leak will not enter an underground working.

(8) A vibration switch that will shut down the heater at prescribed vibration limits must be mounted on the fan cage.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Other heating devices

22.29 The following heating devices must not be located in an underground working or within 25 m (80 ft) of the portal:

(a) an open flame heater;

(b) a liquefied petroleum gas or natural gas heater;

(c) a heater, torch or burner using fuel with a flash point of less than 40°C (104°F).

Atmospheric testing

22.30 (1) The employer must ensure that tests of the underground atmosphere are conducted to ensure that an oxygen deficient atmosphere does not exist, that a worker's exposure to air contaminants does not exceed the exposure limits in Part 5 (Chemical Agents and Biological Agents), and that a worker's exposure to respirable combustible dust (RCD) does not exceed its exposure limit, which is 1.5 mg/m^3, based on an 8-hour time weighted average.

(2) Tests must be conducted by a qualified person using equipment, devices and methods acceptable to the Board.

(3) Calibrations of testing equipment must be recorded in the Underground Record.

(4) Test results must be recorded and signed in the Underground Record by the qualified person doing the testing, and must be readily available for review by affected workers.

[am. B.C. Reg. 312/2003, App. B, s. 45.]

Testing during construction

22.31 During construction or excavation of an underground working the employer must ensure that atmospheric tests are made for carbon monoxide, nitrogen dioxide, combustible gases and oxygen content

(a) if the ventilation has been interrupted for more than one hour,

(b) at least every 4 hours while an internal combustion engine is operating,

(c) after blasting has taken place,

(d) after a fire or other unusual occurrence causing atmospheric contamination, or

(e) as directed by an officer.

Additional tests

22.32 (1) If the presence of a flammable or toxic gas is suspected or encountered, the employer must ensure that additional tests are made as required.

(2) When a worker has reasonable cause to believe that a hazardous atmosphere may exist, the worker may request that tests be made to determine the level of contaminants.

(3) The supervisor or employer receiving such a request must forthwith investigate, ensure that appropriate testing is conducted and recorded, and that any unsafe atmospheric condition is rectified.

(4) The employer must ensure that only workers qualified to conduct testing and workers necessary to assist them enter an underground working, until it is declared safe.

Radioactivity survey

22.33 (1) When excavation commences, the employer must ensure that a survey is conducted to determine if significant levels of ionizing radiation are present at the underground working.

(2) If results of the survey indicate that significant levels of ionizing radiation are present, the employer must establish a radiation protection program.

(3) If the initial survey does not indicate the presence of significant levels of ionizing radiation, the underground working must be resurveyed every 30 days as the excavation work proceeds.

Electrical installations

22.34 Electrical equipment and wiring in an underground working must meet the requirements of *CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Communications

22.35 (1) An effective radio or telephone communication system must be maintained between the surface and underground work areas including refuge and first aid stations and at least every 600 m (2 000 ft).

(2) The communication system must have an independent power supply.

(3) Removal or failure of one communication device must not render the remainder of the communication system inoperative.

Illumination

22.36 (1) The employer must ensure that the minimum illumination measured 1 m (39 in) above the floor or ground level in an underground working is

(a) 22 lux (2 foot candles) in a tunnel, shaft, incline, and haulage way, and

(b) 54 lux (5 foot candles) at a working face or other area of high activity.

(2) The employer must ensure that an emergency lighting system or apparatus is available for every worker in an underground working so that they may exit safely.

(3) Broken or defective lights must be replaced without delay.

(4) A lower level of illumination, such as provided by an electric cap lamp, may be accepted for underground repair or inspection work of short duration.

Cap lamps

22.37 (1) Cap lamps must be kept in the worker's possession at all times while underground.

(2) All newly purchased cap lamps, and after January 1, 1999 all cap lamps, must be capable of providing a peak illumination of at least 1 500 lux (150 foot candles) 1.2 m (48 in) from the light source, throughout the work shift.

Maintenance

22.38 The employer must establish a procedure for assessing and maintaining cap lamps or equivalent portable lighting system.

Auxiliary lighting

22.39 If a worker is required to assess ground conditions in an underground working, at a distance greater than the effective range of a cap lamp, auxiliary lighting must be provided to safely carry out the assessment.

Battery charging stations

22.40 The employer must ensure that battery charging stations are

(a) effectively ventilated, and

(b) posted with "No Smoking" and "Fire Hazard" signs.

(c) Repealed. [B.C. Reg. 312/2003, App. E, s. 20 (c).]

[am. B.C. Reg. 312/2003, App. E, s. 20.]

Pipelines

22.41 The employer must ensure that air, water or discharge pipelines are

(a) hung or secured from suitable hangers, and

(b) located so that they are protected from moving equipment.

Water control

22.42 (1) If the accumulation of water might affect the stability of the working or otherwise endanger workers, the employer must ensure that a suitable system is installed to remove the water.

(2) Adequate drainage must be installed on all roadways and haulage ways.

Dams

22.43 If there may be a danger to workers from structures for storing water in an underground working, the plans and specifications must be submitted to the Board for approval before construction begins.

Transportation of workers

22.44 The employer must ensure that

(a) workers are not transported in the box of a haulage, pickup or service truck, or in the bucket of a piece of mobile equipment, unless it is specifically designed for that purpose,

(b) workers do not board or leave any vehicle while it is in motion, and

(c) when transporting workers, underground crew vehicles are clearly identified for that purpose.

Transportation of workers by rail

22.45 (1) The employer must ensure that any railway type conveyance used to transport workers is

(a) pulled when transporting workers,

(b) provided with overhead and side protection, and

(c) equipped with handrails, a non-slip floor, and an emergency exit if the conveyance is fully enclosed.

(2) A minimum clearance of 30 cm (1 ft) must be maintained between the head of a worker travelling on the track haulage vehicle and the roof of the roadway or any obstruction.

(3) Prior written acceptance of the Board must be obtained before transporting workers on an incline or slope in an underground working by means of track haulage.

(4) Workers must not ride on the exterior of a car, locomotive or train in an underground working.

(5) Passenger cars hauled by mechanical means must have

(a) a clearance of not less than 15 cm (6 in) above the roof of the car, and

(b) safety chains connected between the cars and between the first car and the locomotive, in addition to the normal couplings or drawbar.

Shaft conveyances

22.46 (1) Workers may only ride in an appropriate, designated shaft conveyance.

(2) When shaft sinking, workers must not ride on the rim of the bucket, or on material or equipment in the bucket.

(3) Suitable safety staging must be installed for transporting workers in buckets over 107 cm (42 in) deep, at a level not less than 107 cm (42 in) below the rim.

Emergency Requirements

Procedures

22.47 The employer must ensure that

(a) appropriate written emergency procedures are established and are readily available at the worksite, and address

(i) communication and emergency warning procedures,

(ii) evacuation and personnel count procedures,

(iii) fire fighting and rescue procedures,

(iv) ventilation procedures,

(v) location of emergency equipment and procedures for use, and

(vi) other relevant information,

(b) notices giving direction for immediate action in an emergency are posted in conspicuous places,

(c) each person is instructed in the emergency procedures before commencing work in an underground working, and

(d) a designated worker on each shift is responsible for implementing the emergency procedures.

Coordination

22.48 The employer must designate an emergency response coordinator with full authority to implement the emergency procedures.

Evacuation procedure

22.49 A test of the evacuation procedure must be done within 3 months of commencing the project, and at least annually thereafter.

Refuge stations

22.50 (1) A refuge station must be provided within 500 m (1 640 ft) of the main underground work area, which is

(a) large enough to accommodate all workers underground,

(b) supplied with drinking water and compressed air tanks or cylinders,

(c) equipped with a communication system to the surface,

(d) capable of being sealed to prevent the entry of gases,

(e) provided with a plan of the underground working which shows all exits,

(f) maintained in sanitary condition, and

(g) equipped with emergency lighting.

(2) When unusual conditions warrant, such as gassy underground workings, additional refuge stations may be required by the Board.

Rescue workers

22.51 (1) The employer must ensure that workers holding certificates of competence in underground mine rescue valid in BC, or other similar certification acceptable to

the Board, who are trained in and capable of carrying out the established emergency procedures, are available for rescue operations as follows:

(a) at least 3 workers when 6 to 10 workers are underground on shift;

(b) at least 5 workers when more than 10 workers are underground on shift;

(c) if 5 or fewer workers per shift are employed underground, or if the underground workings do not progress more than 300 m (1 000 ft), the employer must submit written rescue procedures, including details of training and availability of rescue workers, for Board approval.

(2) The names and locations of trained workers must be posted in conspicuous places.

(3) The employer must ensure that proficiency drills for workers trained in rescue work are held at least every 30 days, and are recorded in the Underground Record.

Self-contained breathing apparatus

22.52 (1) The employer must ensure that self-contained breathing apparatus (SCBA) for use in emergencies is available and located on the surface as near to the portal as is practicable, and capable of at least 2 hours operation.

(2) The employer must provide

(a) at least 4 units of SCBA when 10 or fewer workers are underground on shift, and

(b) at least 6 units of SCBA when more than 10 workers are underground on shift.

Dangerous conditions

22.53 (1) Only workers trained for emergencies may enter or remain in any underground working dangerous to life or health by virtue of fire, unplanned explosion, hazardous atmosphere or other hazardous condition, and no other work may be performed until the hazardous condition has been eliminated or controlled.

(2) Hazardous conditions described in subsection (1) must be reported to the Board.

Fire prevention and control

22.54 The employer must ensure that

(a) sufficient suitable fire extinguishers or other systems of fire control are available at any underground location where a fire may occur, and that automatic systems are installed in shops and lunch rooms,

(b) Repealed. [B.C. Reg. 312/2003, App. E, s. 21 (a).]

(c) combustible liquids with a flash point below 52°C (126°F), flammable liquids, oil and grease used in an underground working are transported and stored only in metal containers or receptacles or in portable plastic containers approved for petroleum fuels, and when stored underground,

unless in an approved enclosure, are restricted to a quantity sufficient for the current day's work,

(d) any equipment repair or refueling depot is not located underground unless written permission has been obtained from the Board, and

(e) workers do not build, start, or maintain a fire in an underground working.

(f) Repealed. [B.C. Reg. 312/2003, App. E, s. 21 (d).]

[am. B.C. Regs. 312/2003, App. E, s. 21; 222/2021, App. A, s. 5.]

Flammable gas restriction

22.55 (1) Except when needed for burning or cutting, acetylene, propane, or other volatile fuel must not be permitted underground.

(2) If volatile fuels are used for burning or cutting, the containers for the fuel must meet the requirements of the *Transportation of Dangerous Goods Act, 1992* (Canada), and may not have a capacity greater than 10 kg (22 lbs).

Equipment fire extinguishers

22.56 The employer must ensure that mobile diesel equipment used in an underground working is equipped with a fire extinguisher acceptable to the Board.

Accounting for workers

22.57 The employer must ensure that

(a) an effective tag-in method of accounting for all workers entering and leaving the underground working is established and maintained,

(b) at least one worker is on outside duty whenever any worker is underground,

(c) an effective system of checking on any worker is instituted, and

(d) trained rescue workers are identified by distinctive tags.

Entrance to Underground Working

General requirement

22.58 The employer must ensure that any portal or collar excavation, including the slopes surrounding it, is effectively stabilized to prevent falls of material into the work area, or other effective means are employed to prevent injury to workers due to falls of material.

Structures at the entrance

22.59 Prior written acceptance must be obtained from the Board before locating any structure built of combustible material, or any hazardous material storage, within 25 m (80 ft) of an entrance to an underground working.

Projecting support system

22.60 Any support system projecting outside an underground working must be of sufficient strength to ensure that it does not break or collapse should material fall from above.

Spill control

22.61 Storage facilities for hazardous liquids must be located so that spillage will not flow towards an underground working.

Ground Control

General requirement

22.62 The employer must ensure that any part of the underground working accessible to workers is effectively scaled and stabilized, or secured to prevent entry by unauthorized persons, and is periodically inspected by a qualified person to prevent the development of unsafe conditions.

During excavation

22.63 (1) The employer must ensure that any active underground working is examined and, if necessary, scaled daily or otherwise stabilized as the nature of the ground and the work being performed necessitates.

(2) The worker making the examination must, before going off shift, report to the worker's supervisor any unusual condition found that has not been corrected.

(2.1) If a supervisor receives a report of an unusual condition that has not been corrected, the supervisor must, before going off shift, make a written report of the unusual condition to the underground working supervisor.

(3) Any ground stabilization must be done by, or under the direction of a qualified person.

(4) An adequate supply of properly sized and dressed scaling bars and other equipment necessary for scaling must be provided and maintained by the employer.

(5) If a shoring set is required

(a) any loose rock or material must be scaled or adequately supported before other work is performed,

(b) the set must be designed and installed so that the bottom section is securely anchored to prevent movement,

(c) effective lateral bracing must be installed between sets to stabilize the support,

(d) the set must be completely in place and secured before other work is performed, and

(e) a damaged set that is hazardous must be repaired or replaced without delay.

[am. B.C. Regs. 9/2017, App. M, s. 3; 116/2022, App. B, s. 13.]

Shotcrete

22.64 (1) The employer must ensure that shotcrete equipment is maintained in good operating condition, and that all practical measures are taken to control dust at the source during shotcreting operations.

(2) Only those workers involved in the shotcrete operation may work downwind of the operation unless sampling shows that contaminants are within exposure limits.

(3) When shotcrete is being applied

(a) the employer must ensure that any worker who may be affected by shotcrete dust is supplied with and uses appropriate personal protective equipment, and

(b) there must be a worker at the shotcrete machine capable of immediately stopping the flow of material, in communication with the nozzle worker.

Operator protection

22.65 Operators of cranes or other mobile equipment engaged in ground control activities must be protected against falling, flying, or intruding objects or material, by means of suitable cabs, screens, grills, shields, deflectors, guards or structures.

Drilling

Probe holes

22.66 (1) Whenever there is the possibility of encountering excessive water, gas, or other hazard, probe holes must be drilled deep enough to identify the hazard or at least 2 rounds ahead of the round to be blasted.

(2) All probe results must be recorded in the Underground Record.

Connecting to existing workings

22.67 (1) The employer must ensure that each underground working supervisor is provided with current development plans for the underground working supervisor's assigned area of responsibility which indicate the size, inclination and length of all development openings and drill holes, and points where openings are or will be within 8 m (25 ft) of a breakthrough.

(2) If an active heading is within 8 m (25 ft) of another underground opening or drill hole, the underground working supervisor must, before any round is fired,

(a) make a thorough examination of other underground openings, drill hole collars, or the nearest point of intersection,

(b) ensure that the heading can be safely advanced, and

(c) ensure that access to the nearest point of intersection with the other opening or drill hole is guarded.

(2.1) The underground working supervisor must ensure that all findings, and any corrective actions taken, under subsection (2) are documented in the Underground Record referred to in section 22.7.

(3) If 2 headings are expected to connect and are within 8 m (25 ft) of connecting, all work must cease in one of the headings, and all previously blasted holes must be examined for remnants of explosives.

[am. B.C. Reg. 9/2017, App. M, s. 4.]

Blasting at adjacent sites

22.68 When workers are working at adjacent underground work sites, they must agree to mutually acceptable blasting times and procedures.

Inspection before abandonment

22.69 The employer must ensure that an underground working is not abandoned, nor work discontinued, until material broken in the last round has been cleared from the face of the heading, and the face examined for holes or sockets containing explosives.

Underground Use of Explosives

Transport of explosives

22.70 (1) The transport of explosives from the magazine or other surface storage place must be arranged so that no undue delay will occur between the time the explosives leave the surface storage and the time they are properly stored or used underground.

(2) Detonators transported on a shaft conveyance must be transported separately from other explosives and materials.

(3) The hoist operator must be notified before explosives are moved on a shaft conveyance.

(4) Safety staging must be rigged inside the sinking bucket at a depth of 107 cm (42 in) from the rim, to ensure safe handling of the explosives.

[am. B.C. Reg. 207/2021, App. A, s. 68.]

Mechanical haulage

22.71 (1) When explosives are transported in underground workings by means of tracked or trackless mechanical haulage,

(a) the speed of the vehicle must not at any time exceed 6 km/h (4 mph),

(b) definite arrangements for the right of way of a vehicle carrying explosives must be made before the vehicle is moved,

(c) the explosives must be protected from trolley wires, batteries or other hazards,

(d) the vehicle must have a flashing light and reflective signs conspicuously displaying the word "EXPLOSIVES" not less than 15 cm (6 in) in height, and

(e) the vehicle engine must be shut off while loading or unloading explosives, except when needed to operate a power takeoff.

(2) Explosives must be placed in separate, suitable locked containers, or a single container where they are separated by a barrier approved under the *Explosives Act* (Canada).

[am. B.C. Reg. 207/2021, App. A, s. 69.]

Transport by track haulage

22.72 (1) If mechanical track haulage is used the locomotive must pull the conveyance carrying explosives as close to the point of use as possible.

(2) When explosives are being transported by track haulage they must

(a) Repealed. [B.C. Reg. 207/2021, App. A, s. 70 (b).]

(b) be protected from trolley wires, batteries, or other hazards, and

(c) not be carried on the locomotive.

[am. B.C. Reg. 207/2021, App. A, s. 70.]

Underground storage of explosives

22.73 (1) Explosives must not be stored underground without the prior approval of the Board.

(2) A day box in an underground working must be located in a safe stabilized area where there is no possibility of being struck by a train or mobile equipment, at least 60 m (200 ft) from any shaft, hoist room, portal, refuge station or worker assembly area, transformer vault, or combustible refuse.

(3) Repealed. [B.C. Reg. 207/2021, App. A, s. 71 (b).]

[am. B.C. Reg. 207/2021, App. A, s. 71.]

Restriction on ignition sources

22.74 (1) Repealed. [B.C. Reg. 312/2003, App. J, s. 6.]

(2) Precautions must be taken to ensure that neither heated materials nor electrical equipment come into direct contact with explosives.

[am. B.C. Reg. 312/2003, App. J, s. 6.]

Fume class

22.75 Explosives used in underground workings must

(a) possess a Fume Class 1 rating as established by the Explosives Branch of the Department of Energy, Mines and Resources (Canada), and

(b) have prior written approval for use from the Board if not of a Fume Class 1 rating.

Blasting line

22.76 The blasting line must

(a) meet the requirements of *CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines*,

(b) be readily identifiable as blasting cable,

(c) be suspended from insulated supports, and

(d) not be located in close proximity to any electrical lighting or power line.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Remote initiation

22.77 Where a safe means of exit can not be guaranteed, such as in a shaft or raise, a remote means of initiation must be used.

Water spray

22.78 An effective water spray (atomizer) must be activated in every development heading at the time of the blast.

Return to blasting site

22.79 (1) Written procedures for atmospheric testing and return to the blast site must be developed for each underground working.

(2) Workers must be trained in the procedures and copies must be readily available to all workers for reference.

(3) After a blast is detonated, workers must not return to the blast site until

(a) a minimum of 10 minutes has elapsed, and

(b) tests have confirmed that the concentrations of carbon monoxide or nitrogen dioxide do not exceed the exposure limits prescribed in this Regulation, the oxygen level is not less than 19.5%, and the concentrations of flammable substances are under 20% of their lower explosive limit.

(4) Testing must be carried out cautiously by a qualified person, following established safe work procedures which will prevent exposure to levels above exposure limits.

Work restriction

22.80 Before other work can take place in a blast site,

(a) all hazards must be identified and controlled,

(b) adequate dust suppression controls must be in place before mucking, and

(c) loose material must be scaled, trimmed or otherwise stabilized by the use of equipment, machines, and methods which minimize the danger of injury to workers.

[am. B.C. Reg. 207/2021, App. A, s. 72.]

No safety fuse assembly in underground working

22.80.1 A safety fuse assembly must not be used in an underground working.

[en. B.C. Reg. 207/2021, App. A, s. 73.]

Mechanical Excavation

Dust control

22.81 (1) Mechanical excavating devices, such as tunnel boring machines and road headers, must have an effective dust control and ventilation system which maintains workers' exposure to dust below the applicable exposure limits in this Regulation.

(2) Such systems must be maintained in good working order and must be operational whenever the mechanical excavating device is working.

Work clearance

22.82 Before any work is done in the confined area at the head of a tunnel boring machine, the machine head must be retracted a full piston stroke from the face, if possible.

Elevated work

22.83 Elevated work in connection with mechanical excavating equipment must be carried out using suitable work platforms.

Fixed and Mobile Equipment in Underground Working

Logs

22.84 (1) An inspection and maintenance log must be provided and maintained for each unit of mobile equipment used underground.

(2) The operator of any equipment must

(a) examine the equipment before using it,

(b) note any deficiencies in the vehicle log, and

(c) not operate the equipment until repairs have been made by a qualified person, and noted in the log, or a qualified person has provided assurance that it is safe to operate the equipment, and has noted the reason in the log.

(3) If no deficiencies or unsafe conditions are found, this must be noted in the log.

(4) Before operating equipment the operator must read the most recent entries in the log and if an unsafe condition has been recorded but not corrected the equipment must not be used until repairs have been made by a qualified person, or assurance is given that the equipment is not unsafe to operate and the reason noted in the log.

(5) The employer must monitor the log system to ensure that it is effective.

(6) Records must be kept in the log for all unsafe conditions reported and repairs effected to correct them.

(7) Each entry in the log must show the time and date of the entry and the name of the worker who made the entry.

Internal combustion engines

22.85 (1) Only diesel fueled internal combustion engines may be used underground.

(2) Before using a diesel engine underground the employer must first obtain permission from the Board.

(3) Diesel fuel for use underground must meet the requirements of *CGSB Standard CAN/CGSB-3.16-M88 Mining Diesel Fuel*, but flash point restrictions may be relaxed in accordance with the supplier's recommendations for cold weather conditions.

(4) All diesel fueled equipment used underground must be equipped with adequate devices to control exhaust emissions.

(5) If diesel fueled equipment used underground is fitted with an exhaust scrubber it must be of a type acceptable to the Board.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Fire suppression

22.86 (1) All diesel powered mobile equipment used underground, capable of holding more than 25 litres (5.5 imp gal) of combustible fluids, must be fitted with a multinozzle fire suppression system in accordance with *CSA Standard CAN/CSA-M424.2-M90, Non-Rail-Bound Diesel-Powered Machines for Use in Non-Gassy Underground Mines*, which operates automatically in the event of a fire.

(2) It must be possible to manually activate the fire suppression system by means of easily accessible ground level devices from the operator's station and from each side of the machine, and the activation of the system must cause engine shutdown.

(3) If, in the opinion of the Board, sufficient danger is present, the employer must use fire-resistant fluids in diesel powered equipment.

Hoses carrying flammable liquid

22.87 (1) Hoses and lines ducting flammable or combustible liquid on mobile equipment used underground must be installed in accordance with *CSA Standard CAN/CSA-M424.2-M90, Non-Rail-Bound Diesel-Powered Machines for Use in Non-Gassy Underground Mines*.

(2) Such hoses and lines must be shielded to prevent leaks or spills from contacting hot surfaces or other ignition sources.

Operating requirements

22.88 Any diesel engine being operated in an underground working must

(a) not expose workers to respirable combustible dust (RCD) from the exhaust in excess of 1.5 mg/m^3 based on an 8-hour time weighted exposure, and

(b) not idle unnecessarily.

(c) Repealed. [B.C. Reg. 312/2003, App. B, s. 46 (c).]

[am. B.C. Reg. 312/2003, App. B, s. 46.]

Underground Haulage

Traffic control

22.89 (1) The employer must ensure that a written traffic control scheme is developed for the underground working which provides that where a worker or workers are working in proximity to track or mobile equipment, both the workers and the equipment operators are fully aware of each others' presence.

(2) If an equipment operator encounters pedestrian traffic at a location other than a safety station, the operator must stop and only proceed when the pedestrian gives permission to do so.

Clearance for mechanical haulage

22.90 (1) The employer must ensure that a clear space is provided in an underground working for safely passing workers or equipment which provides

(a) for track haulage, at least 60 cm (2 ft) clear space on one side of the tracks, free of tripping and slipping hazards, and

(b) for trackless haulage, at least 2 m (6.5 ft) total clear space, free of tripping and slipping hazards.

(2) If the minimum clear space cannot be maintained, safety stations must be excavated at least every 30 m (100 ft) to provide an avoidance space for workers.

(3) The safety stations must be

(a) clearly identified and marked,

(b) clean and free of obstructions,

(c) cut as close to perpendicular to the haulage way as is practicable,

(d) at least 1 m (39 in) deep, in addition to the clearance from the vehicle to the wall,

(e) at least 2 m (6.5 ft) high and at least 1.5 m (5 ft) wide, and

(f) excavated on the same side of the haulage way if more than one safety station is required.

(4) Safety stations are not required if the traffic control system prevents simultaneous movement of pedestrians and machinery.

Track haulage and mucking equipment

22.91 (1) The employer must ensure that a locomotive is equipped with

(a) a hold-to-run type of control,

(b) properly maintained headlights, front and rear,

(c) an audible warning system, which must be operated whenever the locomotive is about to move, and to warn workers if they may be endangered by movement of the locomotive,

(d) safe seating for the operator,

(e) an effective braking system, with a parking brake,

(f) non-slip material on steps and footboards,

(g) handholds for entering or leaving the operator's station, and

(h) a restraining device or door if there is a hazard to workers of falling.

(2) The employer must ensure that haulage equipment has

(a) a safety chain or other suitable restraining device between all haulage units,

(b) a positive locking device on rocker type cars to prevent accidental dumping, and

(c) a reflector and a suitable beam or flashing light to indicate the rear of the train.

(3) The employer must ensure that any track mucking equipment is provided with an operator's foot stand which is maintained in position and used when the mucking machine is being operated.

Equipment hazard area

22.92 Workers must not pass

(a) between the cars of haulage equipment at any time, or

(b) any haulage equipment that is being loaded during mucking operations unless the loading machine has finished loading the car or stopped mucking, and the operator has given permission to proceed.

Switching

22.93 (1) The employer must establish and workers must follow safe work procedures for switching cars.

(2) Fly switching is prohibited.

Derailed equipment

22.94 The employer must ensure that derailed equipment is rerailed by means of jacks or other mechanical devices designed for this purpose.

Track haulage operations

22.95 (1) The operator of a locomotive must ensure that

(a) the train is pulled rather than pushed, unless impracticable,

(b) nothing is placed on top of the locomotive unless it is adequately secured, does not extend beyond the ends or sides, nor into the cab of the locomotive, and does not obscure the operator's view,

(c) the brake is applied, the operating control is in neutral and the main switch is in the non-operating position if the locomotive is unattended, and

(d) the locomotive is operated from within the operator's position.

(2) If the operator's vision is limited when pushing muck cars or other equipment, the train must not be moved until a signal worker has been stationed in a safe position at the head of the train with an effective means of communication with the operator.

(3) If locomotives are to be operated by an automatic system or by remote control, prior written acceptance must be obtained from the Board.

Rail tracks and switches

22.96 (1) Rail tracks in use must

(a) be maintained in safe condition,

(b) have joints and fish plates installed directly over the ties,

(c) be maintained reasonably level and free of bumps, dips and obstructions, and

(d) have drainage that prevents water from covering the rails.

(2) A rail switch in which a worker's foot may be trapped must have guards at the frog, guard rail, and switch point.

(3) The employer must ensure that

(a) portable switches are covered between the rails, and

(b) switches on the main haulage line are equipped with suitable safety devices and maintained to allow the free flow of haulage equipment.

Trackless Loading and Hauling

Automated and remote control systems

22.97 (1) If trackless loading and hauling equipment is to be operated by an automatic system or by remote control, prior written acceptance must be obtained from the Board.

(2) If operated by an automatic system or remote control, loading and hauling equipment must be designed so that in the event of failure of the control system the equipment will immediately stop.

(3) Every unit of equipment that is automatically or remotely controlled must be controlled independently of any other unit of equipment so there is no interference between one unit and another.

(4) Operators of automatic or remote control equipment must be positioned in a safe area clear of the equipment's range of motion.

Clearance lights

22.98 The employer must ensure that automatic or remote control equipment is fitted with lights which indicate the width of the vehicle.

Road maintenance

22.99 The employer must ensure that haulage roads are free of holes, ruts, excessive water and loose rock, and are maintained in safe operating condition.

Waste Dumps and Spoil Areas

General requirement

22.100 (1) The employer must ensure that waste dumps or spoil areas

(a) are provided with a safe means of entry and exit,

(b) are adequately illuminated,

(c) are operated in accordance with written safe work procedures, and

(d) have effective controls to prevent erosion.

(2) A dump or stockpile area must be examined daily by a qualified person who must communicate any dangerous or abnormal conditions to affected workers.

Dumping procedures

22.101 (1) The employer must

(a) appoint only qualified and suitably equipped persons as dump workers,

(b) where material is to be dumped from a vehicle into a bin, raise, shaft or other opening, provide and maintain a barrier capable of preventing a vehicle from inadvertently entering the bin, raise or opening, and

(c) where dumping is not allowed or dangerous, prevent dumping by barricading the entrance sufficiently to prevent access and posting a sign which reads "No Entry for Dumping Purposes".

(2) Operators are prohibited from dumping material from a haulage vehicle

(a) over a bank more than 3 m (10 ft) high, or

(b) within 3 m (10 ft) of the dump berm crest if the bank is more than 3 m (10 ft) high, except when dumping into a bin, raise, or other opening and a dump berm is in place and a dump worker is directing vehicles to the dumping position.

Reversing when dumping

22.102 The driver of a haulage truck must not

(a) where the bank is more than 3 m (10 ft) high and the dumping position is within 3 m of the dump berm crest, move the vehicle backward to the dumping position, nor begin dumping before having received verbal directions or standard visual signals as shown in Figure 22-1,

(b) operate the vehicle in reverse for a distance greater than 4 truck lengths on

(i) a dump, or

(ii) a stockpile, ramp, road, or a ramp or road that is under construction, unless the ramp or road has a positive gradient of more than 5%.

Dump worker

22.103 A qualified and suitably equipped person, who is responsible for directing traffic at a dump point, must inspect the condition of the dump site as required and report any dangerous or abnormal condition to a supervisor so that corrective action can be taken.

Track waste dump

22.104 A track waste dump must be equipped with

(a) guardrails and toeboards, meeting the requirements of Part 4 (General Conditions), on all walkways on an elevated dump,

(b) a securely anchored stop block at the end of the dump track capable of stopping a fully loaded train, and

(c) a device to prevent haulage cars from overturning or kicking back when dumping.

Electrical trolley systems

22.105 If an electrical trolley system is used in dumping operations

(a) equipment must be arranged to prevent inadvertent contact with energized lines, and

(b) all affected workers must be instructed in appropriate safe work procedures.

Figure 22-1: Standard hand signals for controlling mobile equipment movement

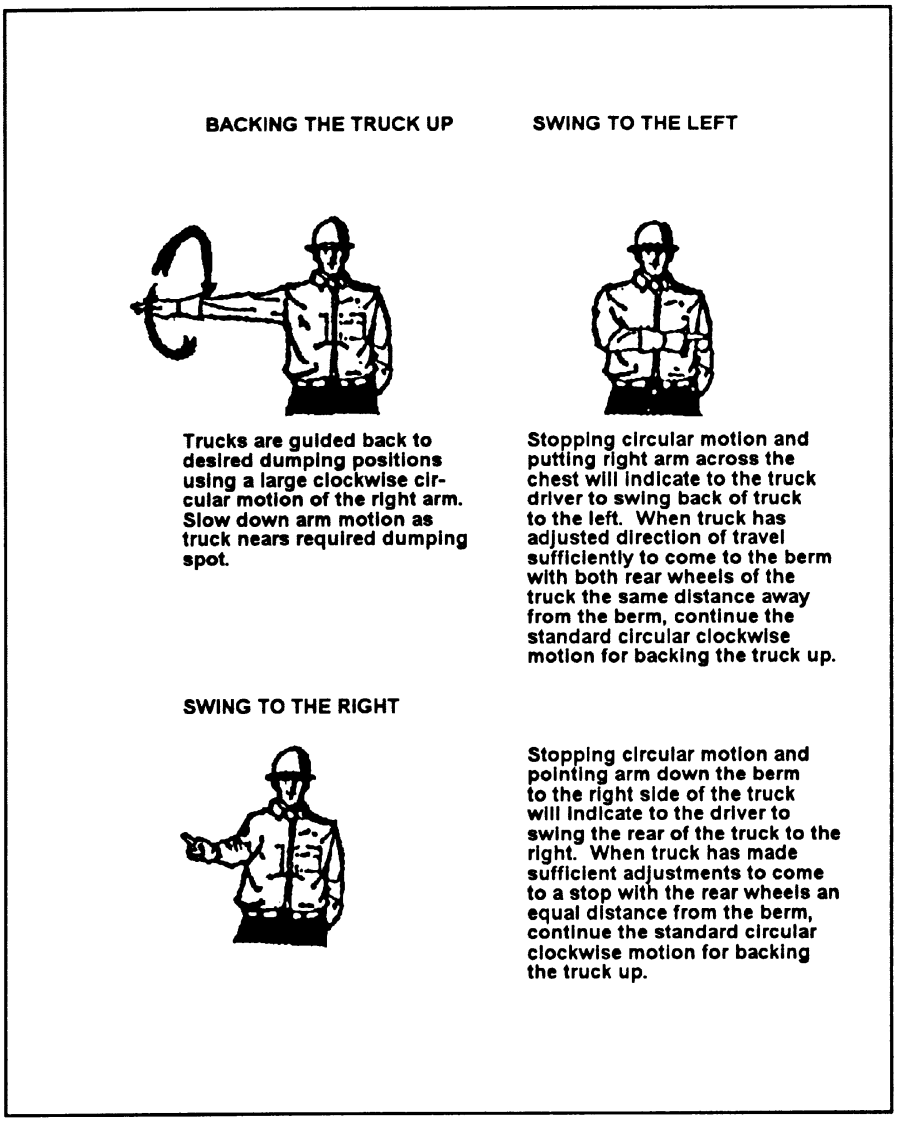
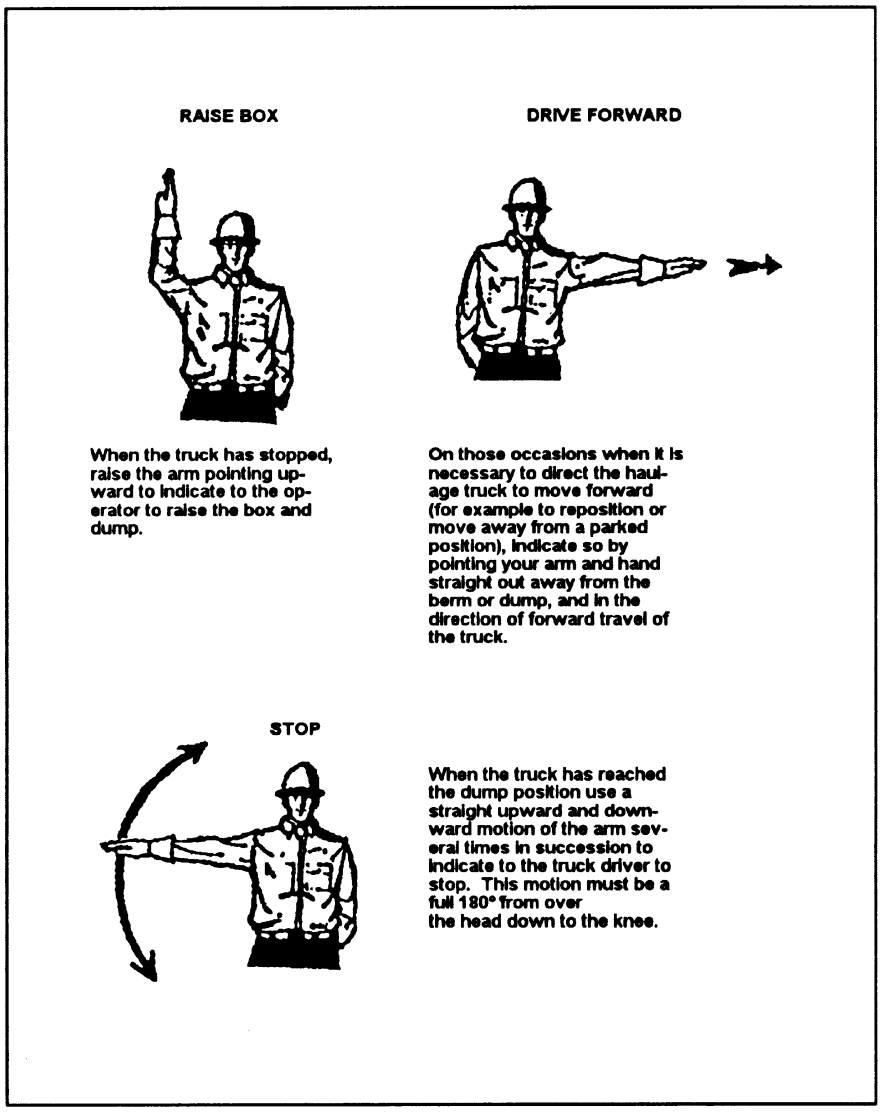


Figure 22-1 (continued): Standard hand signals for controlling mobile equipment movement



Raises

General requirement

22.106 (1) The employer must ensure that

(a) where a timber work platform is used, the main platform bearers are securely pinned to prevent them from dislodging,

(b) ladderways and travelways used for foot traffic are maintained in good repair and clean condition,

(c) a raise in excess of 50° measured from horizontal and 15 m (50 ft) in length has separate compartments for the passage of workers and blasted material during the driving operation and, where timber is used, that it is installed to within 5 m (16 ft) of the face, and

(d) if an accessway and a skipway occupy the same compartment in a raise, the accessway is not used by workers when the skip is in motion, and a guard is installed between the accessway and skipway to prevent workers from falling into the skipway.

(2) The requirements of subsection (1) do not apply to a raise using mechanical raise equipment.

Guarding the bottom of the raise

22.107 The employer must ensure that

(a) if work is being performed in a raise, the bottom of the raise is effectively guarded to protect workers from falling objects, by a barrier and sign reading "Danger Workers Working Above",

(b) the top end of pilot holes are effectively guarded, and

(c) if a raise is within 2 rounds of breaking through to surface or another work area, a worker is guarding the area of breakthrough.

Explosives

22.108 The employer must ensure that explosives are not taken up the raise until all holes are drilled and are ready for loading.

Suspended drill platforms

22.109 The employer must ensure that a suspended drill platform

(a) complies with the requirements in Part 13 (Ladders, Scaffolds and Temporary Work Platforms) for suspended work platforms,

(b) is stabilized to prevent lateral sway or spinning while in the work position,

(c) is provided with a protective canopy that fully covers the work platform during the first access following a blast, and provides protection for workers if a section is left open for work purposes,

(d) has an effective means of two-way communication between the hoist operator and the work platform, and the communication line is protected from damage,

(e) is provided with a safe means of emergency escape, and

(f) is examined at the beginning of each shift, and has any defects corrected before use.

Raise climbers

22.110 (1) Before a raise climber is installed, the Board must be notified and, if required, the employer must submit the design drawings and technical details of the instal-

lation, including construction materials, rated load capacities, dimensions, operating controls and safety features.

(2) The materials and procedures used in the construction of a raise climber must conform to the requirements of appropriate standards of the CSA or ASTM.

(3) A raise climber must not be put into service unless a certificate is available from the manufacturer, or a professional engineer, attesting that all critical load bearing components of the complete assembly and its accessories have been inspected and non-destructively tested by approved methods.

(4) At least once a year after it has been put into service, or when ordered by the Board, any part of a raise climber installation which if it failed could endanger workers must be non-destructively tested by persons certified in accordance with *CGSB Standard CAN/CGSB-48.9712-95, Qualification and Certification of Non-destructive Testing Personnel*, and a copy of the test report must be made available on site for inspection by an officer.

(5) A raise climber that has previously been in use in any place beyond the control of the present employer must not be re-installed until the inspections and tests required by subsection (3) have been carried out.

[am. B.C. Regs. 312/2003, App. A, ss. 5 and 25.]

Identification plate

22.111 Every raise climber must have a durable and legible identification plate which shows

(a) the manufacturer's name, the date of manufacture, the model number and serial number, and

(b) the maximum allowable speed and maximum allowable load ratings as certified by the manufacturer or a professional engineer.

General brake requirements

22.112 (1) Raise climbers must be equipped with at least 2 separate and independently operated service brakes, each capable of safely stopping and holding the conveyance under all rated conditions of load and speed.

(2) An automatic overspeed brake which is capable of bringing the conveyance to a safe stop under any rated load condition from a predetermined overspeed must be installed.

(3) Each brake or braking system must be capable of being independently tested.

(4) If electromechanical brakes are installed they must be activated immediately should the power supply to the climber be interrupted.

Electrically powered raise climbers

22.113 An electrically powered raise climber must have at least one service brake which automatically applies in the event of an interruption of the power supply to the climber, and in such an event, the service brake must be capable of being

(a) operated manually by workers in the climber to lower it safely under continuous control, and

(b) released manually, provided that another brake is available for workers in the climber to lower it to safety under continuous control.

Brake components

22.114 (1) Raise climber brakes must either be designed to compensate automatically for lining wear, or the means for manual adjustment must be readily accessible.

(2) Brake blocks and linings must be protected from water, oil, grease or other substances which could adversely affect them.

(3) The design of the brake system must ensure that the failure of any one component will still leave sufficient braking capacity to bring the climber to a safe stop.

Guarding

22.115 Every raise climber must have all exposed gearing, chain drives, couplings, or any moving parts which could endanger workers effectively guarded or otherwise protected.

Controls

22.116 (1) All operating controls of a raise climber must be situated in a convenient position to allow for their safe operation.

(2) An emergency switch must be provided in the cab of every electrically operated raise climber that will cut off the power to the drive motors if the main control contact fails to open, or in any other emergency.

Electric equipment

22.117 (1) All electrical equipment, including switches, connectors, wiring and cables must be designed, installed and weatherproofed to ensure the integrity of the electric components under all operating conditions.

(2) An electrically powered raise climber must not be operated at a potential of more than 750 volts, and must be protected by a ground fault system.

(3) The operating controls and electrical panels of an electrically driven raise climber must be capable of being locked out to prevent unauthorized operation.

(4) Every raise climber must be equipped with a suitable fire extinguisher.

Work platforms

22.118 (1) Repealed. [B.C. Reg. 420/2004, s. 11.]

(2) Work platforms used during raise driving with a raise climber operating at an inclination greater than 60° from the horizontal must be fitted with substantial covers.

(3) Work platforms must be securely anchored to the raise climber guides or rails when being used by workers.

(4) Before any work is done from a work platform all brakes must be applied and the safety device attached to the guide rail.

[am. B.C. Reg. 420/2004, s. 11.]

Prohibition

22.119 No more than one raise climber conveyance may be installed in a raise unless approved by the Board.

Safety factor

22.120 The static factor of safety of all load carrying components of raise climbers and associated equipment must be no less than 5 under the maximum rated load conditions.

Bolts

22.121 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 47.]

(2) Defective or damaged bolts must not be used and all exposed bolts and other components must be protected against damage from falling rock.

[am. B.C. Reg. 312/2003, App. B, s. 47.]

Racks and pinions

22.122 (1) Only racks and pinions supplied by the manufacturer or certified by a professional engineer may be used.

(2) All permanent raise climber installations used to transport workers must be fitted with a device to continuously monitor the integrity of the rack ahead of the driving pinions, or with a braking system which operates independently of the rack.

22.123 Repealed. [B.C. Reg. 312/2003, App. B, s. 48.]

Communication

22.124 (1) An effective means of communication must be provided between a raise climber conveyance and the base from which it operates.

(2) If intermediate levels or landings are served by the conveyance, the Board may require the installation of a suitable signal system.

Inspection before use

22.125 (1) After a raise climber is installed and before it is put into service, the complete installation must be inspected and tested by authorized workers who have available to them the manufacturer's or professional engineer's manual which details specifications and test procedures.

(2) A complete record of the inspection and tests required by subsection (1) and all other inspections and tests, defects, damage or problems, and repairs or maintenance done must be entered in a raise climber log, which must be maintained at the site, and made available for inspection by an officer.

(3) All entries in the log must be dated and signed by the person who carried out the work, and the supervisor in charge of the installation must check and countersign the entries at least once each week.

Limits and travel stops

22.126 (1) Whenever a raise climber is operating, the end of the track on which it travels must be fitted with a stop block to prevent the conveyance from being taken beyond the end of the track.

(2) All permanent electrically driven raise climber installations must be provided with devices which will automatically stop the conveyance at the upper and lower limits of travel.

Equipment maintenance

22.127 (1) The employer must appoint qualified persons to establish mechanical and electrical maintenance schedules for each raise climber, and to ensure that all maintenance is carried out in accordance with the manufacturer's recommendations and the requirements of this Regulation.

(2) A mechanic must check an operating raise climber each day to ensure that it is operating safely.

(3) At least once a week, a mechanic, and for an electrically driven raise climber, an electrician, must perform routine servicing in accordance with the manufacturer's requirements and this Regulation, and inspect and test all safety and protective devices to ensure that they are working properly.

(4) Before recommencing operations after a prolonged shutdown, a full inspection of the complete installation must be made by authorized workers.

Operator's duties

22.128 (1) Repealed. [B.C. Reg. 312/2003, App. F, s. 7.]

(2) The operator of a raise climber must ensure that the brakes are in safe working condition at the beginning of the shift, and that the over speed brake is tested at least once a day.

(3) Each day, before normal operations begin, the raise climber must be put through its full range of movements to ensure that all limit switches, brakes, controls, audio and visual indicators are functioning correctly.

[am. B.C. Reg. 312/2003, App. F, s. 7.]

Reporting defects

22.129 If a worker carrying out a prescribed inspection or test on a raise climber installation finds a defect, fault, malfunction or any other condition which could affect the safe operation of the equipment, the worker must immediately notify the supervisor in charge of the installation, and the raise climber must not be used until remedial action has been taken and the supervisor authorizes a resumption of use.

Repair requirements

22.130 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 49.]

(2) Repairs to a rack or pinion must only be carried out under the direction of a manufacturer's representative or a professional engineer, and the repaired components must be non-destructively tested in accordance with the requirements of section 22.110 (4).

[am. B.C. Reg. 312/2003, App. B, s. 49.]

Emergency procedures

22.131 (1) Means must be readily available to enable workers to descend from a raise climber in the event of a power failure or other emergency.

(2) The employer must ensure that operators of raise climbers and other workers who would be involved in the emergency descent of trapped workers are trained in the use of the emergency equipment.

Maximum load

22.132 The supervisor in charge of a raise climber installation must ensure that the maximum load specified on the identification plate is never exceeded.

Riding restriction

22.133 Except for inspection purposes workers are prohibited from riding on work platforms while they are in motion.

After blast monitoring

22.134 When ascending the raise following a blast, the operator must carefully monitor the condition of the guide rail and rack ahead of the conveyance.

Transporting material

22.135 (1) Equipment or materials being carried in a raise climber conveyance must be properly secured.

(2) Only workers needed for the work to be done may be transported with explosives, steel, timber or similar material or equipment.

(3) Material or equipment must not be dropped down a raise from the conveyance.

Electrical shut off

22.136 The electrical supply to an electrically driven raise climber must be disconnected during preparation for a blast.

Cleaning

22.137 The employer must ensure that a raise climber is thoroughly cleaned at least weekly.

Hoists and Shafts

General requirement

22.138 Excavation of shafts and installation of hoists in an underground working must be in accordance with the applicable regulations from the Health, Safety and Reclamation Code for Mines in British Columbia or such other requirements as the Board may prescribe.

Shaft openings

22.139 The employer must ensure that

(a) the collar of a shaft is effectively stabilized, and

(b) the top of a shaft or opening is effectively guarded to prevent workers or material from falling into the shaft.

Access ways

22.140 The employer must ensure that ladder ways, access ways, and platforms are maintained in a safe and clean condition and kept clear of the material hoist system.

22.141 Repealed. [B.C. Reg. 312/2003, App. J, s. 7.]

Large Diameter Holes

General requirement

22.142 Before a worker is permitted to enter a large diameter hole (LDH)

(a) the hole must be adequately ventilated,

(b) the hole must be tested for oxygen, flammable gases and other airborne contaminants, and

(c) all in-hole electrical equipment must be grounded.

Vertical holes

22.143 The employer must ensure that, before a worker enters a vertical LDH,

(a) the collar of the hole is stabilized,

(b) a casing of adequate strength, extending at least 1 m (39 in) above the surface level, is installed,

(c) the worker entering the hole wears a fall arrest harness attached to a securely anchored lifeline, tended by a worker equipped and capable of rendering immediate assistance, and

(d) there is an effective communication system established between the hoist operator and the worker tending the lifeline.

Limiting descent

22.144 Workers entering large diameter holes must not descend more than 3 m (10 ft) below the casing of the hole unless ground conditions have been inspected and certified safe in writing by a professional engineer, and copies of the certification must be maintained at the worksite.

[am. B.C. Reg. 253/2001, s. 17.]

Water in the hole

22.145 If water may be encountered in the hole, the bottom of the work platform must be fitted with flotation devices capable of positively supporting the platform and its load.

Horizontal holes

22.146 (1) Repealed. [B.C. Reg. 312/2003, App. D, s. 22.]

(2) Workers must not enter a horizontal LDH unless it has a casing of sufficient strength to hold the ground.

[am. B.C. Reg. 312/2003, App. D, s. 22.]

Gassy Underground Workings

Written notice

22.147 If an underground working is classified as gassy a written notice specifying the contaminant gas or vapour must be posted at a conspicuous location on the worksite.

Worker instruction

22.148 Every worker in a gassy underground working must be

(a) informed of the hazardous condition, and

(b) instructed in the necessary precautions for the gassy condition.

Atmospheric testing

22.149 In a gassy underground working additional testing for the naturally occurring gases must be conducted continuously

(a) at all faces, places of work and passageways,

(b) at the equipment operator's station,

(c) in the exhaust duct,

(d) at a probe hole during drilling,

(e) before loading explosives, and

(f) before blasting loaded holes.

Automatic alarm

22.150 Continuous explosive gas monitors must be equipped with automatic alarm systems that are set and maintained to warn workers to evacuate at 20% of the lower explosive limit (LEL), or if the gas monitor malfunctions.

Ventilation

22.151 The main ventilation system must be on an independent electrical circuit and fans must be explosion proof and non-sparking.

Ventilation malfunction

22.152 If the ventilation system malfunctions

(a) every worker must leave the underground working, and

(b) workers must not return until safe ventilation is restored, and the atmosphere tested and declared safe.

Air velocity

22.153 The air velocity in the main air duct must be measured at least once a day.

No smoking

22.154 Workers are not permitted to smoke, or to carry or keep ignition material in an underground working if flammable gas is present.

Welding and burning

22.155 For welding, burning or other spark producing operations, the employer must ensure that

(a) a hot work permit is obtained,

(b) the operations only take place in atmospheres containing less than 20% of the LEL of gases or vapours,

(c) testing for gases or vapours is done before, and continuously during work, and

(d) welding and burning operations are otherwise in compliance with this Regulation.

Prohibited metals

22.156 Objects made of or containing aluminum, magnesium, titanium or light metal alloy are prohibited in a flammable gassy underground working, except for electrical equipment within a flameproof enclosure, or circumstances where there is no possibility of friction or impact.

Flame arresters

22.157 An internal combustion engine used in a gassy underground working must be equipped with a flame arrester at the exhaust outlet.

Mechanical excavators

22.158 If a mechanical excavator is used

(a) automatic and manual gas monitoring equipment must be provided to test the atmosphere at the working face,

(b) electrical power in the heading must be automatically shut off when 20% of the LEL of a gas or vapour is reached, and

(c) a manual shut off control for the electric power in the heading must be provided at the working area, and the control must be immediately accessible to workers.

Fire resistant fluids

22.159 (1) In a gassy underground working, or in a working containing combustible dusts in sufficient quantity to present a fire or explosion hazard, fire resistant fluids meeting the requirements of *CSA Standard CAN/CSA-M423-M87 Fire Resistant Hydraulic Fluids*, category 1 or 2 must be used in hydraulic systems of more than 10 litre (2.2 imp gal) capacity on equipment in use underground.

(2) Subsection (1) does not apply to

(a) engine hydraulic valve lifters, hydraulic cooling fan drivers, lubricating systems, fuel injection systems, torque converters, transmissions, and axles, or

(b) braking systems employing totally enclosed friction elements immersed in a liquid coolant, and to braking systems with hydraulics independent of any other hydraulic system.

Combustible dusts

22.160 (1) If an underground working or portion of an underground working contains or has the potential to contain coal dust or other combustible dusts in quantities sufficient to present a fire/explosion hazard, the Board may require additional safety measures to be instituted.

(2) Such measures must meet the requirements of the applicable sections of

(a) Repealed. [B.C. Reg. 312/2003, App. E, s. 22 (a).]

(b) *CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines*, and

(c) *CSA Standard CAN/CSA-M424.1-88, Flameproof Non-Rail-Bound Diesel-Powered Machines for Use in Gassy Underground Coal Mines*.

[am. B.C. Reg. 312/2003, App. E, s. 22.]

PART 23 – OIL AND GAS

Definitions

23.1 In this Part:

"derrick" means a stationary or portable structure used to support the hoisting and lowering mechanism on a rig;

"flow piping system" means a temporary or portable system of piping and other component parts, including valves and fittings, that is

(a) located above ground, and

(b) for use to convey to or from a wellhead a liquid under pressure, or a gas under pressure, during drill stem testing, swabbing, cementing, well servicing or well stimulation;

"hot work" means work which involves burning, welding, riveting, grinding, using fire or spark producing tools, or other work that produces a source of ignition;

"lower explosive limit" means the minimum concentration of combustible gas or vapour in air, expressed as a percentage by volume, that will ignite if a source of ignition is present;

"rig" includes a derrick and all equipment that is directly involved with drilling or servicing a well;

"well" means an opening in the ground which

(a) is made or being made by drilling, boring, or in any other manner

(i) for the purpose of obtaining oil, gas or crude bitumen or from which any oil, gas or crude bitumen is obtainable,

(ii) for the purpose of developing or using a reservoir for the storage of natural gas, or

(iii) for the purpose of obtaining geothermal energy,

(b) is made or being made by drilling or boring for the purpose of obtaining water to inject into an underground formation,

(c) is used, drilled or being drilled for the purpose of injecting gas, air, water, or other substance or a form of energy into an underground formation,

(d) is an evaluation well,

(e) is a test hole, or

(f) is drilled or being drilled to a depth of more than 600 m (2 000 ft) to obtain geological or geophysical information.

[am. B.C. Regs. 258/2008, App. G, s. 1; 142/2017, s. 1.]

General Requirements

Application

23.2 This Part applies to

(a) the exploration for oil, gas, crude bitumen, or geothermal energy,

(b) drilling, operating and servicing a well,

(c) producing, distributing and refining oil, gas, crude bitumen or geothermal energy from a well, and

(d) ancillary processes associated with paragraphs (a) to (c).

23.3 Repealed. [B.C. Reg. 312/2003, App. E, s. 23.]

Coordination of multi-employer workplaces

23.4 (1) If an activity involves the work of 2 or more employers or their workers, each employer must notify the owner, or the person engaged by the owner to be the prime contractor, in advance of any undertaking likely to create a hazard for a worker of another employer.

(2) If a work location has overlapping or adjoining work activities of 2 or more employers that create a hazard to workers,

(a) the owner, or if the owner engages another person to be the prime contractor, then that person, must

(i) appoint a qualified coordinator for the purpose of ensuring the coordination of health and safety activities for the location, and

(ii) provide up-to-date information as specified in subsection (4) readily available on site, and

(b) each employer must give the coordinator appointed under subsection (2) (a) (i) the name of a qualified person designated to be responsible for that employer's site health and safety activities.

(3) The duties of the qualified coordinator appointed under subsection (2) (a) (i) include

(a) informing employers and workers of the hazards created, and

(b) ensuring that the hazards are addressed throughout the duration of the work activities.

(4) The information required by subsection (2) (a) (ii) includes

(a) the name of the qualified coordinator appointed under subsection (2) (a) (i),

(b) a site drawing, which must be posted, showing project layout, first aid location, emergency transportation provisions, and the evacuation marshalling station, and

(c) a set of work procedures designed to protect the health and safety of workers at the workplace, developed in accordance with the requirements of this Regulation.

[am. B.C. Reg. 185/99, s. 68.]

Safe work procedures

23.5 (1) The employer must identify the work activities or circumstances, including releases of gases, that have caused or may cause significant risk of injury or occupational disease to workers.

(2) The employer must analyze the risks arising out of the work activities or circumstances identified under subsection (1) and implement safe work procedures if the activities or circumstances create a hazard.

(3) The procedures implemented under subsection (2) must state the number of workers involved, the steps to be followed and the safety equipment required.

Control of static electricity

23.6 (1) When flammable liquids or finely divided materials which may produce a dust which is flammable or explosive are being transferred between containers, the containers must be

(a) in firm contact with each other, and

(b) continuously electrically bonded throughout the transfer to prevent accumulation of a static electric charge.

(2) If tanks, mixers or processing vessels are used for flammable or explosive substances, they must be electrically bonded and grounded while the contents are being transferred.

(3) A wellhead may be used as a ground

(a) for dissipating static electricity, and

(b) if tested and proved acceptable, for an electrical distribution system.

[am. B.C. Reg. 142/2017, s. 2.]

Fire hazards

23.7 (1) Smoking is prohibited on or about a rig, within 25 m (80 ft) of the well bore and within 25 m (80 ft) of any well, production facility or gas processing plant.

(2) Open flames are prohibited within 25 m (80 ft) of the well bore whenever gas may be emitted from the well or any other source.

(3) If iron sulfide is removed from a tank

(a) the iron sulfide must be kept wetted down until safely disposed of, and

(b) other materials and equipment which are contaminated must be kept wetted down or kept in an inert atmosphere until cleaned.

Control of ignition sources

23.8 (1) If regular monitoring and hotwork permits are not in use to control ignition sources

(a) internal combustion engines must be shut down within the zone defined by the *BC Electrical Code* and the Drilling and Production Regulation as a

Class 1 Division 2 or higher classification, unless their operation is integral to the work process, and

(b) diesel engines required to operate within the zone defined by the *BC Electrical Code* and the Drilling and Production Regulation as a Class 1 Division 2 or higher classification must have a positive air shutoff or other effective method for engine shut down.

(2) Mobile equipment powered by a diesel engine and used for maintenance or repair work on pressurized gathering, distribution and transmission equipment must have a positive air shutoff or other effective method of engine shut down.

Flare pits and flare lines

23.9 (1) Written safe work procedures must be implemented to ensure the safety of workers lighting or operating a flare tip, flare stack or flare line.

(2) Workers must be instructed in the application of the written work procedures required by subsection (1).

(3) Before workers enter a flare system danger area where the installation is temporary and remote ignition of the pilot is not feasible

(a) the flare line must be isolated, and

(b) contaminants in the flare pit area must be less than 20% of the lower explosive limit.

(4) The location of a flare pit or stack must not interfere with safe access to the work area.

(5) If feasible, there must be a continuous ignition source before flow to a flare pit or stack occurs.

Fire extinguishers

23.10 (1) Non-freezing fire extinguishers, other firefighting equipment and firefighting personnel must be provided as required by subsections (2), (3) and (4) and Table 23-1.

(2) The minimum requirements for a twin agent unit are

(a) 1 100 litres (250 imp gal) pre-mixed ATC foam solution at 6%,

(b) 680 kg (1 500 lbs) potassium bicarbonate dry chemical system,

(c) 30 m (100 ft) discharge hose, and

(d) two firefighting personnel.

(3) The minimum requirements for a continuous foam unit are

(a) 475 litres (100 imp gal) ATC foam concentrate,

(b) 680 kg (1 500 lbs) potassium bicarbonate dry chemical system,

(c) 1 900 litres (400 imp gal) per minute centrifugal certified fire pump with one 65 mm (2.5 in) discharge port, two 38 mm (1.5 in) discharge ports, and one 125 mm (5 in) suction port, and

(d) two firefighting personnel.

(4) Firefighting equipment must meet the requirements of *NFPA 10, Portable Fire Extinguishers, 1990 Edition*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Table 23-1: Minimum requirements for firefighting equipment

Work activity	Number of extinguishers required	Type of extinguisher
Heavy hauler	1	20-BC
Hot oiler	2	20-BC
Seismic shot hole drill	2	20-BC
Drilling rig	4	40-BC
Service rig	4	40-BC
Battery operator	1	20-BC
Fluid hauler	1	40-BC
Service truck of 1 tonne capacity or more	1	20-BC
Any other commercial vehicle	1	5-BC
Any vehicle carrying explosives	2	4-A:40-B:C
Welder	1	10-BC
Well testing	2	10-BC
1 fracturing tank	1	Twin agent unit
2, 3 or 4 fracturing tanks	1	Continuous foam unit with 100 barrel water truck
5 or more fracturing tanks or greater than 40% methanol water fracturing	The fire hazard must be evaluated in accordance with current industry standards, and firefighting equipment and personnel must be provided as determined necessary by the evaluation.	

[am. B.C. Reg. 207/2021, App. A, s. 74.]

Air operating systems

23.11 (1) Alcohol must not be added to air lines at the air intake side of a compressor.

(2) The air in the alcohol injection system must be bled down to atmospheric pressure before opening an air operating system to inject alcohol.

(3) If an air operating system supplies air for breathing purposes, the alcohol injection system must be isolated, the system purged of old air, and air purifying systems placed between existing piping and workers using the breathing system.

Pipelines, fittings and valves

23.12 (1) Pipelines, piping systems, fittings and valves must

(a) be designed, constructed and maintained to safely withstand the anticipated internal pressures and external loads,

(b) be restrained from undue horizontal, vertical or swinging motion, and

(c) if applicable, meet the requirements of

(i) *CSA Standard Z662-94, Oil and Gas Pipeline Systems*, or

(ii) *API Recommended Practice 520, Sizing, Selection, and Installation of Pressure-Relieving Devices in Refineries, Part I – Sizing and Selection (July 1990, 5th Edition) and Part II – Installation (November 1988, 3rd Edition)*, or

(iii) *API Recommended Practice 521, Guide for Pressure-relieving and Depressuring Systems, dated November, 1990 (3rd edition)*, or

(iv) *American Society of Mechanical Engineers (ASME) Standard B31.3-1993, Chemical Plant and Petroleum Refinery Piping*.

(v) Repealed. [B.C. Reg. 312/2003, App. E, s. 24 (d).]

(2) When a valve is to be disassembled

(a) it must be depressurized, purged or otherwise made safe, and

(b) written safe work procedures must be followed.

(3) Process control and power systems must be designed to operate on the gas being used.

[am. B.C. Reg. 312/2003, App. E, s. 24.]

Hose connections

23.13 (1) Hoses and fittings must be of a design suitable for the type of service for which they are used.

(2) Quick connect fittings must be identified or have hardware controls to ensure connection only to the correct service.

(3) Quick connect fittings for breathing air service must be different from and not compatible for connection to any other service.

(4) Temporary piping and hose systems for hazardous fluids must be effectively protected from damage.

Pumps

23.14 (1) A positive displacement pump and attachments must have valves, pipes and fittings capable of withstanding the pump's maximum working pressure.

(2) A quick closing type valve must not be used on the discharge line of a positive displacement pump.

(3) A positive displacement pump must be protected against freezing.

(4) Except for a pumping wellhead, a pressure relief device must be installed on the discharge side of a positive displacement pump, but a valve must not be installed between them.

(5) For a wellhead utilizing a down-hole positive displacement pump, the employer must implement measures to prevent the pump from causing pressures that exceed the pressure rating of the system.

[am. B.C. Reg. 243/2006, s. 12.]

23.15 and **23.16** Repealed. [B.C. Reg. 312/2012, App. B, s. 1.]

Pipe racks

23.17 (1) Pipe racks and tubs must be placed on a level and firm surface.

(2) Pipe, tubular goods or similar round material must be prevented from accidentally rolling off a pipe rack.

(3) Spacers must be used between the layers of pipe or other material on a pipe rack.

[am. B.C. Reg. 312/2003, App. C, s. 7.]

Handling pipe

23.18 (1) Pipes or tubular goods must be restrained from uncontrolled movement.

(2) Deck pins used to restrain pipes must

(a) be at least 45 cm (18 in) high, and extend beyond the centre line of the pipe closest to the pins, or

(b) if the pipe is tiered, extend one pipe diameter above the pipe closest to the pins.

(3) Deck pins are not required if specialized dunnage is used.

(4) Pipes or tubular goods must be adequately secured before restraining devices are removed.

(5) While pipe is being loaded, unloaded or transferred, workers must not be on top of an unsecured load, between the load and the pipe racks or tubs, or in any other area made hazardous by potential pipe movement.

(6) When pipe is being transferred between pipe racks, catwalks, or trucks, temporary supports or skids must be constructed, placed and anchored so that they will support the load placed upon them.

(7) When transferring drill collars, tubular goods or other similar materials which are not provided with shoulders, pick up subs or other appropriate pipe handling equipment must be used.

(8) A nubbin must not be used to pick up drill collars, tubular goods or similar materials unless the nubbin is equipped with a wire rope safety line and swivel for attachment to the elevator bails.

(9) A trailer used as a pipe rack during drilling, servicing or pipe salvaging must have a guard, along the full length of both sides of the trailer, designed and constructed to ensure that when a pipe is hoisted into the derrick, the lower end of the pipe will not roll off the trailer.

(10) Repealed. [B.C. Reg. 258/2008, App. G, s. 2.]

(11) Pipes must be loaded on or unloaded from a truck one layer at a time.

[am. B.C. Reg. 258/2008, App. G, s. 2.]

Kelly hose and safety lines

23.19 (1) Clamps and wire rope safety lines or chains must be used to fasten the kelly hose at the standpipe end to the derrick and at the swivel end of the swivel housing.

(2) Repealed. [B.C. Reg. 312/2003, App. B, s. 51.]

(3) Shock hoses from pump to standpipe must be restrained by safety lines if they are subject to whipping.

[am. B.C. Reg. 312/2003, App. B, s. 51.]

Catheads

23.20 The employer must ensure that workers do not use friction catheads after April 14, 1999.

Rigging up and tearing out

23.21 (1) The driver of a vehicle used for rigging up or tearing out equipment must not move the vehicle until signalled to move by a qualified signaller.

(2) The signaller must ensure that workers are clear of the path of the vehicle, load and load line.

(3) To prevent materials or equipment from rolling or sliding off a truck or trailer during unloading operations, load tie down devices must not be removed until the lifting slings and hoist line have been attached to the equipment or material that may slide or roll off, and slack in the hoist line and rigging has been taken up.

(4) A worker must not remain or ride on a load or part of a load being raised, lowered or moved.

(5) The movement of a load being raised or lowered must be controlled by

(a) a tag line long enough to ensure that the worker controlling it cannot be struck by the load, or

(b) where a helicopter is being used, by effective work procedures.

(6) A worker must not work, stand or pass

(a) under a suspended load,

(b) between the winch mechanisms and a load being winched, or

(c) in areas where the worker may be injured due to winch line or mechanism failure.

(7) Repealed. [B.C. Reg. 312/2003, App. B, s. 52.]

(8) Winch mechanisms, lines, slings, hooks and fittings must be inspected thoroughly by the equipment operator

(a) before commencing work, and

(b) at such intervals as the nature of the work may require.

[am. B.C. Reg. 312/2003, App. B, s. 52.]

Driver training

23.22 A vehicle driver in the oil and gas industry must, before operating a vehicle with a gross vehicle weight rating greater than 5 500 kg (12 000 lbs.),

(a) be certified in the applicable Energy Safety Canada driver training course acceptable to the Board, or

(b) have completed driver training providing skills and knowledge for safe driving equivalent to or better than those required by paragraph (a).

[en. B.C. Reg. 258/2008, App. G, s. 3; am. B.C. Reg. 14/2019, App. F, s. 2.]

Steep slopes

23.23 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 53.]

(2) If material or equipment must be moved on steep terrain, a written plan must be prepared before snubbing or yo-yo operations are carried out.

[am. B.C. Reg. 312/2003, App. B, s. 53.]

Roads

23.24 Roads, bridges and other structures forming part of the road system used by mobile equipment to transport workers, equipment or materials in connection with operations covered by this Part must meet the requirements for roads and road maintenance in Part 26 (Forestry Operations and Similar Activities).

Transporting liquids

23.25 Liquids must be transported in properly designed and constructed tanks or vessels.

Gauging

23.26 A tank which contains or may contain a fluid with hydrogen sulfide as a component must have an external means of gauging its contents, or if manual gauging or sampling is required, the worker doing the gauging or sampling must use a supplied air respirator meeting the requirements of Part 8 (Personal Protective Clothing and Equipment) for use in an IDLH atmosphere, and must be visually monitored by another worker equipped with an equivalent respirator and capable of effecting a rescue of the worker doing the gauging or sampling.

Liquefied gas used for purging or gauging operations or well stimulation

23.26.1 The employer must ensure that workers are protected from hazards that may be caused by the release of liquefied gas being used for purging or gauging operations or well stimulation.

[en. B.C. Reg. 142/2017, s. 3.]

Geophysical Operations

Power line and upset hazards

23.27 The drill mast must be lowered if equipment is being moved and there is a danger of

(a) the mast contacting power lines or other overhead obstructions, or

(b) the unit losing stability.

Seismic drills

23.28 (1) A seismic drill must have an emergency engine stopping device which is clearly identified, within reach of the drill operator at the drilling position, and tested daily.

(2) Two workers must be present on the same shot hole while drilling.

Communications on vehicles

23.29 If a worker rides on a seismic line truck to perform work, there must be an effective means of communication between the driver and the worker.

23.30 Repealed. [B.C. Reg. 258/2008, App. G, s. 4.]

Drilling and Servicing Rigs

Size of work area

23.31 The owner must ensure that the work area is sized, constructed and laid out so that

(a) all the required equipment may be safely moved and operated, and

(b) emergency response activities may be carried out.

(c) Repealed. [B.C. Reg. 312/2003, App. C, s. 8 (c).]

[am. B.C. Reg. 312/2003, App. C, s. 8.]

Inspection and repair

23.32 (1) Each drilling and service rig must be inspected and repaired in accordance with the following applicable standards published by the Canadian Association of Oilwell Drilling Contractors:

(a) *Recommended Practice 1.0, for Drilling Rigs, Mast Inspection and Certification, January 1, 1994*;

(b) *Recommended Practice 2.0, for Drilling Rigs, Overhead Equipment Inspection and Certification, January 1, 1994*;

(c) *Recommended Practice 3.0, for Service Rigs, Inspection and Certification of Masts, January 1, 1994*;

(d) *Recommended Practice 4.0, for Service Rigs, Overhead Equipment Inspection and Certification, January 1, 1994*;

(e) *Recommended Practice 1.0A, Addendum for Drilling Rigs, Substructure Inspection and Certification, September 12, 1995*.

(2) Inspections and repairs must be recorded in a Canadian Association of Oilwell Drilling Contractors log book or equivalent log acceptable to the Board.

(3) The log must be available on site for review by an officer.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Rig moves

23.33 (1) The raising and lowering of a derrick must be done under the direct supervision of the rig manager or other qualified person.

(2) When hoisting a mast section, rigging must be attached to designated lifting points only.

(3) Lifting points must be clearly marked on each mast section of the derrick.

List of weights

23.34 A master list of the weight of rig components must be kept on site.

Prohibited work areas

23.35 Except for the operator at the controls, workers are prohibited from being on, in or beneath a derrick being raised, lowered or telescoped.

SCBA

23.36 On each drilling and service rig there must be a minimum of 4 self-contained breathing apparatus in good working order, 2 together in each of 2 separate opposite locations, so that 2 apparatus are always accessible regardless of wind direction.

Blowout preventers

23.37 (1) When installing a blowout preventer

(a) the preventer must be effectively restrained while it is being aligned, and

(b) workers are prohibited from being located where they may be injured if the preventer swings or drops.

(2) When removing a blowout preventer, 2 opposing anchor lines must remain in position until

(a) the lifting sling is attached to the preventer,

(b) the slack in the hoisting line and rigging is taken up, and

(c) the draw works brake handle is tied down.

Spudding in

23.38 Spudding in must not start until

(a) all guards are in place,

(b) all platforms, stairways and handrails are installed and securely fastened,

(c) the escape line, anchors and safety buggy are installed and inspected, and

(d) all connecting pins are secured against dislodgment.

Emergency escape systems

23.39.1 A drilling or service derrick must have an emergency means of escape from the racking board that complies with section 23.39.2 or 23.39.3.

[en. B.C. Reg. 258/2008, App. G, s. 5.]

Emergency escape system 1

23.39.2 (1) A drilling or service derrick must have a specially rigged and securely anchored line as an emergency means of escape that

(a) provides a ready means of escape from the racking board,

(b) consists of a wire rope not less than 13 mm (1/2 in) diameter,

(c) has a length twice the vertical distance between the ground and the point at which it is attached to the derrick,

(d) is effectively anchored and able to withstand a load of 13.3 kN (3 000 lbs), and

(e) is kept free of obstructions.

(2) Equipment must not be placed, and vehicles must not pass, under the last 15 m (50 ft) of the escape line.

(3) A safety buggy of a design acceptable to the Board must be installed and operated on the escape line.

(4) The safety buggy required under subsection (3) must be

(a) kept at the racking board,

(b) provided with an effective brake and means to prevent the trolley from coming off the escape line, and

(c) inspected by a qualified person at least once a week.

(5) The escape line must be tensioned so that a person seated in the safety buggy will touch the ground at a safe distance from the derrick, not less than 6 m (20 ft) from the ground level anchor.

[am. B.C. Regs. 312/2003, App. B, s. 54; 258/2008, App. G, ss. 5 and 6.]

Emergency escape system 2

23.39.3 (1) A drilling or service derrick must have an emergency means of escape that

(a) is available for use at the racking board whenever a person is working at that level during drilling or well servicing operations,

(b) is able to simultaneously and safely transport all persons from the racking board level, either individually or as a group, to a location at ground level removed from the source of danger,

(c) shields the persons using the system from any danger coming from the well bore during the descent or separates the persons using the system from such danger during the descent,

(d) has a means to keep the persons using the system from falling out of or off of the emergency means of escape during descent, and

(e) has a means, either automatic or manually controlled, to control the rate of descent to a speed that minimizes the risk of injury to the persons using the system when they near ground level.

(2) The placement of equipment and the movement of vehicles in the area under the emergency means of escape required under subsection (1) must be controlled so as to ensure the emergency means of escape can be safely used.

(3) The emergency means of escape required under subsection (1) must be inspected and tested in accordance with the manufacturer's instructions

(a) each time the derrick is erected, before a person works at the racking board during drilling or well servicing operations, and

(b) at least once each month when the rig is being used for drilling or well servicing operations and a person is working at the racking board.

(4) Each person assigned to work at the racking board during drilling or well servicing operations must

(a) have demonstrated proficiency in the use of the type of emergency escape system installed on the rig, and

(b) participate in drills and receive retraining as necessary to ensure ongoing proficiency in the use of the escape system installed on the rig.

[en. B.C. Reg. 258/2008, App. G, s. 7.]

Draw works controls

23.40 (1) If dual purpose controls are used for automatic catheads, a locking device must be installed to prevent one cathead from being accidentally engaged while the other is operating.

(2) The function of each draw works control must be clearly identified.

(3) If a control may become engaged because of accidental contact with lines or other equipment, the control must be suitably guarded.

Stabbing boards

23.41 (1) A stabbing board must be used by a worker located above the derrick floor during the running of casing or tubing, or well servicing operations.

(2) A wooden stabbing board must

(a) be fitted with expanded metal or wire rope fastened to the underside and along the full length of the board,

(b) have each end of the board secured to the derrick by a wire rope of not less than 13 mm (1/2 in) diameter, or chain of at least equivalent strength, and

(c) be at least 30 cm (12 in) wide.

(3) A metal platform of equal width and strength may be used in place of a wooden stabbing board.

(4) At the stabbing board, a personal fall protection system must be attached to

(a) wire rope with a breaking strength of not less than 40 kN (9 000 lbs) stretched across the derrick at a location approximately 2 m (7 ft) above the stabbing board,

(b) a cross-member of the derrick structure at a point approximately 2 m (7 ft) above the stabbing board, or

(c) a solid support secured across the derrick at a location approximately 2 m (7 ft) above the stabbing board.

Derrick enclosures

23.42 (1) Engine rooms, pump houses, derrick floors and derrickhand platforms must be enclosed to a sufficient height to provide protection against the weather.

(2) When erecting, maintaining or dismantling derrick enclosures

(a) safe work procedures must be implemented, and

(b) where practicable, a safe work platform must be provided.

(3) Workers are prohibited from straddling or climbing onto prefabricated wall panels during erection, maintenance or dismantling of derrick enclosures.

(4) Safe exits must be provided directly to the outside on each of at least 3 sides of the derrick floor enclosure.

(5) The pump house enclosure must have at least 2 doors, opening in different directions to the outside.

(6) Exit doors of a derrick enclosure and the doors of the doghouse must

(a) open outward from the derrick floor, and

(b) not be held closed with a lock or outside latch when workers are employed on the derrick floor.

Ventilation openings

23.43 (1) Before commencing drill stem tests, swabbing, bailing, or displacement with gas or oil

(a) derrick enclosures must be altered to provide openings at least 1.8 m (6 ft) high and 2.4 m (8 ft) wide on opposite sides above, and on 2 sides below, the derrick floor, or

(b) adequate mechanical ventilation or monitoring must be provided.

(2) If it is not practicable to provide openings as specified in subsection (1) (a), several openings must be made providing a total area of at least 4.5 sq m (50 sq ft) on each side.

(3) If mechanical ventilation is used

(a) it must be installed on the mud tank side,

(b) it must be able to completely change the air in the substructure every 2 minutes, and

(c) at least one opening must be provided in the front of the substructure to allow for adequate inflow of makeup air.

(4) During cold weather, ventilation procedures must not compromise the well control systems.

Pits and tanks

23.44 (1) Any pit or tank used for the circulation of flammable material must be isolated from sources of ignition.

(2) If a pit or tank is enclosed, adequate mechanical ventilation must be provided.

Ladder platforms

23.45 (1) Repealed. [B.C. Reg. 312/2003, App. J, s. 8 (a).]

(2) A personal fall arrest system meeting the requirements of Part 11 (Fall Protection) may be used in place of a ladder safety system where such ladder system is required by the standard referenced in Part 13 (Ladders, Scaffolds and Temporary Work Platforms).

(3) Ladder platforms must be located as follows:

(a) on a triple-stand derrick, 2 or more between the floor and the derrickhand platform, and one or more between the derrickhand platform and the crown;

(b) on a double-stand derrick, one or more between the floor and the derrickhand platform;

(c) on a single-stand derrick, one platform at the level of the derrickhand platform;

(d) at the crown of each drilling rig.

(4) The platforms required by subsection (3) must, as far as practicable, be equally spaced, but not more than 9 m (30 ft) apart.

[am. B.C. Regs. 312/2003, App. J, s. 8; 422/2004, s. 2.]

Derrick floor access stairways

23.46 (1) On each drilling and service rig, a stairway must be installed beside the ramp and must extend from the ground to the derrick floor.

(2) The catwalk must be provided with a stairway at the outer end.

Guardrails

23.47 (1) Guardrails installed on the walkways and platforms of mud tanks must have

(a) a horizontal top rail not less than 90 cm (36 in) nor more than 1.1 m (42 in) high, and

(b) posts or uprights spaced not more than 3 m (10 ft) apart.

(2) Guardrails must be installed on

(a) the outer perimeter of all mud tank hinged wing platforms or walkways, and

(b) both sides of walkways located over mud tanks.

(3) Wire rope of not less than 10 mm (3/8 in) diameter, or chain of equivalent strength, may be substituted for guardrails on mud tank walkways if the ropes or chains are rigged and maintained at the required height and kept taut.

(4) Floor openings, elevated walkways and platforms must have toeboards meeting the requirements of Part 4 (General Conditions) if the height exceeds 3 m (10 ft) above grade.

[am. B.C. Reg. 312/2003, App. D, s. 24.]

Hoisting lines

23.48 A minimum of 5 wraps of the hoisting line must be maintained on the drum of the draw works to eliminate strain on the drum line anchorage.

Travelling blocks

23.49 (1) Travelling blocks, hooks, elevators, elevator links and other units of travelling equipment on a rig must be free of projecting bolts, nuts, pins or parts.

(2) If a travelling block is being used on a rig, an upward travel limiting device must be provided to prevent the travelling block from contacting the crown block or structure.

(3) The upward travel limiting device required by subsection (2) must

(a) operate by disengaging the hoisting drum from its power source and applying the hoisting drum brake, and

(b) be tested on each shift.

Hand guards

23.50 A worker must not handle moving hoisting lines, unless using a secured spooling device from a safe location.

Riding hoisting equipment

23.51 (1) A worker must not ride the travelling block hook, or elevators, nor slide down any pipe, kelly hose, cable or rope line.

(2) In an emergency an injured worker may be lowered from the derrick by means of the travelling block or a tugger if the rotary table is stopped, and a qualified worker operates the controls.

(3) If the hoisting equipment to be used under subsection (2) is not rated by the hoist manufacturer for hoisting personnel, training with the equipment must be done without suspending or supporting a person with the load line of the hoisting equipment.

[am. B.C. Reg. 258/2008, App. G, s. 8.]

Guards

23.52 (1) Guards of sufficient strength to contain broken parts must be installed at the draw works and rotary table drives of each rig.

(2) Substantial guards of sufficient height must be installed in front of the hoisting drums on a rig to prevent workers from contacting them.

(3) If headache-posts on a rig rotate, the top and bottom ends must be guarded to contain the post should the shaft fracture.

Crown blocks

23.53 If bumper blocks are attached to the underside of the crown beams on a rig, a safety cable or its equivalent must be

(a) fastened along the full length of the bumper blocks, and

(b) secured at both ends to the derrick.

Securing fingers

23.54 The unsupported ends of derrickhand platform fingers must be connected to the platform frame by wire rope not less than 13 mm (1/2 in) in diameter, or chain of at least equivalent strength.

Counterweight safety lines

23.55 A counterweight above the derrick floor which is not fully enclosed or running in permanent guides must be secured to the derrick frame by a wire rope safety line that is not less than 16 mm (5/8 in) in diameter, and of a length that will prevent the counterweight from coming within 2.4 m (8 ft) of the rig floor.

Weight indicators

23.56 A drilling rig must have a reliable load weight indicator, and if it is hung above the floor it must be secured by a wire rope or chain safety line.

Brakes

23.57 (1) The brakes on the draw works of a drilling rig, and on a service rig used for drilling, must be tested at the beginning of each crew shift, and inspected at weekly intervals.

(2) A rig engaged in drilling operations must be equipped with an automatic feed control.

(3) If a hold down chain is used to secure the draw works brake handle, the chain must be attached to the brake handle in a manner which prevents accidental disengagement of the chain.

(4) Loss of brake pressure due to cooling of the brake drum mechanism must be prevented.

(5) The operator of the draw works must not leave the controls unattended while the hoisting drum is in motion, except when drilling.

Drill pipes, collars and tubing

23.58 (1) Whenever drill pipes, drill collars or tubing are racked in a derrick, provision must be made for the complete drainage of any fluids or gases in the stands.

(2) Before drill pipe, drill collar, tubing or casing is run in a well bore, it must be free from ice plugs or other obstructions.

(3) Except while being moved, drill pipes, collars, tubing, casing and rods racked in a derrick must be secured at the top end by means of tieback ropes or equivalent devices to prevent them from falling out of or across the derrick.

Mud cans

23.59 Whenever a wet joint, or stand of pipe or tubing, is being unscrewed and disconnected above the derrick floor, a mud can must be used to convey any liquids through a pipe to the mud tank or sump.

Rotary tongs

23.60 Rotary tongs must have

(a) a primary safety device to prevent uncontrolled movement of the tongs, and

(b) a secondary safety device that will activate if the primary device fails.

Rotary table

23.61 (1) If visibility on the rig floor is obscured, workers must not work there while the rotary table is in motion.

(2) Hoses, lines or chains must not be operated or handled near a rotary table while it is in motion.

(3) The rotary table must not be engaged until all workers are clear of the rotary table.

Fuel storage

23.62 Except for fuel in the primary supply tanks of operating equipment, gasoline or other liquid fuel must not be stored within 25 m (80 ft) of a well.

Guylines

23.63 (1) Derrick guylines must be secured to adequate ground anchors.

(2) Derrick guylines and ground anchors must be installed according to the requirements of the manufacturer, a professional engineer, or the *American Petroleum Institute Recommended Practice RP 4G-1992, Maintenance and Use of Drilling and Well Servicing Structures, First Edition, January 1, 1992*.

(3) Permanent ground anchors must be designed and installed so they will be effective all year round.

(4) Temporary ground anchors must be pull tested before initial use and, if they continue to be used, tested annually and whenever they may have been affected by seasonal changes.

(5) The manufacturer's specifications for the correct number of guylines and spacing must be legibly marked on a plate affixed to the derrick, or on a specification sheet posted at the rig.

(6) The prime contractor or owner must ensure that documentation is available on site showing that ground anchors meet the requirements of this Part, and that such documentation is signed by the person responsible for the adequacy of the anchors.

[am. B.C. Reg. 14/2019, App. G, s. 1.]

Drill Stem Testing, Swabbing, Cementing, Well Servicing and Stimulation

General requirements

23.64 (1) Drill stem testing procedures must conform to *Alberta Recommended Practices for Well Testing and Fluid Handling, ARP 4.1 Drill Stem Testing, June, 1993*.

(2) During drill stem testing

(a) motors and engines or other sources of ignition not required for the operation must be shut off, and

(b) motor vehicles must not be permitted within 25 m (80 ft) of the well bore.

(3) The rig manager, testing supervisor and, if required, representatives of other contractors doing work must be present to ensure that

(a) workers are trained to carry out their responsibilities during the test, and

(b) the equipment supplied is in good repair and will function as designed.

(4) If liquids are recovered during drill stem tests

(a) the liquids must be reverse circulated from the drill pipe,

(b) prior to reverse circulating, drill pipe may be pulled from the hole using test plugs on every joint of drill pipe disconnected, until well fluids are encountered at the surface, and

(c) if reverse circulation is not practicable due to a failure of the pump out sub, the drill pipe may continue to be tripped out of the hole with extreme caution, using test plugs and a mud can.

(5) If test fluid recovery is encountered during darkness

(a) the liquids recovered must be reverse circulated, and

(b) if reverse circulation is not practicable due to failure of the pump out sub, additional drill pipe must not be pulled and disconnected until daylight.

(6) Whenever oil, water or gas has been encountered during drill stem testing,

(a) tests for the presence of hydrogen sulfide must be done, and

(b) if hydrogen sulfide is found, the sour fluids encountered must be reverse circulated to a vented tank not less than 50 m (165 ft) from the well, or to a flare pit.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Snubbing operations

23.64.1 A snubbing operation must be carried out in accordance with recognized industry safe work practices.

[en. B.C. Reg. 258/2008, App. G, s. 9.]

Swabbing at night

23.65 When swabbing at night

(a) auxiliary lighting providing a minimum illumination of 54 lux (5 fc) measured 50 cm (20 in) above the travelled surface must be provided,

(b) rig lighting which is not explosion proof must be turned off,

(c) the sandline depthometer must be used to supplement the sandline flags,

(d) the sandline flags must be illuminated and acid resistant,

(e) adequately illuminated wind direction indicators must be placed at appropriate locations around the site, and

(f) a wellsite supervisor must remain on site at all times.

Gauging

23.66 A swabbing tank must have an external means of gauging its contents.

Disposal of fluids

23.67 (1) Fluids used in or resulting from swabbing must be piped directly through a degasser to a battery, skid tank, mobile trailer tank or tank truck, located not less than 50 m (165 ft) from the well bore.

(2) If fluids used in or resulting from swabbing are being piped into a tank truck the tank truck engine must be shut off, and the driver must not remain in the truck cab.

Air intake and exhaust

23.68 During well servicing

(a) the air intake and exhaust of the pump motor must be located not less than 6 m (20 ft) from the rig tank while the pump is circulating hydrocarbons, and

(b) the tank truck must be located on the far side of the rig tank from the well bore and at a distance not less than 6 m (20 ft) from the rig tank during loading and unloading.

Flow piping systems – integrity assurance program

23.69 (1) The employer must develop and implement a program for the purpose of ensuring the integrity of the flow piping systems at the worksite.

(2) In fulfilling the requirements of subsection (1), the employer must consider the conditions under which each flow piping system may operate, including corrosion factors and fluctuating temperatures and pressures, and the program must include provision for the following elements:

(a) routine inspections, non-destructive testing and pressure testing of piping and other component parts of each flow piping system, including setting out in writing, for each type of part to be inspected and tested,

(i) the inspection and testing procedures,

(ii) the frequency of inspection and testing and how the frequency is to be determined,

(iii) the criteria for rejection of a type of part and its removal from service, and

(iv) the method of determining how frequently a type of part is to be replaced, including the basis for replacement;

(b) preparing, updating and making readily available at the worksite an up-to-date document, relating to the inspections and testing referred to in paragraph (a), that identifies each part that has been inspected and tested, and sets out, for that part,

(i) the inspection and testing procedures followed,

(ii) the results of the inspection and testing, and

(iii) if a part has been rejected, the rejection criteria applied;

(c) periodic reviews and updates of the program;

(d) a system of preparing and retaining records in relation to each element of the program.

(3) The employer must assign to a qualified person responsibility for administration of the program referred to in subsection (1).

[en. B.C. Reg. 142/2017, s. 4.]

Flow piping systems – selection, installation and operation

23.69.1 The employer must ensure that

(a) each flow piping system at the worksite is

(i) selected based on the manufacturer's specifications, having regard to the system's anticipated operation, and

(ii) installed and operated in accordance with the manufacturer's instructions and specifications, and

(b) copies of all of the manufacturer's instructions and specifications in relation to the flow piping systems are readily available at the worksite.

[en. B.C. Reg. 142/2017, s. 4.]

Flow piping systems – restraint systems

23.69.2 (1) The employer must ensure that each flow piping system at the worksite is restrained by an engineered restraint system that is designed and manufactured

(a) to be used for the purpose of safely restraining the flow piping system, and

(b) to withstand the forces that may be encountered if the flow piping system fails.

(2) If a restraint system has been manufactured by a commercial manufacturer, the employer must ensure that the restraint system is installed and anchored in accordance with the instructions and specifications of that manufacturer.

(3) If a restraint system has been manufactured by the employer or another person who is not a commercial manufacturer, the employer must ensure that

(a) engineering documentation, including technical specifications and instructions for use, has been prepared and signed by the person responsible for demonstrating that the restraint system has been designed and manufactured as described in subsection (1),

(b) the restraint system is installed and anchored in accordance with that engineering documentation, and

(c) a copy of that engineering documentation is readily available at the worksite.

(4) In addition to meeting the requirements of subsection (2) or (3) (b), the employer must ensure that each restraint system is anchored at both the wellhead end and the supply vehicle end or pumping unit end, but a restraint system need not be anchored to the wellhead or to the supply vehicle or pumping unit.

(5) The employer must ensure that temporary ground anchors that are part of a restraint system are pull tested before initial use and, if they continue to be used, that they are pull tested annually and whenever they may have been affected by seasonal changes.

[en. B.C. Reg. 142/2017, s. 4.]

Flow piping systems – other requirements

23.69.3 (1) If the pressure of a flow piping system at the worksite may exceed 2 000 kPa (290 psi) during well stimulation and similar operations, the employer must ensure that

(a) those operations of the flow piping system are conducted by remote control,

(b) unauthorized workers do not enter the area between the point of discharge and the wellhead, and

(c) before the operations are started, warning signs are posted in the area of the operations stating "DANGER, NO UNAUTHORIZED WORKERS ALLOWED IN THIS AREA" or other similar language.

(2) If the pressure of a flow piping system at the worksite may exceed 3 000 kPa (435 psi), the employer must ensure that

(a) the flow piping system connections are welded or flanged or are hammer unions, and

(b) if the only connection on the wellhead is a threaded connection that is integral to the wellhead, the component parts of that threaded connection are compatible with each other.

(3) The employer must ensure that each flow piping system at the worksite is completely depressurized before a leak in a connection or fitting in the flow piping system is corrected.

(4) The employer must ensure that a person does not hammer on a pressurized flow piping system at the worksite.

(5) If workers are using liquefied gas for well stimulation, the employer must ensure that the unit that supplies the liquefied gas and the unit that pumps the liquefied gas are positioned so that the valve controls of each of those units are on the sides of each of those units that are opposite from the piping that supplies the liquefied gas to the well.

[en. B.C. Reg. 142/2017, s. 4.]

Piping, hoses and valves

23.70 (1) Only metal piping, or flexible hose designed for high pressure service, may be used between a service pump and the wellhead, and a check valve must be installed at the wellhead end of the piping.

(2) A bleedoff valve must be installed between the check valve and the wellhead.

[am. B.C. Reg. 142/2017, s. 5.]

High risk fluids

23.71 If it is necessary to replenish the pumping unit supply with high risk fluids, the filling line from an auxiliary tank must be piped directly to the suction end of the pump, and not into the pumper truck.

Pressure testing requirements

23.72 (1) The employer must ensure that, before a well service operation at the worksite commences, piping, pumps, valves, fittings and wellheads that are to be used in the operation have been

(a) hydraulically pressure tested, or

(b) if hydraulic pressure testing is not practicable, pressure tested with an inert gas,

to a pressure that is at least 10% above the maximum operating pressure of the well service operation anticipated by the well owner but not above the manufacturer's maximum pressure rating of the piping, pumps, valves, fittings or wellheads.

(2) The employer must ensure that, before a well testing or flowback operation at the worksite commences, the flow piping system from the wellhead to the first pressure control choke has been

(a) hydraulically pressure tested, or

(b) if hydraulic pressure testing is not practicable, pressure tested with an inert gas,

to a pressure that is at least 10% above the maximum operating pressure of the well testing or flowback operation anticipated by the well owner but not above the manufacturer's maximum pressure rating of the piping, pumps, valves, fittings or wellheads.

(3) The employer must ensure that documentation of the results of the testing required under subsections (1) and (2) is readily available at the worksite.

(4) The employer must ensure that, if

(a) nitrogen is being used in well stimulation, and

(b) the flow piping system that supplies the nitrogen to the well is pressure tested with nitrogen,

the nitrogen treating line is connected to the main line as close as practicable to the well.

(5) The employer must ensure that, before each flow piping system at the worksite is pressurized with low flash point hydrocarbons, the air has been purged from the flow piping system.

[en. B.C. Reg. 142/2017, s. 6.]

Hot oiling

23.73 The vent line used in hot oiling operations must discharge a minimum of 10 m (33 ft) from sources of ignition.

Bonding and grounding

23.74 During drill stem testing, swabbing, cementing, well servicing or stimulation, electrical continuity between items of equipment must be maintained and the entire system must be grounded.

Production and Plant Operations

Preventing ignition

23.75 Unless the system is designed and constructed to prevent flashback, sources of ignition in the flare pit and surrounding areas must be extinguished while a vessel is being completely drained to the flare pit and the pressure in the vessel is 35 kPa (5 psi) or less.

Blanking of lines

23.76 Pipes connecting a vessel to a flare system must be blanked off and hoses disconnected

(a) before work is performed within the vessel, and

(b) during treater refilling operations.

Retaining walls and diked areas

23.77 (1) Retaining walls and diked areas must be provided with safe access.

(2) A worker must not enter a diked area unless

(a) effective measures, including testing, have been taken to protect workers if hydrogen sulfide may be present,

(b) testing for flammable gases and vapours, oxygen deficiency and harmful air contaminants is done if there are leaks or spills that may present a hazard to workers, and

(c) testing for flammable gases and vapours is done before hot work takes place.

(3) Testing must be done for hydrogen sulfide before entry to any diked area where sour fluid is stored.

Truck loading and unloading

23.78 (1) A tank truck must be electrically bonded and grounded when loading and unloading hydrocarbons.

(2) The ground conductor required by subsection (1) must remain effectively attached until all other connections have been removed.

(3) Servicing or maintenance must not be carried out on a tank truck when loading or unloading hydrocarbons except for required greasing of the pump.

(4) Chocks must be used to secure a tank truck while loading and unloading hydrocarbons.

(5) Other vehicles must not be started or shut off within 8 m (25 ft.) of a tank truck containing flammable liquids while it is being connected or disconnected.

(6) If a tank truck is being loaded through a dome hatch and it is necessary to observe the fluid level

(a) a platform must be provided for the loader,

(b) shutoff controls must be located at the platform,

(c) illumination in accordance with the requirements of Part 4 *[General Conditions]* must be provided during hours of darkness, and

(d) the loading spout must extend to within l5 cm (6 in.) of the bottom of the tank.

[am. B.C. Reg. 222/2021, App. A, s. 6.]

Pressure relief

23.79 If a tank truck tank is pressurized as part of the unloading process

(a) written safe work procedures must be provided for and followed by the operator,

(b) the truck must be fitted with a pressure relief valve, regulator, pressure gauge and a mechanism for quickly shutting off supply to the tank, and

(c) controls must be readily accessible to the operator.

Venting of trucks

23.80 Tank trucks or loading facilities must have a system for protecting workers from hydrogen sulfide if it is present.

Wrenches

23.81 (1) Valve wrenches must be constructed to an adequate engineered design.

(2) Snipes or extensions must not be applied to valve or pipe wrenches, except by design.

Cleaning and Repairing Tanks or Vessels

Inerting

23.82 The requirement to control ignition sources during inerting operations in Part 9 *[Confined Spaces]* does not apply to the workplaces covered by this Part.

Safety harnesses

23.83 (1) If it is not practicable for a worker entering a confined space to use a lifeline due to internal piping or other obstructions, the worker must wear a full body harness.

(2) If a lifeline is not used, 2 workers must be equipped with respirators and capable of effecting a rescue if required, and stationed immediately outside the entrance to the confined space.

[am. B.C. Reg. 312/2010, App. G, s. 16.]

Welding precautions

23.84 (1) After a vessel or tank has been cleaned, and before further work is performed,

(a) the vessel or tank must be ventilated and tested for toxic and flammable substances and oxygen deficiency, and

(b) repeat tests must be made while work is in progress, as required by Part 9 *[Confined Spaces]*.

(2) If necessary to ensure the safety of workers, steam or an inert gas must be used to purge flammable substances from tankers, tanks, vessels or piping prior to any cutting or welding operations.

(3) Services must be provided through the top accessway of a tank or vessel or, if this is not practicable, the services must be protected.

(4) Equipment or fire extinguishers must not cause a hazard to workers in the tank or vessel.

Openings

23.85 Primary entry ways and ventilation openings must be effectively secured in the open position before entry into a confined space is allowed.

Electrical equipment

23.86 Electrical equipment used in confined spaces must be supplied with power through an approved ground fault circuit interrupter.

23.87 Repealed. [B.C. Reg. 348/2003, s. 7.]

Gas Sample Containers

Standards

23.88 (1) Gas sample containers must meet the requirements of *CSA Standard CAN/CSA-B339-88 Cylinders, Spheres, and Tubes for the Transportation of Dangerous Goods*.

(2) Gas sample containers must be used in accordance with *CSA Standard CAN/CSA-B340-M88, Selection and Use of Cylinders, Spheres, Tubes, and Other Containers for the Transportation of Dangerous Goods, Class 2*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Safe practices

23.89 (1) Repealed. [B.C. Reg. 381/2004, s. 19.]

(2) Valves must be screwed directly into gas sample containers.

(3) Plugs must be used in the gas sample container valves.

[am. B.C. Reg. 381/2004, s. 19.]

PART 24 – DIVING, FISHING AND OTHER MARINE OPERATIONS

Definitions

24.1 In this Part:

"altitude diving" means any dive performed over 300 m (1 000 ft) above sea level;

"atmospheric diving system (ADS)" means a diving system capable of withstanding external pressures greater than atmospheric pressure, and in which the internal pressure remains at one atmosphere, and includes a one person submarine and a one atmosphere compartment of a diving submersible;

"atmospheric pressure" means pressure at the surface of the water, normally considered to be 101.3 kPa (14.7 psi);

"bailout bottle" means an independent breathing gas supply carried by the diver, of sufficient quantity to return the diver to the surface, bell or emergency supply in the event of a malfunction of the primary breathing gas supply;

"bottom time" means the total elapsed time, rounded to the next whole minute, from the time the diver leaves the surface to the time the diver begins final ascent;

"chamber operator" means a person who has demonstrated capability in operating the controls of a recompression chamber and is knowledgeable and competent in diving tables and the application of treatment tables;

"construction diving" means any diving operation that involves burning, welding, erection, alteration, dismantling, demolition, structural maintenance and inspection, excavating, salvage, boring, blasting, concreting and the installation of any machinery or equipment;

"contaminated environment" means a workplace that contains or may contain chemical, biological or radiological material in sufficient concentration that, should any quantity of it be ingested, absorbed, adsorbed or inhaled, will likely endanger the health or safety of the worker;

"contamination reduction zone" means the area used to dress and undress divers, transfer workers from the exclusion zone, and decontaminate personnel and equipment;

"crewmember" for the purposes of sections 24.69 to 24.143, means any person who is working on a fishing vessel;

"decompression illness" means a dysfunction caused by exposure to a reduction in pressure resulting in the production of bubbles in the body;

"deep diving" means any diving operation to depths greater than 50 m (165 ft);

"dive profile" means a logged schedule of the diver's activities during any diving operation, which includes the time the surface was left, depth, decompression, repetitive dives and other information concerning the diving operations;

"dive site" means any location where a diving operation takes place including a boat, scow, float, raft or platform which is seaworthy, secure, and of sufficient size to safely accommodate all workers and equipment without overcrowding;

"diver's harness" means a harness, fitted with a positive buckling device and an attachment point for a lifeline, that will prevent any strain on the diver's mask, helmet and umbilical, that is worn by the diver and is strong enough to lift the diver from the water in an emergency;

"diver's tender" means a worker who is competent and knowledgeable in the diving apparatus being used, the diving operation in progress, emergency diving procedures and communications between diver and tender;

"diving supervisor" means a person having complete and direct responsibility for the diving operation who is knowledgeable and competent with the diving equipment, the diving operations in progress, emergency diving procedures, diving physics and physiology and medical aspects of diving;

"emergency breathing supply" means the bailout bottle carried by the diver and may include the high pressure breathing medium bottle carried on the diving stage;

"exclusion zone" means the workplace at the surface from which divers are tended during a contaminated diving operation;

"fish" means any species of animal living in water, including its eggs or roe;

"fishing vessel" means any commercial vessel used in catching fish or collecting or transporting fish for landing;

"lifejacket" means a device that,

(a) when worn correctly, provides a specified buoyancy that will turn the wearer face-up on entering the water, and will keep the wearer in this position, and

(b) is of a type of lifejacket that has the approval, and bears a mark or label indicating that approval, set out in section 7 (1) and (2) of the Small Vessel Regulations (Canada);

"lifeline" means a rope of 16 mm (5/8 in) in diameter, of polypropylene or other synthetic fibre of at least equal strength, which is secured to the diver and to a permanent fixture at the surface;

"live boating" means the support of a surface supplied diver from a vessel under way;

"lock-out submersible (or LOS)" means a self-propelled submersible fitted with a submersible compression chamber from which a diving operation can be carried out and that has a separate one atmosphere chamber from which the submersible is operated;

"master" for the purposes of sections 24.69 to 24.143, means the person in overall command of a fishing vessel;

"medical recompression" means treatment of a diver in a compressed air environment, in a recompression chamber, in accordance with established practice or medical direction, to alleviate symptoms resulting from a previous decompression;

"mixed gas" means a mixture of breathable gases other than atmospheric air;

"no decompression limit" means that in accordance with the diving table in use for the depth and duration of the dive, no decompression stop is required;

"owner" for the purposes of sections 24.69 to 24.143, means the person who holds legal title to a fishing vessel and also includes a charterer of a fishing vessel;

"personal flotation device (PFD)" means a device that,

(a) when worn correctly, provides a specified buoyancy to support a conscious person in an upright or backward leaning position, but is not designed to turn a person from a face-down to a face-up position in the water, and

(b) is of a type of personal flotation device that has the approval, and bears a mark or label indicating that approval, set out in section 7 of the Small Vessel Regulations (Canada);

"recompression chamber" means a system consisting of one or more pressure vessels for human occupancy, with associated utilities, controls and instrumentation, whose purpose is to support diving operations, hyperbaric treatment, dive simulation and/or scientific study and equipment testing;

"reserve breathing supply" means a secondary supply, other than the bailout bottle, of a breathing medium of the appropriate mixture and of sufficient quantity to enable the diver to return safely to the surface with all appropriate decompression stops;

"scuba" means self-contained underwater breathing apparatus;

"stage" means a suspended work platform such as a cage, basket or platform in which 2 divers may be lowered to or raised from an underwater worksite;

"submersible compression chamber (or SCC)" means a chamber that is intended to be submerged and that is designed to transport a person at atmospheric pressure or divers at pressures greater than atmospheric pressure from the surface to an underwater work site and back and includes the compression chamber of a diving submersible;

"support zone" means the workplace used in support of the diving operations and where the cleaning and/or disposal of diving equipment may take place;

"surface supply diving" means supplying air or a mixture of gases to a diver through a hose from the surface;

"umbilical bundle" means a combination of hoses and cable, including a lifeline or strength member attached in a manner to prevent stress on the diver's hose, which is capable of supplying a breathing mixture or other services as required such as power, heat, cooling, communications and depth (kluge) indicating hose;

"working alone" means working in circumstances where assistance would not be readily available to a crewmember if the crewmember fell overboard.

[am. B.C. Reg. 14/2019, App. E, ss. 2 and 3.]

Wharves, Docks and Mooring Floats

Ladders

24.2 Fixed ladders must be provided at every dock for access to and egress from the water, and must

(a) be spaced at intervals not exceeding 30 m (100 ft),

(b) extend from the top of the dock to at least 1 m (3.3 ft) below the lowest water level,

(c) be maintained free of barnacles and marine growth, and

(d) have their location identified by high visibility paint on the curb or bullrail.

Lifesaving equipment

24.3 (1) Appropriate lifesaving equipment must

(a) be provided and maintained for the rescue of any worker in danger of drowning, and

(b) be positioned at intervals not exceeding 50 m (165 ft) in conspicuous locations as near as practicable to the danger area.

(2) Throwing lines fitted to lifebuoys or similar equipment must be of suitable size and length and made of buoyant material.

(3) For the purposes of this section, lifesaving equipment includes lifebuoys, throwing bags, grapples, boat hooks or other equipment appropriate to the circumstances.

Curbs, bullrails, guardrails and barriers

24.4 (1) A curb or bullrail must be installed along the open sides of each float, dock, wharf, pier and similar other area where mobile equipment might be used.

(2) Each curb and bullrail must be of substantial construction and be at least 25 cm (10 in) high.

(3) Where practicable, guardrails meeting the requirements of Part 4 (General Conditions) must be installed at

(a) dangerous breaks in the continuity of a wharf, dock or pier, and

(b) dangerous corners, edges and other parts of a wharf, dock or pier.

(4) Moveable warning barriers may be used where the use of standard guardrails is impracticable.

(5) Effective warning barriers must be installed across the entrances of barge and ship loading ramps when the ramps are not in use.

[am. B.C. Reg. 185/99, s. 70.]

Markings

24.5 (1) Where circumstances require, curbs, bullrails, guardrails and barriers must be painted solid yellow, yellow and black stripes or checkers, or yellow against a suitable contrasting background.

(2) Retroreflective paint or patches must be applied to curbs, bullrails, guardrails and barriers where mobile equipment is operated at night.

[am. B.C. Reg. 185/99, s. 70.]

Rescue boat

24.6 A suitable boat must be provided and kept ready for immediate use when workers are employed in situations where a boat is necessary for rescue or evacuation.

[am. B.C. Reg. 185/99, s. 70.]

Diving Operations

General Requirements

Application

24.7 Sections 24.7 to 24.68 apply to all persons involved in any occupational diving operation.

[am. B.C. Reg. 185/99, s. 70.]

24.8 Repealed. [B.C. Reg. 312/2003, App. G, s. 3.]

Notice of project

24.9 (1) The employer must submit a notice of project for diving activity, or notify the Board by telephone, at least 24 hours before commencing a diving operation which involves

(a) construction diving,

(b) engineering inspection diving,

(c) diving in a contaminated environment,

(d) diving under ice, under or between nets, or into other areas of potential entrapment,

(e) exceeding the no-decompression limit, or

(f) the use of mixed gas other than nitrox as a breathing medium.

(2) The notice of project must indicate the date, the location, the diving equipment to be used and the scope of the diving operation.

(3) Before diving commences, a copy of the notice of project must be posted at the worksite, or if notification is provided by telephone, a written summary of that notification that contains the information required by subsection (2) must be posted at the worksite.

(4) If in an emergency it is not practicable to notify the Board prior to the start of a diving operation, the Board must be notified as soon as possible, but no later than 24 hours after the diving operation has begun.

[am. B.C. Reg. 253/2001, s. 18.]

Medical certification

24.10 (1) The employer must ensure that each diver has current medical certification, from a physician knowledgeable and competent in diving medicine, before commencing diving operations.

(2) A diver's medical certification must be

(a) established prior to entry into any commercial diving activity,

(b) renewed every 2 years up to age 39 and annually from age 40 onwards,

(c) renewed more frequently than required by paragraph (b) if clinically indicated, and

(d) re-evaluated by a physician knowledgeable and competent in diving medicine if the diver is subjected to an event or has a physical condition which may affect the diver's medical status.

(3) A copy of each diver's medical certification must be kept at the dive site.

Diver's fitness

24.11 (1) A diver must not dive if, in the opinion of the diving supervisor, the diver is incapable of functioning safely underwater.

(2) A diver must be medically re-examined, as required by the diving supervisor, to ensure that the diver is fit to dive.

(3) Divers, standby divers and divers' tenders must not participate in any diving operation if they are physically or emotionally fatigued or if they have consumed drugs or alcohol which would impair their ability to work safely.

Training

24.12 (1) A diver must not dive unless the diver has been thoroughly trained in the theory and use of the diving apparatus that the diver will be using.

(2) The training required by subsection (1) must be provided by a person or agency acceptable to the Board.

(3) All divers, diving supervisors and divers' tenders must be trained in CPR, oxygen (O_2) therapy, and diving accident management.

Evidence of competency

24.13 (1) The employer and diving supervisor must ensure that all divers

(a) meet the minimum requirements of *CSA Standard Z275.4-97 Competency Standard for Diving Operations*, and

(b) are competent to use the diving equipment that will be used in the diving operation.

(2) A certified copy of competency documents for each diver must be available for inspection on site by an officer.

[am. B.C. Reg. 312/2003, App. A, s. 4.]

Diving logs

24.14 (1) Each diver must have, and keep for 2 years after the last entry, a personal log containing a record of all

(a) dives carried out, and

(b) medical recompressions and other exposures to a compressed air/mixed gas environment.

(2) The records in a diver's personal log must be in chronological order and each dive must be verified and initialled by the diving supervisor.

(3) The records for each dive must include

(a) the type of diving apparatus used and the gas medium breathed,

(b) the times the diver left the surface, reached and left the bottom, and returned to the surface,

(c) the maximum depth attained,

(d) the surface interval, if a repetitive dive,

(e) the decompression tables that were used,

(f) the date the dive was undertaken, and

(g) remarks (such as name of employer, unusual incidents).

(4) The diving supervisor must keep a separate log of the diving operation containing the information required by subsection (3).

(5) The diving supervisor's log must be filed with the employer upon completion of the operation.

(6) All current logs must be available at the dive site for inspection by an officer.

Dive site equipment

24.15 When diving is in progress, the dive site must be provided with

(a) a current list of facilities with hyperbaric chambers capable of providing emergency treatment,

(b) the locations and phone numbers of the nearest hospital and available emergency assistance,

(c) if the no-decompression limit is to be exceeded, a 16 mm (5/8 in) synthetic line, marked at appropriate intervals for decompression stops, weighted and of sufficient length to reach the maximum depth for the dive,

(d) a first aid kit and an oxygen (O_2) therapy unit with sufficient capacity to reach emergency medical services,

(e) one complete set of acceptable dive tables and one copy of this Regulation,

(f) an appropriate means for entering and leaving the water, including a means for rescuing an incapacitated diver,

(g) equipment to provide voice communication with emergency services personnel, and

(h) other equipment as may be required by the Board.

[am. B.C. Reg. 348/2003, s. 8.]

Lifelines

24.16 Divers tended on a lifeline must wear a suitable diver's harness and lifelines must be

(a) securely fastened to the diver's harness, but not attached to the diver's weight belt,

(b) free of knots and splices,

(c) secured to a permanent fixture at the surface, and

(d) tended at all times by a diver's tender.

Safe diving procedures

24.17 (1) Every employer engaged in diving operations must prepare and publish a set of safe diving procedures which include

(a) safe procedures and health requirements for each type of diving in which workers may be involved,

(b) all the procedures to meet the applicable requirements of this Regulation, and

(c) emergency, evacuation, and rescue procedures.

(2) The safe diving procedures must be kept at the dive site, readily available to all workers, and available for inspection by an officer.

Diving supervisor's worksite duties

24.18 (1) Each diving operation must be directed by a diving supervisor whose duties include

(a) evaluating the hazards,

(b) planning the dive,

(c) briefing the crew,

(d) ensuring that all needed equipment is available and in good working condition, and

(e) controlling the entire diving operation.

(f) Repealed. [B.C. Reg. 312/2003, App. G, s. 4 (c).]

(2) The diving supervisor must prepare a detailed plan of the diving operations which must be given to the worksite employer before diving commences.

(3) The diving supervisor must

(a) remain in the dive area during diving operations,

(b) delegate the supervisory responsibilities to another diving supervisor, if required to enter the water, and

(c) suspend diving operations if conditions become unsafe.

[am. B.C. Reg. 312/2003, App. G, s. 4.]

Crew briefing

24.19 Immediately before each dive, the diving supervisor must brief all persons involved in the diving operations about

(a) the hazards which may be encountered during the dive,

(b) the intended duration of the dive and the maximum depth to be reached,

(c) decompression procedures to be followed,

(d) the location of other divers,

(e) the work to be done,

(f) specific recall signals, and

(g) emergency procedures to be followed.

Diver's responsibilities

24.20 (1) Each diver must satisfy the diving supervisor that the diver fully understands the signals and procedures in use.

(2) Except in the case of accidental or unavoidable circumstances, a diver must not remain or be permitted to remain at any depth longer than the maximum time planned for that dive.

(3) In any diving operation the diver must inform the tender or diving partner and must proceed to the surface under any of the following conditions:

(a) if any malfunction in diving gear occurs;

(b) on receipt of any signal which cannot be understood;

(c) at the onset of any symptoms of physical or psychological distress;

(d) on receipt of a recall signal;

(e) when the main air supply is near depletion;

(f) if the emergency apparatus/air supply is being used;

(g) in the event of excessive leakage to a dry type of diving suit which may affect the diver's buoyancy.

[am. B.C. Reg. 116/2022, App. B, s. 14.]

Diving tables

24.21 (1) Diving operations, repetitive dives, and treatment of divers, must be carried out in strict accordance with tables and procedures published or approved by the Defence and Civil Institute of Environmental Medicine (Canada).

(2) Sport diving tables must not be used.

(3) Diving computers must not be used in place of primary diving tables.

[am. B.C. Reg. 312/2003, App. A, s. 5; 14/2019, App. F, s. 3.]

Decompression procedures

24.22 (1) During diving operations which require decompression, a reserve breathing supply with sufficient reserve to bring divers to the surface with appropriate decompression stops must be available and ready for immediate use.

(2) Whenever planned dives will exceed the no-decompression limit

(a) the divers must be equipped with a bailout bottle containing a minimum 1.4 m^3 (50 ft^3) of breathing medium,

(b) an approved double lock hyperbaric chamber in operable condition with overriding outside controls and appropriate air facilities must be located so that travel time by available transport will not exceed 30 minutes,

(c) if the planned decompression time will exceed 15 minutes the hyperbaric chamber must be on the dive site, and

(d) a chamber operator must be available on the surface at the dive site or at the hyperbaric chamber.

(3) A dive must not exceed the no-decompression limit if the hyperbaric chamber is occupied.

Diver care and transportation

24.23 (1) The diving supervisor must ensure that on completion of decompression, the diver remains under observation in the general area of the hyperbaric chamber for a period of time to ensure the well-being of the diver.

(2) If a diver shows signs of pressure related illness or requires therapeutic recompression, the diving supervisor must ensure that treatment is initiated immediately and a physician knowledgeable in hyperbaric medicine is notified.

(3) If it is necessary to transport a diver suffering a diving ailment by air, provision must be made to furnish the patient with oxygen and the flight altitude must be prescribed by the attending physician or the diving supervisor.

Medical alert tag

24.24 A diver must wear a medical alert tag or bracelet stating the diver's status and indicating the possibility of decompression sickness or other diving illness, for at least 24 hours after completion of diving.

Hyperbaric chambers

24.25 Hyperbaric chambers must conform to standards acceptable to the Board and must be provided with

(a) a means of extinguishing a fire,

(b) an oxygen monitoring device,

(c) an oxygen delivery system with a built-in breathing system (BIBS), and

(d) an adequate supply of air, including an emergency reserve supply to complete any decompression and treatment procedures.

Breathing mediums

24.26 (1) If air is used as the respirable medium in diving operations it must meet the requirements of *CSA Standard CAN/CSA-Z275.2-92, Occupational Safety Code for Diving Operations*, with the exception of the water vapour standard.

(2) The air supplied by compressors for breathing air in diving operations must be tested at least annually to ensure that it meets the requirements of subsection (1).

(3) If mixed gases in other than the normal proportions of respirable air are used for breathing by divers, the diving supervisor must ensure that

(a) the diving procedures and schedules of work, and decompression are in accordance with the recommendations of a competent authority, and

(b) prior written authorization has been received from the Board to use mixed gases other than nitrox and that the authorization is kept on the dive site, available for inspection by an officer.

(4) The following requirements apply to operations using nitrox mixes:

(a) procedures and mixes must be acceptable to the Board;

(b) all workers involved with nitrox diving must be trained in the procedures to a standard acceptable to the Board;

(c) proof of training and a copy of the operating procedures must be readily available at each dive site.

Breathing apparatus

24.27 (1) All breathing apparatus and associated delivery systems must be correctly installed and tested for function before each use.

(2) The breathing apparatus, accessories and applicable service records must be available for inspection by an officer, and service records must be available to workers on the dive site.

[en. B.C. Reg. 312/2003, App. E, s. 25.]

Compressor intake

24.28 The compressor intake must be located so that the breathing medium will not be contaminated by gasoline vapours, engine exhausts, or other objectionable impurities.

[am. B.C. Reg. 312/2003, App. B, s. 56.]

Gauges and meters

24.29 (1) Gauges and meter equipment must be tested every 6 months or whenever a malfunction is detected, and errors found must be corrected without delay.

(2) If the equipment is removed from service, the specific problem with the equipment must be identified.

Warning devices

24.30 When any diving activity is taking place, warning devices must be displayed as follows:

(a) marker buoys must be used to display warning devices (flags, lights, lamps, or flares) to define the limits of the diving area, and boats other than those connected with the diving activity must be kept clear of the diving area;

(b) in navigable waters the recognized diver's flag must be flown or prominently displayed;

(c) flags and signals used for work site identification must only be displayed during active diving operations.

[am. B.C. Reg. 312/2003, App. E, s. 26.]

Rescue boat

24.31 If divers are operating from floating equipment, a suitable power boat, ready for immediate use, must be available on the dive site, for rescue or escape.

Hoists

24.32 (1) If a hoisting device is required to lower or raise the diver it must not be used for any other purpose until the diver has been recovered.

(2) All directions to the hoist operator must be given by either the diver, the diver's tender or the diving supervisor.

Standby diver

24.33 (1) A standby diver must be

(a) on the dive site and able to render assistance at all times when diving operations are in progress,

(b) trained and equipped to operate at the depths and circumstances of the dive, and

(c) able to enter the water in one minute.

(2) A standby diver on the surface may also perform other duties provided such duties do not compromise the standby diver's ability to promptly render emergency assistance to the divers.

(3) When the diving supervisor can assure that the depth of the dive will not exceed 18 m (60 ft) and no hazards are present, 2 divers in the water may act as standby for each other provided that

(a) each diver is free swimming,

(b) the no-decompression limit is not exceeded,

(c) each diver has been trained to effectively rescue a diver in trouble and has demonstrated this ability to the diving supervisor's satisfaction,

(d) the divers are in close proximity to each other at all times so as to be able to effect rescue, and

(e) the divers are in constant audio communication with each other and the surface, or when using scuba they maintain constant physical or visual contact with each other.

(4) In subsection (3), **"no hazards are present"** includes, but is not limited to, a dive made in good weather conditions, where there are no appreciable currents, where there is good underwater visibility, no possibility of entanglement with underwater objects, and good access and egress to and from the dive site.

Incident investigation reports

24.34 (1) An incident investigation report meeting the requirements of the OHS provisions of the *Workers Compensation Act* must be submitted to the Board as soon as possible if any of the following occurs during a diving operation:

(a) injury or death;

(b) convulsions or serious impairment of consciousness during or after a dive;

(c) decompression illness;

(d) lung overpressurization;

(e) any serious mishap, even though the diver escapes actual injury, or a series of events which render equipment or procedures suspect, before, during, or after the diving operation.

(2) The facts must be recorded as soon after the incident as possible, and the report must include the dive profile and all relevant details.

(3) In the event of any diving incident,

(a) the Board reserves the right to take temporary possession of and investigate all equipment related to the diving operation, and

(b) the equipment must not be tampered with or altered in any manner until authorization has been received from the Board.

[am. B.C. Regs. 185/99, s. 71; 195/2015, s. 2; 279/2019, App. D, s. 4.]

Scuba Diving

Communication

24.35 Each diver using scuba must

(a) employ the buddy system whereby 2 divers remain, at all times, in constant visual or physical contact and both surface immediately if they lose that contact,

(b) be tended on a lifeline by a diver's tender,

(c) be in constant audio communication with the surface, or

(d) be tethered, with a minimum 10 mm (3/8 in) diameter synthetic line or equivalent, to an identifiable float located on the surface that is constantly visually monitored from a location that allows immediate assistance to be rendered in case of emergency.

Minimum crew

24.36 (1) A minimum crew of 3 workers must be present on each dive site if the dive will

(a) not exceed 18 m (60 ft) in depth, and

(b) remain within the no-decompression limit, and

(c) be made where it is known there is no hazard of entrapment.

(2) When using the buddy system, a minimum of 2 divers must be present, and a third person must stay on the surface as a supervisor/tender.

(3) When using lifelines, floats or audio communication with the surface,

(a) a standby diver and a supervisor/tender must be on the surface, and

(b) a tender must tend only one scuba diver unless the divers are on floats, or have lifelines and effective 3-way voice communication, in which case the tender may tend 2 divers.

(4) When a dive does not meet the requirements of subsection (1), then

(a) a standby diver and a supervisor/tender must stay on the surface, and

(b) if not using the buddy system, a single diver must be tethered and carry a bailout bottle.

Restrictions on scuba

24.37 (1) Scuba must not be used in underwater construction, burning, welding, salvage operations, demolition, jetting and suction dredging or other diving operations in which the diver

(a) may be entrapped,

(b) does not have free access to the surface,

(c) may be exposed to a contaminated environment, or

(d) could be adversely affected by hazardous underwater or surface work activities or conditions which could be alleviated if the diver were using surface supplied air.

(2) Divers using scuba must use open circuit apparatus providing a breathing medium by an automatic demand flow system.

(3) Recirculating apparatus may only be used with prior permission of the Board.

(4) Divers using scuba must not dive to depths greater than 40 m (130 ft) unless prior authorization has been received from the Board.

Equipment

24.38 (1) Each diver using scuba must use all of the following equipment appropriate to the diving conditions and as specified by the diving supervisor:

(a) a scuba unit complete with a quick release harness and a submersible pressure gauge;

(b) a face mask and swimming fins;

(c) a suitable knife and a depth gauge;

(d) an exposure suit and an inflatable buoyancy device;

(e) a weight belt with quick release buckle;

(f) an underwater watch with elapsed time indicator;

(g) an underwater light when night diving;

(h) other equipment as may be required by the Board.

(2) If a risk of entrapment is present, one complete spare set of underwater breathing apparatus with fully charged cylinders must be assembled at the dive site.

(3) When diving in open water, each free swimming diver must carry an audible or visual locating device such as a whistle, flare, or strobe light.

Testing cylinders

24.39 (1) Each scuba cylinder must be hydrostatically tested at least once every 5 years and visually inspected internally at least once a year.

(2) The hydrostatic test date must be affixed to the cylinder and entered into the maintenance log.

(3) The visual inspection date must be entered in the maintenance log.

Surface Supply Diving

Minimum crew

24.40 (1) For each diving operation where planned dives do not exceed 40 m (130 ft) or the no-decompression limits, and where there are no hazards present, a minimum dive crew of 3 workers must be present, one of whom must be a diver's supervisor/tender, one a diver and one a standby diver on the surface unless the standby is permitted by section 24.33 (3) to serve as a standby in the water.

(2) If the planned dive exceeds 40 m (130 ft), or the no-decompression limits, or there are hazards present, the dive crew must consist of a minimum of 4 workers: a diving supervisor, a diver's tender and 2 divers, one of whom must be a standby diver on the surface.

Diver's tender

24.41 (1) Each surface supplied diver must be tended, hands on, by a separate diver's tender.

(2) If audio communications are used, one tender may monitor 2 divers.

Diver's equipment

24.42 (1) Diver's boots must be patterned, constructed, and fastened to prevent their loss underwater.

(2) Every diver must wear a separate weight belt outside the diving dress, which

(a) if released must result in the diver achieving positive buoyancy, and

(b) must be inspected daily before commencing a diving operation.

(3) Non-return valves must be

(a) fitted to all surface supplied diving helmets, masks, and hookah diving systems, and

(b) checked before commencing a diving operation.

(4) Each diver must wear a bailout system and carry a suitable knife.

(5) When divers use a stage to carry out decompression diving, the stage must have an independent source of emergency breathing gases sufficient to complete any needed decompression of the diver.

Compressors

24.43 Compressors used to supply air to divers must be

(a) capable of maintaining a supply of air equal to at least double the volume of air required,

(b) capable of developing pressure at least 25% greater than the anticipated pressure requirement, and

(c) automatic in operation.

[am. B.C. Reg. 312/2003, App. D, s. 25.]

Volume tanks

24.44 Air from a low pressure compressor must be discharged into a volume tank of at least 100 litres (22 imp gal) capacity, fitted with

(a) a no-return valve on the inlet side,

(b) a pressure gauge,

(c) an over pressure relief valve, and

(d) a drain cock capable of draining any fluids.

Breathing air filters

24.45 Air supplied from a volume tank must be passed through a filtration system consisting of at least a water trap, a particulate filter and a chemical vapour absorbent.

Manifolds and fittings

24.46 (1) The manifold system must be provided with

(a) a primary and a reserve air supply capable of being isolated from each other, and

(b) piping of a diameter which ensures an adequate flow of gas to the diver(s).

(2) The reserve supply must provide a sufficient quantity of breathing mixture to enable the diver to return to the surface and undergo all "in water" decompression.

(3) If there is no voice communication with the diver, each surface supplied air system must be equipped with an audible low pressure alarm situated so that it can be heard by the diving supervisor and the diver's tender.

Breathing gas lines

24.47 (1) All stationary breathing air or mixed gas lines must be guarded against damage or interference.

(2) Each diver's air or mixed gas line must be fitted with a valve that is

(a) readily accessible,

(b) guarded against interference,

(c) clearly marked to identify the diver it services, and

(d) under the care and control of the diver's supervisor or diver's tender.

(3) Each diver's air or mixed gas line must be fitted with a pressure gauge to indicate the pressure being delivered to the diver, and the gauge must be located downstream of the diver's supply valve so that the dial and figures are clearly visible to the diver's tender.

(4) All hoses, pipes, couplings and other fittings used in any air or mixed gas line for divers must be designed and suitable for their intended use.

(5) Hoses must be protected from kinking and be capable of sustaining the required flow rates and pressures for the system used.

(6) Every umbilical must incorporate a lifeline to prevent stress on the hose or diver's helmet, and the umbilical and lifeline must be attached to a suitable diver's harness.

(7) The standby diver's umbilical and lifeline must be of sufficient length to reach the operating diver.

Deep Diving

General requirements

24.48 Divers who take part in deep diving operations must

(a) be tethered to the work base by a breathing gas umbilical,

(b) have effective two-way voice communications with the surface, and

(c) be supplied with a mixed gas breathing medium.

Hyperbaric chamber

24.49 An approved double lock hyperbaric chamber must be on the dive site and in operable condition.

Transportation to the underwater worksite

24.50 (1) If the depth of the dive is less than 73 m (240 ft) and the total "in water" ascent time is less than 1 hour, the diver must be transported to and from the underwater worksite by a stage, bell, or submersible compression chamber (SCC).

(2) If the depth or time exceeds the conditions in subsection (1) an SCC must be used to transport the diver.

(3) The standby diver must be stationed at the surface, or if an SCC is used the standby diver must be in the SCC.

(4) The diving supervisor must have a means of

(a) monitoring the depth of the diver and the SCC,

(b) controlling the pressures of the breathing mixtures supplied to each diver and the standby diver, and

(c) continuously analyzing the breathing mixture.

Rest periods

24.51 (1) If non-saturation diving techniques are used in a deep diving operation, the diving supervisor must ensure there is a rest period of at least 24 continuous hours following the completion of decompression.

(2) If saturation diving techniques are used, the diving supervisor must ensure that

(a) if the dive is to a depth of 150 m (500 ft) or less, a diver does not exceed 4 hours in the water and 4 hours as an attendant in the SCC,

(b) if the dive is deeper than 150 m (500 ft), a diver does not exceed 3 hours in the water and 3 hours as an attendant in the SCC, and

(c) in any 24 hour period, there is a rest period of at least 12 continuous hours after the applicable time limits in paragraphs (a) and (b) have been reached.

(3) A diver must not commence another dive within 7 days of completion of decompression following a saturation dive unless at the discretion of a physician knowledgeable and competent in diving medicine.

Submersible Compression Chambers (SCC) and Lock-Out Submersibles (LOS)

Standards

24.52 Submersible Compression Chambers and Lock-Out Submersibles must meet the requirements of *CSA Standard Z275.1-93, Hyperbaric Facilities*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

General equipment requirements

24.53 Each SCC and LOS must be equipped to permit the transfer of persons under pressure into and from a surface compression chamber, and must have

(a) doors and hatches that act as pressure seals, and that may be opened from either side,

(b) valves, gauges, and other fittings necessary to control the internal pressure and to clearly indicate the internal and external pressures,

(c) spring loaded pressurization and main exhaust valves which will close when not held in the open position,

(d) a reserve breathing mixture for persons occupying or working from the SCC or LOS, which must be protected against inadvertent operation and be capable of being brought on line from within the SCC or LOS without outside assistance,

(e) a two-way voice communication system capable of continuously recording and saving the previous 4 hours of conversation, with emergency backup capabilities, through which a person in the SCC or LOS can communicate with the diving supervisor,

(f) heating and lighting equipment including emergency backup illumination,

(g) first aid equipment, without towelettes,

(h) a hoisting device to bring an unconscious or injured diver into the chamber,

(i) a standby diver's umbilical bundle which must be 3 m (10 ft) longer than the diver's umbilical bundle,

(j) a strobe light that is activated while the chamber is in the water,

(k) an emergency locating device with a surface receiver operating at 37.5 kHz,

(l) instruments to monitor temperature, oxygen and carbon dioxide levels within the chamber, and for an SCC the instrument readings must be readable on the surface,

(m) primary and emergency carbon dioxide scrubbers,

(n) hull integrity valves mounted on all gas and other penetrations into the submersible compression chamber,

(o) a secondary source of power for the diving systems and equipment that can be rapidly brought on line in the event the primary energy source fails, and

(p) in a diving operation in which an SCC is used, a sufficient quantity of breathing mixture to meet the needs of the occupants of the chamber for at least 24 hours.

[am. B.C. Reg. 348/2003, s. 9.]

Design

24.54 Each SCC and LOS must be of a design that

(a) allows divers to enter and exit without difficulty,

(b) allows at least 2 divers, equipped and dressed for the diving operation, to be seated within, and

(c) in case of emergency, allows a diver within to disconnect or shear the primary lifting cable and the umbilical bundle.

Lifting gear

24.55 (1) Each SCC and LOS must be used in association with lifting gear that

(a) enables the SCC or LOS to be lowered to the depth at which the diving operation is to be carried out, without excessive lateral, vertical, or rotational movement taking place,

(b) is provided with, in addition to the primary lifting cable, a tag rope so designed that in the event of the primary cable breaking during an air water interface transfer, the tag rope will permit the SCC or LOS to descend only to a calm area immediately below the turbulent wave zone, and

(c) is provided with a secondary means of being returned to the surface in the event of failure of the main lifting gear.

(2) If use of the secondary means in subsection (1) (c) involves shedding weights, the controls for shedding weights must be operable from within the SCC or LOS and must incorporate a means to prevent the weights from being shed inadvertently.

Secondary lifting equipment

24.56 (1) An LOS must be provided with

(a) a secondary lifting eye or similar device of at least the same strength as the primary lifting eye, and

(b) a secondary lifting cable that is readily available and of at least the same strength as the primary lifting cable, and is compatible with the secondary lifting eye or similar device.

(2) An SCC must be provided with

(a) a secondary lifting eye or similar device of at least the same strength as the primary lifting eye, and

(b) a secondary lifting cable that is attached and capable of returning the SCC to the surface.

(3) An alternative means must be provided to return the SCC or LOS to the deck.

Diving system procedures

24.57 (1) The diving supervisor must ensure that a lock-out diving operation is not conducted from a submersible unless

(a) the submersible is negatively buoyant on the bottom or positively secured to the work site,

(b) the diving supervisor is on board the submersible and present in the one atmosphere chamber during the lock-out operation, and

(c) a standby diver is monitoring the lock-out operation from the submersible's compression chamber and is dressed and equipped to immediately carry out rescue operations in the event of an emergency.

(2) The diving supervisor must ensure that lock-out submersible and atmospheric diving system operations are not conducted unless

(a) a backup unit with sufficient depth capabilities to effect a rescue is available for use in the event of an emergency,

(b) the on-board life-support system of the LOS is capable of sustaining life for a period of time that would enable the backup unit to reach the site of the diving operation and effect rescue, and

(c) a breathing mixture is provided that will meet the needs of the occupants for at least 48 hours.

Atmospheric Diving Systems (ADS)

Registration

24.58 The employer must ensure that an atmospheric diving system meets the requirements for registration with Lloyd's Registry of Shipping, the American Bureau of Shipping, or Det Norske Veritas.

General equipment requirements

24.59 An ADS must have

(a) valves, gauges, and other fittings necessary to control the internal pressure, and to clearly indicate the internal and external pressures,

(b) a reserve breathing mixture for persons occupying the ADS, a mixture which is protected against inadvertent operation and is capable of being brought on line from inside, without outside assistance,

(c) a two-way voice communication system, capable of continuously recording and saving the previous 4 hours of conversation, and with emergency backup capabilities, by which a person inside the atmospheric diving system can communicate with the diving supervisor,

(d) lighting equipment including emergency backup illumination,

(e) first aid equipment,

(f) heating equipment and thermal protection for all occupants,

(g) a strobe light that can be activated while the ADS is in the water,

(h) an emergency locating device with a surface receiver operating at 37.5 kHz,

(i) instruments to enable occupants to monitor the temperature, oxygen and carbon dioxide within the atmospheric diving system,

(j) a primary and an emergency means of scrubbing carbon dioxide,

(k) a device which allows the occupant to disconnect or shear the primary lifting cable and the umbilical bundle in an emergency, and

(l) in addition to the primary lifting cable, a tag rope or secondary lifting method so designed that in the event of the primary cable breaking during an air water interface transfer, the tag rope or secondary method will permit the ADS to descend only to a calm area immediately below the turbulent wave zone.

Secondary means of surfacing

24.60 (1) The employer must ensure that atmospheric diving operations are not conducted unless the atmospheric diving system is provided with a secondary means of returning to the surface in the event the main lifting gear fails.

(2) If use of the secondary means involves shedding weights, the controls for shedding weights must be operable from within and must incorporate a means to prevent the weights from being shed inadvertently.

Secondary lifting equipment

24.61 An ADS must be provided with

(a) a secondary lifting eye or similar device that is of at least the same strength as the primary lifting eye, and

(b) a secondary lifting cable that is readily available and of at least the same strength as the primary lifting cable, and is compatible with the secondary lifting eye or device.

Altitude Diving

General procedures

24.62 (1) The diving supervisor must ensure that altitude diving operations are conducted in accordance with acceptable altitude diving tables.

(2) Altitude diving procedures must address

(a) acclimatization at the dive site to reduce the diver's nitrogen load caused by the reduced atmospheric pressure at the increased altitude,

(b) the equivalent ocean depth in order to select the appropriate tables at the altitude,

(c) accurate methods of calculating the diver's actual depth of dive,

(d) calculation of the reduction in ascent rate due to the increase in altitude, and

(e) post dive travel considerations.

Specific Diving Hazards

Hazardous mechanisms

24.63 Before a diver enters the water all hazardous mechanisms must be

(a) secured against inadvertent movement, and

(b) locked out as required by Part 10 (De-energization and Lockout).

Intakes, pipes and tunnels

24.64 (1) If a diver is required to approach or enter the intake of any pipe, tunnel, duct, or similar installation the diver must be provided with the means to distinguish the specific intake from any others in the vicinity.

(2) A diver must not enter the water until flow through the intake is stopped and the intake mechanism is locked out, and the flow must not be restarted until the diver has left the water.

(3) If divers are required to approach a hazardous mechanism, a pressure differential structure, or the intake of any pipe, tunnel, duct or similar installation, the divers must use only surface-tethered diving equipment with effective two-way voice communication with the surface; if required to enter, they must use only surface supplied diving equipment with effective two-way voice communication with the surface.

Exceptional hazards

24.65 Additional dive team members with independent equipment and capable of effecting rescue must be on the dive site whenever diving operations incur exceptional risk of entrapment of a diver or loss of the diver's life support system.

Contaminated environments

24.66 (1) Before diving commences in a contaminated environment, an operational plan must be devised that is available at the dive site and provides for

(a) identification of the contaminants,

(b) special clothing or equipment to be used,

(c) potential adverse health effects to persons and special medical precautionary measures,

(d) identification of the exclusion zone, contamination reduction zone and the support zone, and protective clothing and equipment to be used in them,

(e) measures to be followed by personnel when moving from one zone to another,

(f) special first aid measures associated with exposure to the specific contaminants, and

(g) emergency telephone numbers to secure qualified assistance within adequate response times.

(2) The diving supervisor must ensure that

(a) emergency breathing apparatus is provided for surface support personnel if there is risk of inhaling dangerous contaminants during the diving operations,

(b) suitable apparel and equipment is worn by surface support personnel to prevent exposure to contaminants,

(c) an appropriate means of safely decontaminating personnel is available at the dive site,

(d) the dive site has the means and facilities to safely dispose of contaminated clothing and equipment,

(e) all diving systems and equipment exposed to the contaminant are inspected for deterioration before each dive,

(f) diaphragms of the first and second regulators and associated exhaust valves are inspected for deterioration before each dive, and

(g) contaminated diving systems and equipment are not removed from the dive site unless authorized by the diving supervisor, and are not used in any subsequent diving operation unless found free of all contaminants.

(3) A minimum crew of 4 workers must be present at a diving operation in a contaminated environment, one of whom must be a diver, one a diving supervisor, one a diver's tender, and one a standby diver.

(4) The diving supervisor must ensure that scuba is not used for diving operations in a contaminated environment.

(5) For dives in contaminated environments, the diving supervisor must ensure that divers use surface supply equipment including

(a) a surface supply diving helmet designed and suitable for such work,

(b) a totally enclosed diving suit, made of nonabsorbent material which mates to the helmet with a positive seal and locking device,

(c) a two-way voice communication system, and

(d) protective devices, where practicable, to minimize contaminant exposure to diving equipment.

(6) For dives in contaminated environments, the following zones must be established on site:

(a) a dedicated contamination reduction zone with suitable means to decontaminate personnel;

(b) a dedicated support zone with suitable means to decontaminate or dispose of apparel and equipment;

(c) a dedicated exclusion zone to handle the contaminant, accessible only to authorized and protected personnel.

(7) For dives in contaminated environments,

(a) workers entering the exclusion zone must wear appropriate personal protective equipment,

(b) workers must enter and leave the exclusion zone only through the contamination reduction zone, and

(c) no food, drink, or tobacco may be taken into the exclusion zone or the contamination zone.

Live Boating

General requirements

24.67 Live boating diving operations must be conducted only

(a) during daylight hours,

(b) in appropriate weather, current and sea conditions,

(c) from a vessel with the necessary maneuverability to ensure the diver's safety, and which is under the control of a competent master, and

(d) within the no-decompression limits.

Procedures

24.68 The diving supervisor must ensure that

(a) a procedure or device is in place that will prevent the diver's lifeline or umbilical bundle from becoming entangled in the boat's propulsion system,

(b) the diver's tender is in a position of unobstructed view to the vessel master and the diving supervisor,

(c) the propulsion system is disengaged when the diver enters or leaves the water,

(d) the diver's umbilical or lifeline is monitored, hands on, by a diver's tender,

(e) there is continuous voice communication,

(f) no more than 70% of the diver's umbilical or lifeline is deployed during the diving operation,

(g) the vessel master is competent to perform live boating operations and is under the direct control of the diving supervisor during diving operations, and

(h) all dive crew members are familiar with their duties and responsibilities with respect to the diver's safety, and they may terminate the dive if the diver's safety is jeopardized.

Fishing Operations

General Requirements

Application

24.69 (1) Sections 8.26 and 8.28 do not apply to a crewmember of a fishing vessel.

(2) Section 8.29 does not apply to an owner or master of a fishing vessel.

(3) Sections 8.27 and 8.30 do not apply to a personal flotation device (PFD) or lifejacket used on a fishing vessel.

[en. B.C. Reg. 14/2019, App. E, s. 4.]

Compliance with standards

24.70 All fishing vessels must

(a) be maintained in seaworthy condition, and

(b) be built in accordance with the applicable regulations under the *Canada Shipping Act, 2001*.

[am. B.C. Reg. 222/2021, App. C, s. 2.]

Owner and master responsibilities

24.71 (1) An owner of a fishing vessel must ensure that all machinery and equipment on board a fishing vessel is capable of safely performing the functions for which it is used.

(2) The owner must ensure that major modifications to a fishing vessel do not adversely affect the stability of the vessel.

(3) The master of a fishing vessel must ensure that

(a) machinery and equipment is properly maintained and functions safely during the voyage, and

(b) any replacement equipment meets the requirements of this Part.

Documentation

24.72 The owner of every fishing vessel must provide documentation on board, readily accessible to crewmembers, which describes

(a) engine room instructions,

(b) vessel characteristics, including stability,

(c) the location and use of firefighting equipment, and

(d) the location and use of emergency equipment, including radio equipment.

Instruction

24.73 (1) Before the start of each fishing season, the master must ensure that each crewmember is instructed in the operational characteristics of the fishing vessel including

(a) the location and use of safety equipment, engine room components and controls,

(b) deck equipment and rigging,

(c) navigation equipment and electronic aids,

(d) fishing equipment and its use, including safe work practices for each fishery the vessel will be engaged in,

(e) procedures for anchoring the vessel,

(f) the location and use of emergency equipment, including firefighting and radio equipment, and

(g) escape routes in the event of fire.

(2) The master must ensure as far as is reasonably practicable, that the instruction required by subsection (1) results in each crewmember being able to apply the information as needed to protect the crewmember's health and safety.

(3) New crewmembers joining the vessel must be instructed in accordance with the requirements of this section at the time that they join the vessel.

Emergency procedures

24.74 (1) The master must establish procedures and assign responsibilities to each crewmember to cover all emergencies including

(a) crewmember overboard,

(b) fire on board,

(c) flooding of the vessel,

(d) abandoning ship, and

(e) calling for help.

(2) The master must ensure that drills are conducted at the start of each fishing season, when there is a change of crew, and at periodic intervals to ensure that crewmembers are familiar with emergency procedures.

Crewmember responsibility

24.75 Crewmembers must take all reasonable precautions necessary to ensure the health and safety of themselves and other persons on board the fishing vessel.

Vessel preparation

24.76 Before leaving on a voyage the master must ensure that the fishing vessel is capable of safely making the passage, due consideration being given to

(a) the seaworthiness of the vessel,

(b) the stowage and securing of all cargo, skiffs, equipment, fuel containers and supplies,

(c) ballasting, and

(d) present and forecast weather conditions.

Reporting injuries

24.77 (1) Crewmembers must report all injuries to the master, without delay.

(2) The master must report to the owner of the fishing vessel all injuries that required medical aid and record all injuries in the vessel log book.

Unsafe conditions

24.78 (1) A crewmember who observes an unsafe or harmful condition or situation must immediately report it to the master.

(2) The master must ensure that action is taken, without delay, to correct an unsafe or harmful condition or situation.

24.79 Repealed. [B.C. Reg. 348/2003, s. 10.]

Slipping and tripping hazards

24.80 (1) All work areas must be kept

(a) clear of unnecessary obstructions, and

(b) free of slipping and tripping hazards.

(2) Decks must have non-skid surfaces except in those locations where a smooth deck is required for handling fish.

(3) Tools and equipment must be securely stowed when not in use.

Guarding of equipment

24.81 The owner of a fishing vessel must ensure that moving parts of power operated equipment are, where practicable, fitted with effective guards if such parts constitute a danger to crewmembers.

Inspection of rigging

24.82 The master must ensure that all rigging is maintained and inspected regularly to ensure that it is able to safely carry out the work for which it was designed.

Access and egress

24.83 Every portable ladder or gangway between a fishing vessel and shore, between vessels, or when used on board a vessel must be designed and rigged to provide safe access and egress.

Protection from falling

24.84 (1) Crewmembers must be protected from falling overboard by means of grabrails, siderails, handrails, guardrails or personal fall protection equipment.

(2) Crewmembers working aloft or on deck during adverse weather conditions must tie off to a lifeline to prevent falling.

Deck openings

24.85 (1) Deck openings and hatches on a fishing vessel must be

(a) equipped with an effective means of securing them, and

(b) closed and secured when it is not essential to the fishing operation that they be open.

(2) When deck openings and hatches are required to be open for ventilation or other purposes, they must be marked and guarded.

De-energization

24.86 (1) The maintenance and repair of machinery or equipment on board a fishing vessel must only be carried out when the power source has been de-energized and effectively secured to prevent inadvertent startup.

(2) If it is essential that equipment remain operational during the maintenance process, the master must establish a procedure to prevent injury from contact with moving or energized parts.

(3) The main engine must be shut off whenever a diver is conducting work underwater in proximity to the vessel.

Equipment control devices

24.87 (1) Winches, drums, capstans, and similar equipment on board a fishing vessel must have at least one master on/off control that is readily accessible on deck.

(2) Drum pedals and other types of hold-to-run controls must not be bypassed or otherwise rendered ineffective.

Braking devices

24.88 Winches and drums capable of freewheeling must be fitted with an effective braking device.

Illumination

24.89 All work areas on board a fishing vessel must be sufficiently illuminated to enable work to be done safely.

Ventilation

24.90 All crew spaces on fishing vessels must be provided with an adequate supply of fresh air either by passive or mechanical means.

Propane installations

24.91 Propane, liquefied petroleum gas (LPG) and compressed natural gas (CNG) installations used for appliances on fishing vessels must be in conformity with the *NFPA Standard 302-1989, Fire Protection Standard for Pleasure and Commercial Motor Craft*.

Galley requirements

24.92 (1) Galley stoves on fishing vessels must be fitted with rails or other means to restrain the movement of cooking utensils, and to prevent inadvertent contact by crewmembers.

(2) Stove fuel supply tanks and lines must

(a) be fitted with a shutoff valve at the tank, and

(b) not be located directly above the stove.

(3) Galley stoves must

(a) be secured to prevent movement, and

(b) have sufficient clearance to permit the effective cleanup of oil and grease.

Requirements for sensors and alarms

24.93 (1) An owner of a fishing vessel must ensure that a heat sensor, connected to an alarm system, is installed

(a) above the galley stove or near the stove pipe, and

(b) in proximity to the engine exhaust.

(2) The owner must ensure that a water level sensor, connected to an alarm system, is installed

(a) in the machinery space bilges, and

(b) in the shaft log or lazarette.

(3) The owner must ensure that main engines are fitted with low oil pressure and high temperature sensors connected to an alarm system.

(4) The owner must ensure that a sensor and alarm system is installed if the Board considers this necessary to detect leaks of potentially explosive fuel used in engines or appliances.

(5) The owner must ensure that an audible marine grade carbon monoxide sensor, connected to an alarm system where practicable, is installed in crew quarters.

[am. B.C. Reg. 243/2006, s. 13.]

24.94 and **24.95** Repealed. [B.C. Reg. 312/2003, App. D, s. 26.]

Protection against cold

24.96 Crewmembers working in freezers must wear clothing, including headgear, footwear and gloves, that provides adequate protection against cold.

When crewmember must wear a personal flotation device (PFD) or lifejacket

24.96.1 A crewmember must wear a personal flotation device (PFD) or lifejacket on a fishing vessel if the crewmember is

(a) on board the fishing vessel, in the case of a fishing vessel that has no deck or deck structure, or

(b) on the deck or in the cockpit of the fishing vessel, in the case of a fishing vessel that has a deck or deck structure.

[en. B.C. Reg. 14/2019, App. E, s. 5.]

Crewmember working alone

24.96.2 If a crewmember is working alone on a fishing vessel, the crewmember must wear a lifejacket that

(a) has a minimum buoyancy of 93 N (21 lbs), and

(b) is inherently buoyant or automatically inflatable.

[en. B.C. Reg. 14/2019, App. E, s. 5.]

Record of inspection and maintenance

24.96.3 If crewmembers use inflatable personal flotation devices (PFDs) or automatically inflatable lifejackets on a fishing vessel, the owner or the master must keep a record of all inspections made and maintenance performed on those PFDs or automatically inflatable lifejackets.

[en. B.C. Reg. 14/2019, App. E, s. 5.]

Crewmember overboard

24.97 (1) Every fishing vessel must carry, for each crewmember, one immersion suit meeting standards acceptable to the Board.

(2) The master of a vessel must ensure that there is suitable equipment on board and that procedures have been developed which will enable the prompt recovery of a crewmember overboard.

Davits

24.98 The owner of a fishing vessel must ensure that all moveable davits are fitted with an effective locking device.

Communication

24.99 The master must ensure that effective procedures are developed to communicate between the bridge and all work areas on the vessel.

Ozone generators

24.100 The owner of a fishing vessel must ensure that ozone generating equipment is installed and operated in accordance with standards acceptable to the Board.

Loading and offloading

24.101 The master of a fishing vessel carrying fish or cargo must establish safe procedures for the loading and offloading of fish and cargo.

Work areas and operations

24.102 All work areas must be arranged and operations organized to minimize the potential for injury to crewmembers, including strains and sprains.

Proper lifting

24.103 The master must ensure that crewmembers are instructed in and use proper lifting techniques.

Requirements for Specific Fishing Operations

Gillnetting

Salmon

Drums

24.104 The owner of a gillnet vessel must ensure that drums are fitted with

(a) an effective ratchet device for picking up the net under heavy strain,

(b) an effective brake to maintain control when setting out the net, and

(c) a hold-to-run control.

[am. B.C. Reg. 243/2006, s. 14.]

Pin rollers

24.105 (1) The owner must ensure that pin rollers are of a design to prevent their inadvertent lifting.

(2) The master must ensure that pin rollers are maintained to prevent their inadvertent lifting.

Herring

Work areas and safeguarding

24.106 (1) Work areas on herring skiffs and punts must be arranged to prevent contact with moving equipment such as beaters and live rollers.

(2) The owner of a herring gillnet vessel must ensure that drums are fitted with

(a) an effective ratchet device for picking up the net under heavy strain and an effective brake to maintain control when setting out the net, and

(b) a hold-to-run control or other equally effective safeguard to stop the drums if a worker becomes entangled in the net or lines being wound in by the drum.

[en. B.C. Reg. 243/2006, s. 15.]

Fouled propellers

24.107 The master of a herring skiff or punt must develop safe work procedures to direct crewmembers in how to clear fouled propellers.

Hauling net anchors

24.108 The owner must ensure that, when required by fishing conditions, herring skiffs and punts are fitted with mechanical means for hauling net anchors.

Brailers

24.109 Crewmembers must keep clear of brailers when unloading herring.

Towing skiffs

24.110 The master of a fishing vessel that will tow a skiff or punt must develop safe procedures for towing in all weather conditions including

(a) a means of self bailing,

(b) the use of tow line shock absorbers, and

(c) the use of drogue devices to prevent sheering and overtaking.

Handlining

Gloves

24.111 Crewmembers must wear hand protection acceptable to the Board when handlining.

Longlining

Setting procedures

24.112 The master must establish safe procedures for setting gear to prevent crewmembers being caught by hooks and other gear.

Knives

24.113 Each setting and hauling station must be equipped with a knife capable of cutting the gear.

Guarding

24.114 Drums and automated systems using longlines with hooks attached must be guarded or shielded to prevent inadvertent contact with hooks.

Hoisting device

24.115 If there is a potential for injury to crewmembers, a hoisting device must be provided and used to lift large fish.

Seining

General Requirements

Hairpins and ringstrippers

24.116 (1) Seiners built after January 1, 1995 must be fitted with ringstrippers.

(2) The owner of a seiner must ensure that hairpins or ringstrippers on the vessel are designed and constructed so that crewmembers will not be endangered by their use.

(3) The master of a seiner must, if applicable, develop safe hairpin or ringstripper operating procedures which include

(a) consideration of sea and tide conditions,

(b) crew coordination,

(c) communication,

(d) spooling gear,

(e) drumming, and

(f) hoisting and securing.

Spooling gear

24.117 (1) The owner of a seiner must ensure that pursing winches and leads are positioned to permit proper spooling.

(2) Crewmembers must keep clear of the stern spooling gear while it is in operation.

Lifting the bag

24.118 (1) Whenever drawing the bag over the stern presents a risk of equipment failure or vessel instability, alternate procedures such as splitting the lift or brailing must be developed and used.

(2) Crewmembers must stay clear of the bag when it is brought over the stern roller.

Drum operation

24.119 Crewmembers operating the drum must not leave the controls while the drum is turning.

Brailing

24.120 The master of a seiner carrying a brailer must ensure that crewmembers are instructed in safe brailing procedures.

Purse rings

24.121 Purse rings on all seine nets must be secured to the middle of the ring strap to prevent rings from falling when fleeting the net through the power block.

Pumps

24.122 (1) The owner of a seiner carrying pumping gear must ensure that it is capable of pumping fish from the bottom of the bunt while on a set.

(2) If 2 or more fishing vessels are working in a team, the pumping gear may be shared between the vessels.

Drying up

24.123 The master of a seiner must establish a safe drying up procedure which includes

(a) communication on deck and between vessels,

(b) coordination of activities,

(c) securing the net,

(d) hoisting fleets, and

(e) the means of jettisoning the set should the vessel become endangered.

Power blocks

24.124 (1) Power block haul lines must be minimum 25 mm (1 in) diameter double braid nylon or equivalent.

(2) The master must ensure that power block haul lines are inspected frequently and maintained in safe condition.

(3) Haul lines must be shackled to the power block.

(4) A power block must be equipped with an effective safety line when suspended above the deck.

Seine Skiffs

Communication

24.125 The master of a seiner must ensure there is an effective means of communication between the vessel and the skiff during towing operations.

Skiff design

24.126 (1) Decks and floors of skiffs must be non-skid.

(2) Rails and sides of skiffs must be maintained free of protrusions that could snag the net.

Equipment stowage

24.127 Lines and other necessary equipment in skiffs must be securely stowed to prevent slipping and tripping.

24.128 Repealed. [B.C. Reg. 14/2019, App. E, s. 6.]

Engine exhaust

24.129 The owner must ensure that the exhaust system for an engine in a powered skiff

(a) directs the exhaust away from crewmembers, and

(b) is shielded to prevent burns.

Capsize protection

24.130 (1) Towposts in skiffs must be designed and installed to minimize the potential for capsizing.

(2) Power skiffs must be operated in a manner that eliminates the danger of capsizing from backlash in the net.

Beachline Operations

Instruction

24.131 (1) The master of a salmon seiner must ensure that only trained and adequately supervised crewmembers are permitted to tie up to the beach during fishing operations.

(2) The training required in subsection (1) includes instruction in

(a) proper knots,

(b) assessing the tie-up,

(c) beachline straps,

(d) communication,

(e) tying and untying procedures, and

(f) cutting the strap.

Tie-up sites

24.132 Beach tie-up sites must be selected with due regard for the health and safety of crewmembers, consideration being given to terrain, wind and sea conditions.

Personal protective equipment

24.133 Crewmembers engaged in beach tie-ups must

(a) wear appropriate gloves and footwear meeting the requirements of the Board, and

(b) carry a knife capable of cutting the beachline or strap.

Night operations

24.134 The master of a salmon seiner must not conduct beach operations during darkness unless

(a) crewmembers are properly trained in night-time procedures,

(b) crewmembers in the skiff wear high visibility apparel,

(c) the vessel has the capability of adequately illuminating the work area, and

(d) an effective means of communication is established between the skiff and the seiner.

Trap Fishing

Master's responsibility

24.135 The master must ensure that the stability of the fishing vessel is not compromised by

(a) the number of traps loaded on the vessel, and

(b) the manner in which the traps are loaded.

Securing traps

24.136 Traps must be secured to prevent inadvertent swinging or other movement during setting and hauling.

Lifelines

24.137 Crewmembers working on the stern setting black cod traps must be tied off with a safety belt or harness, and lifeline, both meeting standards acceptable to the Board.

Trawling

Safe work procedures

24.138 (1) The master must establish safe work procedures for shooting and hauling trawls.

(2) When shooting the trawl, crewmembers must stay clear of the net once the cod end is overboard.

(3) When hooking up and unhooking trawl doors on the davits, crewmembers must stay clear of pinch points.

(4) The master must establish a safe fleeting procedure.

Securing areas and equipment

24.139 (1) Open stern ramps must be roped off or otherwise guarded except when the area must be open for trawling operations.

(2) Beams must be secured to prevent inadvertent movement when attaching or detaching plumb staffs.

(3) Trawl doors and otter boards must be secured to davits when not in use.

(4) Shrimp and fish boxes must be secured to prevent inadvertent movement.

Splitting straps

24.140 All trawl cod ends must be fitted with splitting straps.

Trolling

Trolling poles

24.141 Trolling poles and stabilizer poles must be fitted with safety straps or other devices to limit their downward travel and to lock them in the down position.

Gurdy brakes

24.142 Gurdy braking devices must be maintained in good working order.

Cockpit covers

24.143 Cockpits must be equipped with covers and an adequate means to secure them in adverse weather.

PART 25 – CAMPS

Note:

The Health Authorities administer the Industrial Camps Regulation.

If Board officers, in the course of their duties, find conditions in camps which may be of concern under the Industrial Camps Regulation, the matter will be referred to the attention of the appropriate officials.

Queries with regard to the administration of the Industrial Camps Regulation should be directed to the officials responsible for its administration.

[am. B.C. Reg. 222/2021, App. C, s. 3.]

PART 26 – FORESTRY OPERATIONS AND SIMILAR ACTIVITIES

Definitions

26.1 In this Part:

"active falling area" means the area within a 2 tree length radius of where a faller or mechanized falling equipment is located and equipped so as to be able to fall timber;

"backspar" means a tree rigged up at the back end of a work area to support a skyline;

"bucker" means a worker who cuts up trees on the ground;

"bunk" means a horizontal bolster that is fitted with a stake at each end;

"butt rigging" means a system of swivels, shackles, links and hooks which connect the haulback and mainlines and to which chokers are fastened;

"cable logging" means a yarding system employing winches, blocks and cables;

"dangerous tree" means a tree that is a hazard to a worker due to

(a) its location or lean,

(b) its physical damage,

(c) overhead conditions,

(d) deterioration of its limbs, stem or root system, or

(e) any combination of the conditions in paragraphs (a) to (d);

"faller" means a worker who manually falls trees;

"federal cargo securement standard" has the same meaning as "Standard" in section 35.02 (1) *[adoption of National Safety Code for Motor Carriers Standard 10 – Cargo Securement]* of the Motor Vehicle Act Regulations;

"forestry operation" means a workplace where work is done in relation to silviculture or harvesting trees, including constructing the means of access and transporting the harvested trees to a facility where they are processed or from which they are exported;

"haulback" means the cable used to outhaul the rigging or grapple when yarding;

"high lead" means a cable logging system in which running line lead blocks are placed on a lift tree or on a mobile yarder to provide lift to the logs during yarding;

"highway" has the same meaning as in the *Motor Vehicle Act*;

"holding wood" means the hinge of wood left uncut between the back of the undercut and the backcut;

"intermediate spar" means a tree used to elevate a skyline between the yarder and the backspar in a multispan skyline system;

"landing" means the area to which logs are

(a) yarded or skidded for sorting, and

(b) prepared for transportation;

"lift tree" means a tree rigged to support running lines;

"log load" means a load of one or more logs on a log transporter;

"log stack" means a log load that is a separate pile of logs of at least 2 layers lying lengthwise or crosswise on a log transporter;

"log transporter" means any of the following that is used on roads to transport logs, other than within a fully enclosed container:

(a) a truck;

(b) a trailer;

(c) a truck and trailer assembly;

"mainline" means the cable used to yard logs;

"mobile equipment" means mobile equipment as defined in section 16.1;

"mobile yarder" means a logging machine mounted on wheels, tracks or skids, incorporating a vertical or inclined spar, tower or boom used in a skyline, slackline, modified slackline, high lead, or grapple cable logging system;

"molly hogan" means a single strand of wire rope rolled into a circle with 6 complete wraps that may be used as a temporary method of connecting the eye splices of 2 lines of the same size or in pin shackles to replace the cotter pin;

"multiple-employer workplace" has the same meaning as in section 13 of the *Workers Compensation Act*;

"prime contractor" has the same meaning as in section 13 of the *Workers Compensation Act*;

"qualified arborist" means a person who

(a) has knowledge, through training or a combination of education and training, of

(i) tree-climbing activities, and

(ii) tree-climbing systems,

(b) has experience

(i) engaging in tree-climbing activities, and

(ii) using tree-climbing systems, and

(c) has, as appropriate to the work being done, knowledge, through training or a combination of education and training, of and experience

(i) pruning, repairing or maintaining trees, or

(ii) taking down trees in pieces or taking down parts of trees;

"sapling" means an immature tree that ordinarily would not be harvested;

"skidding" means moving logs by the use of mobile equipment that travels while the logs are being dragged;

"skyline" means a cable on a yarder that supplies lift for yarding lines, blocks, rigging, carriage and logs;

"slackline" means a skyline that can be tensioned at the operator's discretion;

"spar" means a tree or mast on which rigging is hung for a cable logging system;

"strawline" means a small diameter cable used in rigging up or moving larger cables or blocks;

"tiedown" means chain, wire rope, synthetic rope or webbing, together with a tensioning device, that is

(a) placed over a log load on a log transporter, and

(b) attached to one or more anchor points on the log transporter;

"trainee arborist" means a person undergoing on-the-job training under the direct supervision of a qualified arborist;

"transportation route", in relation to a log transporter, means a route taken by the log transporter from the place where it is first loaded with logs to the place where its load of logs is fully off-loaded;

"tree-climbing activities" means any of the following work activities:

(a) climbing a tree for the purpose of a work activity described in paragraph (b);

(b) doing any of the following while in a tree:

(i) pruning, repairing or maintaining a tree;

(ii) taking down a tree in pieces;

(iii) taking down parts of a tree;

"tree-climbing system" means the equipment a person relies on for support and security while engaging in tree-climbing activities, including a harness, climbing lines and lanyards;

"turn" means one or more logs that are skidded or yarded to the landing at one time;

"wrapper" means chain, wire rope, synthetic rope or webbing, together with a tensioning device, that is

(a) wrapped securely around a log load on a log transporter, and

(b) not attached to the log transporter;

"yarding" means moving logs by the use of mobile or other equipment that does not travel while the logs are being moved.

[am. B.C. Regs. 20/2008, App. A, s. 2; 9/2017, App. N, s. 1; 279/2019, App. D, s. 5; 207/2021, App. B, s. 1; 222/2021, App. F, s. 1.]

General Requirements

Prime contractor requirements for forestry operations

26.1.1 If the owner of a forestry operation enters into an agreement referred to in paragraph (a) of the definition of "prime contractor" in section 13 of the Act designating a person to be the prime contractor for a workplace, the owner must ensure that

(a) the person designated

(i) is qualified to be the prime contractor in respect of that workplace, and

(ii) has the authority necessary to fulfill the responsibilities of prime contractor under the Act, including, without limitation, authority over any employer, worker or other person who may be carrying out the work of the owner at the workplace, and

(b) not more than one person holds the designation of prime contractor for that workplace at any given time.

[en. B.C. Reg. 20/2008, App. A, s. 3; am. B.C. Reg. 279/2019, App. D, s. 6.]

Multiple-employer workplace

26.1.2 (1) This section applies to a multiple-employer workplace in a forestry operation.

(2) Before starting any activity that is likely to create a hazard for an independent operator or a worker of another employer, the person intending to carry out the activity must notify the prime contractor.

[en. B.C. Reg. 20/2008, App. A, s. 3.]

Planning and conducting a forestry operation

26.2 (1) The owner of a forestry operation must ensure that all activities of the forestry operation are both planned and conducted in a manner consistent with this Regulation and with safe work practices acceptable to the Board.

(2) Every person who has knowledge and control of any particular activity in a forestry operation must ensure that the activity is both planned and conducted in a manner consistent with this Regulation and with safe work practices acceptable to the Board.

(3) The planning required under this section must

(a) include identification of any work activities or conditions at the workplace where there is a known or reasonably foreseeable risk to workers,

(b) be completed before work commences on the relevant activity, and

(c) be documented at the time of planning.

(4) If, after any planning referred to in subsection (3), there is a change in the workplace circumstances, including the work activities and the conditions of the workplace, and the change poses or creates a known or reasonably foreseeable risk to workers that was not previously identified, then

(a) the plan must be amended to identify and address the risk and provide for the health and safety of the workers at the workplace, and

(b) the amendment must be documented as soon as is practicable.

[en. B.C. Reg. 20/2008, App. A, s. 4.]

Planning and conducting activities involving trees other than a forestry operation or tree-climbing activities

26.2.1 (1) The employer must ensure that work activities at the workplace that involve pruning, repairing, maintaining, bucking or manually falling trees, taking down trees in pieces or taking down parts of trees are

(a) planned in accordance with this section, and

(b) conducted in accordance with the plan.

(2) Subsection (1) does not apply in relation to

(a) work activities carried out in a forestry operation, or

(b) tree-climbing activities.

(3) The planning required under this section must

(a) identify the hazards and risks associated with the work activities to be performed,

(b) identify how the hazards and risks will be eliminated or minimized to the lowest level practicable,

(c) be completed and communicated to each worker involved in the work activities before the work activities commence, and

(d) be documented at the time of planning.

(4) If, after planning takes place under subsection (3), there is a change in the workplace circumstances, including the work activities and the conditions of the workplace, and the change poses or creates a known or reasonably foreseeable hazard or risk to workers that was not previously identified, the employer must ensure that

(a) the plan is amended to identify

(i) the hazard or risk, and

(ii) how the hazard or risk will be eliminated or minimized to the lowest level practicable,

(b) the amendment to the plan is communicated to each affected worker before the amendment is implemented, and

(c) the amendment to the plan is documented as soon as practicable.

[en. B.C. Reg. 207/2021, App. B, s. 2.]

Training

26.3 (1) Every worker in a forestry operation must receive the training necessary to safely perform the worker's duties.

(2) The requirements of subsection (1) are deemed to have been met with regard to duties of a type performed before April 15, 1998 if

(a) the worker performed the duties regularly for at least 2 years prior to that date, and

(b) the duties performed were documented by April 15, 1999.

(3) Records must be kept, in a form and manner acceptable to the Board, of the training provided in subsection (1).

(4) On request of a worker, a copy of the records under subsection (3) that pertain to the worker must be provided to the worker.

[am. B.C. Reg. 20/2008, App. A, s. 5.]

Forestry operation fire fighting

26.3.1 (1) Workers in a forestry operation who fight a forest fire must be

(a) trained in their fire fighting duties in accordance with a standard acceptable to the Board, and

(b) physically capable of performing their duties safely and effectively.

(2) Training must be provided annually to every worker who is required to fight forest fires and records must be kept of the training provided to each worker.

(3) Except under emergency conditions, a worker who is fighting a forest fire must wear

(a) long pants and a long sleeved shirt made of cotton, wool, denim or flame resistant material, or

(b) other protective clothing appropriate to the hazards to which the worker may be exposed.

[en. B.C. Reg. 20/2008, App. A, s. 6.]

Notice of project

26.4 (1) This section

(a) applies to a workplace in a forestry operation where the work is expected to last more than 5 working days, but

(b) does not apply where the work is limited to

(i) timber cruising,

(ii) forestry road or cutblock layout, or

(iii) surveying.

(2) Not more than 30 days and not fewer than 24 hours before the start of work at a workplace, the owner for whom the work is being done must ensure that a notice of project is provided to the nearest Board office.

(3) If it is necessary to do immediate work in order to prevent injury to workers or damage to property, work on the project may commence immediately, and the owner for whom the work is being done must ensure that a notice of project is provided to the nearest Board office at the earliest possible time.

(4) A notice of project under subsection (2) or (3) must be provided in a form and manner acceptable to the Board.

[en. B.C. Reg. 20/2008, App. A, s. 7.]

Initial safety meeting

26.5 (1) In this section, **"new work location"** means a work location in a forestry operation where the crew of workers has not previously worked.

(2) Before a crew of workers starts work in a new work location, a crew safety meeting must be held to inform the workers of any known or reasonably foreseeable risks in that location and the actions to be taken to eliminate or minimize those risks.

(3) If a worker did not attend the crew safety meeting under subsection (2) for a new work location, before starting work in that location, the worker must receive a safety orientation that covers any known or reasonably foreseeable risks in that location and the actions taken to eliminate or minimize those risks.

(4) Records must be kept of the crew safety meetings and safety orientations provided under subsections (2) and (3).

[en. B.C. Reg. 20/2008, App. A, s. 7.]

26.6 Repealed. [B.C. Reg. 20/2008, App. A, s. 7.]

Highly visible clothing

26.7 (1) Highly visible outer clothing that meets the requirements of Part 8 must be worn by a worker in a forestry operation if

(a) the worker may be endangered by any moving equipment or line,

(b) the worker's location must be routinely checked, or

(c) the worker is involved in harvesting trees at night.

(2) Safety headgear worn by a worker in a forestry operation must be a high visibility colour that contrasts with the background against which the worker is working.

[en. B.C. Reg. 20/2008, App. A, s. 7.]

Climbing equipment

26.7.1 (1) In this section, **"climber"** means a worker in a forestry operation who climbs trees or wooden spars at the workplace.

(2) Unless a climber uses other equipment acceptable to the Board, a climber must use

(a) a safety belt,

(b) a climbing rope or strap, and

(c) climbing spurs.

(3) If a climber must disconnect the climbing rope or strap in order to move by an obstacle, the climber must use a second climbing rope or strap to ensure continuous protection while passing the obstacle.

(4) Before a climber begins a climbing activity, a written climber rescue plan must be developed and communicated to all persons associated with the climbing activity.

(5) If a climber rescue plan requires another climber,

(a) a duplicate set of climbing equipment must be available for immediate use at the climbing work site, and

(b) the other climber must be available to carry out any required rescue.

(6) If, with respect to a climber, there is a possibility of a climbing rope or strap being severed in the conditions present at a climbing work site, then

(a) the rope or strap must be made of material that cannot be severed, or

(b) the climber must use a second climbing rope or strap.

(7) Climbing equipment used by a climber must be maintained in good order.

(8) A climber must inspect the climbing equipment before each use to ensure it is in good order.

[en. B.C. Reg. 20/2008, App. A, s. 8; am. B.C. Reg. 207/2021, App. B, s. 3.]

Weather conditions

26.7.2 When weather conditions create a hazard for a worker in a forestry operation, additional precautions must be taken as necessary for the safe conduct of the work.

[en. B.C. Reg. 20/2008, App. A, s. 8.]

Cutting cables

26.8 A hammer or axe must not be used to cut wire rope, unless designed for that purpose.

26.9 Repealed. [B.C. Reg. 312/2003, App. D, s. 28.]

Metal in saw logs

26.10 A spike, drift bolt, nail, or any other metal must not be left in any recoverable log.

Dangerous trees

26.11 (1) If it is known or reasonably foreseeable that work will expose a worker to a dangerous tree,

(a) the tree must be felled, or

(b) a risk assessment of the tree must be undertaken by a person who has completed a training program acceptable to the Board.

(2) If a risk assessment under subsection (1) determines that a tree poses a risk to a worker, the recommendations made in the risk assessment for eliminating or minimizing the risk must be implemented before the work referred to in that subsection starts.

(3) Despite subsections (1) and (2), if work in a forestry operation is to be carried out in an area that has more than 500 dangerous trees per hectare, the Board may

approve a request to work without felling or assessing all the dangerous trees if, before the work starts,

(a) a person who has completed a training program acceptable to the Board conducts a risk assessment of a representative sample of the dangerous trees, and

(b) any recommendations made in the risk assessment for eliminating or minimizing the risks are implemented.

[en. B.C. Reg. 20/2008, App. A, s. 9.]

26.12 Repealed. [B.C. Reg. 312/2003, App. A, s. 57.]

Tree-Climbing Activities

Application

26.12.0.1 Sections 26.12.0.2 to 26.12.0.6 apply in relation to tree-climbing activities at a workplace other than a forestry operation.

[en. B.C. Reg. 207/2021, App. B, s. 5.]

Requirements respecting tree-climbing activities

26.12.0.2 (1) The employer must ensure that only a qualified arborist or trainee arborist engages in tree-climbing activities at the workplace.

(2) Before a qualified arborist or trainee arborist engages in tree-climbing activities at the workplace, the employer must

(a) ensure that a qualified arborist determines that each tree that is intended to be climbed is able to withstand the loads intended to be imposed on it by

(i) the tree-climbing activities, and

(ii) the work activities to be performed on the ground in the area around the tree, or around other trees, that relate to the tree-climbing activities,

(b) ensure that

(i) a tree-climbing plan is prepared by a qualified arborist or trainee arborist in accordance with section 26.12.0.3 (1) for the trees that a qualified arborist or trainee arborist intends to climb and determines are able to withstand the loads described in paragraph (a) of this subsection, and

(ii) the tree-climbing plan, as documented under section 26.12.0.3 (1) (c), is communicated to each worker involved in the tree-climbing activities or the work activities described in paragraph (a) (ii) of this subsection, and

(c) if the tree-climbing plan referred to in paragraph (b) is prepared by a trainee arborist, ensure that the plan is approved by a qualified arborist.

[en. B.C. Reg. 207/2021, App. B, s. 5.]

Tree-climbing plan

26.12.0.3 (1) In preparing a tree-climbing plan referred to in section 26.12.0.2 (2) (b), a qualified arborist or trainee arborist must,

(a) for each tree that is intended to be climbed or that may be impacted by the tree-climbing activities,

(i) visually assess and identify the hazards and risks associated with

(A) the structure of the tree, including the shape, lean, root collar, roots, stems, trunk and branches,

(B) the recurring patterns of tree failure associated with the species of the tree, such as rot, root damage or stem damage,

(C) the tree-climbing activities, and

(D) the work activities to be performed on the ground in the area around the tree, or around other trees, that relate to the tree-climbing activities, and

(ii) identify how the hazards and risks identified under subparagraph (i) will be eliminated or minimized to the lowest level practicable,

(b) for each tree that is intended to be climbed, identify

(i) the tree-climbing system to be used in climbing the tree,

(ii) the type and location of the initial anchor point to be used in the tree,

(iii) the name and duties of each worker involved in the tree-climbing activities or the work activities described in paragraph (a) (i) (D),

(iv) the appropriate personal protective equipment to be used by each worker involved in the tree-climbing activities or the work activities described in paragraph (a) (i) (D),

(v) an effective means of communication to be used between the qualified arborist or trainee arborist, as applicable, and the workers involved in any work activities described in paragraph (a) (i) (D), and

(vi) the emergency response, evacuation and rescue procedures to be used in the event of an equipment malfunction, a fall, an injury or the incapacity of a qualified arborist or trainee arborist to self-rescue when engaging in the tree-climbing activities, and

(c) document the information described in paragraphs (a) (ii) and (b).

(2) If, after preparing a tree-climbing plan in accordance with subsection (1), a qualified arborist or trainee arborist becomes aware of a known or reasonably foreseeable hazard or risk described in subsection (1) (a) (i) that was not previously identified, the qualified arborist or trainee arborist must

(a) amend the tree-climbing plan so it identifies how the hazard or risk will be eliminated or minimized to the lowest level practicable,

(b) communicate the amendment to each affected worker before the amendment is implemented, and

(c) document the amendment as soon as practicable.

[en. B.C. Reg. 207/2021, App. B, s. 5.]

Tree-climbing procedures

26.12.0.4 A qualified arborist or trainee arborist engaging in tree-climbing activities must

(a) assess and determine that each anchor point or other point of securement is suitable for the loads to be imposed on it before using it,

(b) ensure each climbing line of the tree-climbing system

(i) uses at least one anchor point or other point of securement in the tree,

(ii) uses independent anchor points or other points of securement, if practicable, and

(iii) is positioned at each anchor point or other point of securement in such a way that the climbing line will not move away from, though the climbing line may slide through, the anchor point or other point of securement,

(c) position the tree-climbing system in a manner that minimizes the risk of the qualified arborist or trainee arborist falling and colliding with an object while swinging on a climbing line in a pendulum-like motion,

(d) tie a stopper knot at the end of each climbing line of the tree-climbing system,

(e) before accessing the tree, be secured to the tree by the tree-climbing system and remain secured until the work is completed and the qualified arborist or trainee arborist has returned to the ground,

(f) operate a cutting tool only when tied into the tree with

(i) a climbing line or lanyard, and

(ii) a second means of securement, such as another climbing line or lanyard, and

(g) engage in the tree-climbing activities in accordance with the parts of the tree-climbing plan described in section 26.12.0.3 (1) (a) (ii) and (b) (i), (ii) and (v).

[en. B.C. Reg. 207/2021, App. B, s. 5.]

Rescue

26.12.0.5 The employer must ensure that a qualified arborist or trainee arborist engaging in tree-climbing activities can be promptly rescued in accordance with the procedures described in section 26.12.0.3 (1) (b) (vi) that relate to the tree that is climbed.

[en. B.C. Reg. 207/2021, App. B, s. 5.]

Tree-climbing equipment

26.12.0.6 (1) The employer must ensure that a tree-climbing system

(a) consists of pieces of equipment that are suitable for their use in the tree-climbing system and compatible with other pieces of equipment in the tree-climbing system,

(b) is sufficient to support any loads likely to be imposed on it,

(c) is kept free from substances and conditions that could contribute to the deterioration of the equipment, and

(d) is not used for any purpose other than climbing.

(2) The employer must ensure that a tree-climbing system is inspected by a qualified arborist before the tree-climbing system is first used on each work shift.

(3) The employer must ensure that each piece of equipment in a tree-climbing system is removed from service

(a) as specified by the manufacturer of the equipment, or

(b) if the equipment is defective.

(4) The employer must ensure that all of a tree-climbing system is immediately removed from service if one or more pieces of equipment in the tree-climbing system arrest a fall.

(5) The employer must ensure that, if a piece of equipment in a tree-climbing system is removed from service under subsection (3) or all of a tree-climbing system is removed from service under subsection (4), the piece of equipment or the tree-climbing system, as applicable, is not returned to service until it has been inspected and certified safe for use by the manufacturer or its authorized agent or by a professional engineer.

[en. B.C. Reg. 207/2021, App. B, s. 5.]

Equipment Operation

Equipment capabilities

26.12.1 (1) Any equipment designed for a specific function in a forestry operation or adapted for use in a forestry operation must be capable of performing safely the functions for which it is being used.

(2) The requirements of subsection (1) are met if the equipment is used

(a) in accordance with the manufacturer's instructions,

(b) as specified by a professional engineer, or

(c) in a manner acceptable to the Board.

(3) Mobile equipment used for lifting or hoisting logs is exempt from the requirements of section 16.31.

[en. B.C. Reg. 20/2008, App. A, s. 10; am. B.C. Reg. 139/2021, App. D, s. 11.]

Radio controlled equipment

26.12.2 In a forestry operation, any equipment that is controlled by a remote control device must be equipped with a "fail safe" or "stop" mechanism that becomes operational if the remote control device fails.

[en. B.C. Reg. 20/2008, App. A, s. 10.]

Non-slip floors and controls

26.13 Foot controls, floors, steps and similar surfaces where workers in a forestry operation walk or stand must be constructed of, or covered with, a non-slip material suitable for the footwear worn.

[en. B.C. Reg. 20/2008, App. A, s. 11.]

Equipment operator protections

26.13.1 (1) Protective guards must be provided and used on a self-loading log transporter or similar equipment unless

(a) it is not practicable to do so, and

(b) the absence of guards does not pose a hazard to the equipment operator.

(2) The heel bar on the operator's side of the loader boom of a self-loading log transporter must be equipped with a deflector shelf and must not be used for heeling logs.

(3) If pushing or pulling the boom too far on logging equipment could cause the backstop to crush the equipment operator's cab, boom stops must be installed on the equipment.

[en. B.C. Reg. 20/2008, App. A, s. 12.]

Maintaining operator vision

26.13.2 Log handling equipment must not be moved with a load lifted higher than is necessary to provide unobstructed vision for the equipment operator.

[en. B.C. Reg. 20/2008, App. A, s. 12.]

Mobile yarders

26.13.3 (1) A mobile yarder must have a permanently attached, legible and easily visible sign provided by the equipment manufacturer or a professional engineer that includes the following:

(a) the name of the manufacturer and the date of manufacture of the yarder, unless this information cannot be determined;

(b) the model and serial number of the yarder, unless this information cannot be determined;

(c) if the yarder is designed for skyline, slackline or modified slackline systems, the maximum and minimum size of skyline, mainline and haulback that must be used;

(d) the maximum diameter of the mainline of the yarder;

(e) if required for the yarder, the minimum size, number and placement of guylines;

(f) if required for the yarder, the placement and number of outriggers;

(g) the permissible yarding angles of the yarder;

(h) the auxiliary equipment that may be safely attached to the yarder.

(2) Subsection (1) is satisfied if the information is available at the workplace where the mobile yarder is located.

(3) A mobile yarder must be rigged and used in accordance with the information provided under subsection (1) (c) to (h).

(4) A mobile yarder must not be moved with the spar or tower in the vertical operating position unless the stability of the equipment can be maintained.

(5) Multiple throttle controls on a mobile yarder must be arranged to prevent the simultaneous operation of 2 or more controls.

(6) A mobile yarder and its attached equipment must be inspected frequently and at least as often as specified in the equipment manufacturer's instructions.

(7) Manufacturer's manuals for a mobile yarder must be available, at the workplace where the yarder is located, to the following persons:

(a) the yarder operator;

(b) any person maintaining the yarder.

[en. B.C. Reg. 20/2008, App. A, s. 12.]

Saw chain shot

26.13.4 (1) In this section, **"saw chain shot"** means one or more parts of a saw chain travelling at a high speed as a result of the saw chain breaking.

(2) This section applies to mobile equipment that is

(a) used in mechanical falling activities or log processing,

(b) equipped with a saw that cuts using a saw chain, and

(c) manufactured on or after May 1, 2019.

(3) Mobile equipment referred to in subsection (2) must meet one of the following requirements:

(a) the mobile equipment must have protective guards or other devices that prevent the mobile equipment's cab windows from being directly struck by saw chain shot from the mobile equipment's saw chain;

(b) each cab window that could be directly struck by saw chain shot from the mobile equipment's saw chain must

(i) be made of one or more sheets of polycarbonate that have a total thickness of at least 32 mm (1.25 in), or

(ii) meet or exceed the requirements of the level 1 outdoor use ballistics tests of *ANSI/UL 752, Standard for Bullet-Resisting Equipment*, 11th edition (with revisions up to and including December 11, 2015).

(4) For the purposes of subsection (3), saw chain shot that ricochets off an object and then strikes a cab window is not considered to have directly struck the cab window.

[en. B.C. Reg. 9/2017, App. N, s. 2.]

26.14 Repealed. [B.C. Reg. 20/2008, App. A, s. 13.]

Hazard area of logging equipment

26.14.1 (1) A hazard area created by the operation of logging equipment must be identified.

(2) Every hazard area identified under subsection (1) must be communicated to all workers in close proximity to the operating logging equipment and to the hazard area.

(3) A worker must not enter into or proceed on foot through a hazard area referred to in subsection (1) unless the equipment operator first gives permission to the worker in a clear and unmistakable manner.

[en. B.C. Reg. 20/2008, App. A, s. 14.]

Designated safe work area

26.14.2 (1) A safe work area must be designated for workers on foot in close proximity to any operating logging equipment.

(2) The boundaries of a safe work area designated under subsection (1) must be communicated to all workers within and in close proximity to the safe work area.

(3) No equipment may enter into or proceed through a safe work area unless

(a) the equipment operator first obtains permission in a clear and unmistakable manner from all of the workers in that safe work area or from the supervisor of those workers, and

(b) those workers take a safe position.

[en. B.C. Reg. 20/2008, App. A, s. 14.]

Traffic control

26.14.3 If vehicles on a road in a forestry operation are required to drive through a hazard area identified in section 26.14.1 or through a safe work area designated in section 26.14.2, effective traffic control appropriate to the hazard must be implemented.

[en. B.C. Reg. 20/2008, App. A, s. 14.]

26.15 Repealed. [B.C. Reg. 20/2008, App. A, s. 15.]

Slope limitations

26.16 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 58 (a).]

(2) If the manufacturer's maximum slope operating stability limit for logging equipment is known, the equipment must be operated within that limit.

(3) If the manufacturer's maximum slope operating stability limit for logging equipment is not known, the equipment must be operated within the following limits:

(a) a rubber tired skidder must not be operated on a slope which exceeds 35%;

(b) a crawler tractor, feller buncher, excavator and other similar equipment must not be operated on a slope which exceeds 40%;

(c) any other forestry equipment specifically designed for use on a steep slope must not be operated on a slope which exceeds 50%.

(4) Despite subsections (2) and (3) but subject to subsection (5), logging equipment may be operated beyond the maximum slope operating stability limits specified in those subsections if

(a) a qualified person conducts a risk assessment of that operation, and

(b) written safe work practices acceptable to the Board are developed and implemented to ensure the equipment's stability during operation.

(5) Despite anything in this section, logging equipment must not be operated in a particular location or manner if its stability cannot be assured during that operation.

[am. B.C. Regs. 312/2003, App. B, s. 58; 20/2008, App. A, s. 16.]

26.17 Repealed. [B.C. Reg. 20/2008, App. A, s. 17.]

Brakes

26.17.1 Mobile equipment used in forest operations and similar activities must have braking systems that meet the performance requirements of one of the following standards, provided that the standard applies to that type of mobile equipment as indicated in the scope of the standard:

(a) *ISO Standard 11169:1993 Machinery for forestry – Wheeled special machines – Vocabulary, performance test methods and criteria for brake systems*, published May 15, 1993;

(b) *ISO Standard 11512:1995 Machinery for forestry – Tracked special machines – Performance criteria for brake systems*, published March 1, 1995.

[en. B.C. Reg. 139/2021, App. D, s. 12.]

Landslides

26.18 In a forestry operation where there may be a risk of a landslide

(a) the risk must be assessed in accordance with a standard acceptable to the Board,

(b) if a risk is found to be present, written safe work procedures must be developed meeting the requirements of the standard, and

(c) workers must be educated in the safe work procedures.

[am. B.C. Reg. 312/2010, App. C, s. 2.]

26.19 and **26.20** Repealed. [B.C. Reg. 20/2008, App. A, s. 17.]

Manual Falling and Bucking

Application

26.20.1 Sections 26.21 to 26.29 apply only to manual falling and bucking activities.

[en. B.C. Reg. 20/2008, App. A, s. 17.]

Faller qualifications

26.21 (1) A worker must not fall trees or be permitted to fall trees, or conduct or be permitted to conduct bucking activities associated with falling trees, unless

(a) the worker is qualified to do so to a standard acceptable to the Board, and

(b) the work being performed is within the documented and demonstrated capabilities of that worker.

(2) Subsection (1) (a) does not apply to a worker who is in a falling or bucking training program that is acceptable to the Board.

[en. B.C. Reg. 20/2008, App. A, s. 17.]

Forestry operation faller training

26.22 (1) A worker may not work as a faller in a forestry operation unless the worker receives training for falling that is acceptable to the Board and is certified in writing as a competent faller under this section.

(2) Without limiting subsection (1), faller training must include the following:

(a) taking basic training in falling trees by working one-on-one with a qualified faller or trainer for a period of not less than 30 days;

(b) in the presence of a qualified supervisor or trainer, taking a written or oral examination on falling;

(c) after completion of basic training under paragraph (a) and passing the examination under paragraph (b), working as a trainee faller under the close supervision of a qualified faller or trainer for a minimum period specified in subsection (3).

(3) The required minimum supervision period in subsection (2) (c) is

(a) 180 days, or

(b) a shorter period as determined by a qualified supervisor or trainer, if the supervisor or trainer is satisfied that the worker is competent to perform the tasks of a faller.

(4) The person supervising a trainee faller under subsection (2) (c) must

(a) evaluate the trainee's work on a weekly basis,

(b) keep records of all evaluations done in respect of the trainee, and

(c) if, at the end of the training period, the trainee's falling activity meets a standard acceptable to the Board, verify in writing that the trainee has demonstrated the competence necessary for certification under subsection (5).

(5) If all of the requirements of subsections (1), (2) and (4) are satisfied in respect of a worker who is a trainee faller, a person acceptable to the Board may certify in writing that the worker is a competent faller.

(6) A record of the training that is taken under this section must be maintained and kept in a form and manner acceptable to the Board and a copy of that record must be made available to an officer or the trainee to whom the record pertains.

(7) Subsection (2) does not apply to a worker who satisfies all of the following requirements:

(a) the worker has performed falling duties regularly for at least 2 years before the evaluation under paragraph (b) of this subsection takes place;

(b) the worker's falling activity is evaluated by a qualified supervisor or trainer and it meets a standard acceptable to the Board;

(c) in the presence of a qualified supervisor or trainer, the worker passes a written or oral examination on falling;

(d) the worker is certified in writing as a competent faller by a person acceptable to the Board.

(8) For the purposes of subsection (7) (b), the qualified supervisor or trainer must

(a) keep a record of the evaluation, and

(b) verify in writing that the worker has demonstrated the competence necessary for certification under subsection (7) (d).

[en. B.C. Reg. 20/2008, App. A, s. 17.]

Falling supervisors for forestry operations

26.22.1 (1) A qualified supervisor must be designated for all falling and associated bucking activities in a forestry operation.

(2) The supervisor designated under subsection (1) must

(a) ensure that the falling and bucking activities are planned and conducted in accordance with this Regulation,

(b) inspect the workplace of each faller at time intervals appropriate to the risks, and

(c) keep a record of every inspection conducted under paragraph (b).

(3) The supervisor designated under subsection (1) must not undertake or be assigned activities which interfere with performance of the supervisor's duties under subsection (2).

[en. B.C. Reg. 20/2008, App. A, s. 17.]

Procedures for falling and bucking

26.23 (1) In this section and in section 26.24, **"brushing"** means the striking of a standing tree by a tree being felled if the strike is a direct blow or a glancing blow of sufficient force to cause one or more branches to break at or near the stem of the standing tree.

(2) Fallers and buckers associated with falling activities must be provided with and follow written safe work practices acceptable to the Board for the type of work activity they perform, including procedures for the following:

(a) establishing minimum and maximum distances between fallers and other workers;

(b) planning and constructing escape routes;

(c) controlling the fall of trees;

(d) minimizing unnecessary brushing;

(e) dealing with dangerous trees;

(f) bucking trees and logs;

(g) using mechanical assistance to fall trees;

(h) summoning and rendering assistance to manage a falling difficulty or to deal with an emergency;

(i) conducting special or innovative harvesting techniques;

(j) ensuring the well-being of each faller and bucker at least every half hour and at the end of the work shift.

[en. B.C. Reg. 20/2008, App. A, s. 17.]

Responsibility for falling and bucking

26.24 (1) Subject to section 26.29 (3), before a tree is felled, all workers must be clear of the area within a 2 tree-length radius of the tree.

(2) Before falling or bucking starts, all obstructions to the activity must be cleared and a safe escape route to a predetermined safe position must be prepared.

(3) A tree must not be felled if it could strike any stationary or running line of any operational equipment.

(4) If it is necessary to pack or shovel snow to reduce stump height, the depth of the depression at the base of the tree must not exceed 45 cm (18 in.).

(5) The falling of a tree must be conducted in accordance with the following procedures:

(a) a sufficient undercut must be used;

(b) the undercut must be complete and cleaned out;

(c) sufficient holding wood must be maintained;

(d) the backcut must be higher than the undercut to provide a step on the stump;

(e) wedging tools must be immediately available and, unless the tree has a pronounced favourable lean, wedges must be set.

(5.1) When a tree is being felled, the tree must not brush standing trees if that can be avoided.

(6) A tree must not be used to cause another partially cut tree to fall in succession unless

(a) it is necessary to do so to overcome a specific falling difficulty, and

(b) the succession falling is done in accordance with subsection (6.1).

(6.1) The following apply for the purposes of subsection (6):

(a) only one tree may be used to cause another partially cut tree to fall in succession;

(b) only those trees necessary to deal with the falling difficulty referred to in subsection (6) are partially cut;

(c) a wedge is driven into the backcut of each partially cut tree.

(7) When a tree starts to fall, the faller and any other worker present must move quickly to a predetermined safe position, at least 3 m (10 ft.) away from the base of the tree where possible, and take cover if available.

(8) All workers must be clear of the hazard area before a tree or log is bucked.

[am. B.C. Reg. 20/2008, App. A, s. 18.]

Dangerous trees and logs

26.25 (1) Falling or bucking must not be started if

(a) a tree or log is in a condition that, if felled or bucked in that condition, the tree or log would pose a reasonably foreseeable risk to a worker, or

(b) it appears that the tree cannot be completely felled or the bucking cut cannot be completed, as the case may be.

(2) If for any reason a partially cut tree cannot be completely felled and must be bypassed or left unattended, then the following apply:

(a) the tree must be clearly marked;

(b) work, other than that necessary to complete the falling of the tree, must stop in the hazard area until the tree is felled;

(c) any worker who could enter the hazard area must be alerted to the hazard;

(d) the supervisor for that falling activity must be notified.

(3) The supervisor referred to in subsection (2) (d) must ensure that

(a) all workers at risk are notified, and

(b) the tree is safely felled before other work is undertaken in the hazard area.

(4) If a bucking cut cannot be completed and the partially bucked log must be bypassed or left unattended, then the following apply:

(a) if possible, a distinct cross must immediately be cut or marked on the top of each end of the log;

(b) the supervisor for the bucking activity must be notified at the end of the work day;

(c) the supervisor for the bucking activity must notify all workers at risk.

(5) Subsections (2) to (4) do not apply if the incomplete falling or bucking is part of a planned process in which safe work practices acceptable to the Board are implemented.

[en. B.C. Reg. 20/2008, App. A, s. 19.]

Falling dangerous trees

26.26 (1) Where practicable, dangerous trees must be felled

(a) progressively with the falling of other timber but before falling adjacent live trees, and

(b) into open areas.

(2) When falling a dangerous tree,

(a) dangerous bark must be removed, where practicable,

(b) stump height must, in the judgment of the faller, allow maximum visibility and freedom of action,

(c) the tree must be felled in the direction of lean whenever possible, and the undercut must be as deep as necessary to minimize the use of wedges and resulting vibration,

(d) pushing with a green tree must only be undertaken to overcome a falling difficulty, and

(e) wedging over must be used only if there is no alternative, and after a careful assessment of the ability of the dangerous tree to withstand wedging.

(3) If conventional methods cannot be safely employed to fall a dangerous tree, blasting or other acceptable methods must be used.

(4) Falling, bucking or limbing activities must not be undertaken in an area made hazardous by a dangerous tree, or a dangerous tree which has been brushed by a felled tree, until the dangerous tree has been felled.

[am. B.C. Reg. 20/2008, App. A, s. 20.]

Location of fallers

26.27 (1) Fallers and buckers must not work in a location where they or other workers could be endangered by that work.

(2) If an elevation or steep slope poses a risk to a faller, the faller must be provided with and use an appropriate fall protection system.

(3) Any fall protection provided under subsection (2) must not impede the ability of the faller to move to a predetermined safe position as required in section 26.24 (7).

(4) A faller must not work in a location where the faller is supported solely by a lifeline and harness.

[en. B.C. Reg. 20/2008, App. A, s. 21.]

Summoning assistance

26.28 (1) Qualified assistance must be readily available to fallers in case of difficulty, emergency or injury.

(2) Fallers and buckers must have an effective means to summon assistance.

Entry to falling area

26.29 (1) Only a worker with duties associated with the falling activity may enter an active falling area.

(2) Before entering the active falling area, workers must notify the faller or bucker and wait until advised by the faller or bucker that it is safe to enter.

(3) A worker, in addition to the faller, may be at the base of a tree being felled if the worker is

(a) supervising or directing the falling activity,

(b) training as a faller, or

(c) required to assist the faller to overcome a specific falling difficulty.

[am. B.C. Reg. 20/2008, App. A, s. 22.]

Mechanical Falling

Application

26.29.1 Sections 26.29.2 to 26.29.5 apply only to mechanical falling activities.

[en. B.C. Reg. 20/2008, App. A, s. 23.]

Limits on use of mechanical harvester

26.29.2 A mechanical harvester must not be used to fell a tree if

(a) the tree is in a condition that, if felled in that condition, it would pose a reasonably foreseeable risk to the harvester operator, or

(b) the mechanical harvester is not capable of falling the tree safely.

[en. B.C. Reg. 20/2008, App. A, s. 23.]

Incomplete falling cuts

26.29.3 (1) If a partially cut tree cannot be completely felled by a mechanical harvester and must be bypassed or left unattended, the following apply:

(a) the tree must be clearly marked;

(b) work, other than that necessary to complete the falling of the tree, must stop in the hazard area until the tree is felled;

(c) any worker who could enter the hazard area must be alerted to the hazard;

(d) the person responsible for the direction and control of the mechanical harvesting activity must be notified.

(2) The person referred to in subsection (1) (d) must ensure that

(a) all workers at risk are notified, and

(b) the tree is safely felled before other work is undertaken in the hazard area.

(3) Subsection (1) does not apply if incomplete falling is part of a planned process in which safe work practices acceptable to the Board are implemented.

[en. B.C. Reg. 20/2008, App. A, s. 23.]

Hazard area

26.29.4 (1) Only a worker with duties associated with a mechanical falling activity may enter the active falling area.

(2) Before a tree is felled by a mechanical harvester, all workers and equipment, other than the equipment operator and the harvesting equipment, must be clear of the area within a 2 tree-length radius of the tree.

[en. B.C. Reg. 20/2008, App. A, s. 23.]

No additional hazards

26.29.5 Mechanical falling activities must be conducted in a manner that does not create any additional hazard for workers conducting subsequent work activities.

[en. B.C. Reg. 20/2008, App. A, s. 23.]

Traffic Control for Falling Operations

Traffic control

26.30 If, in any type of falling activity, a tree being felled may create a hazard to a user of a road, effective traffic control must be used to stop or control approaching traffic.

[en. B.C. Reg. 20/2008, App. A, s. 24.]

Yarding

26.31 Repealed. [B.C. Reg. 312/2003, App. C, s. 9.]

26.32 and **26.33** Repealed. [B.C. Reg. 20/2008, App. A, s. 24.]

Application

26.33.1 Sections 26.34 to 26.55 apply only to forestry operations.

[en. B.C. Reg. 20/2008, App. A, s. 24.]

Signalling

26.34 (1) Only a designated worker may signal for the movement of cable yarding equipment, but any worker may signal to stop cable yarding equipment, and that signal must be obeyed promptly.

(2) The worker designated to signal the yarder operator must

(a) not be otherwise occupied while the equipment is in motion, and

(b) not signal for the movement of the equipment until assured that no workers are endangered within the area for which the designated worker is responsible.

(3) The signals for rigging movement must be clearly discernible to the equipment operator, and to all workers who could be endangered by the movement of the equipment.

(4) A worker who directs or operates equipment, or who could be endangered by the movement of equipment, must be familiar with the meaning of the signals.

(5) The equipment operator must stop the equipment if a signal is not clearly understood.

(6) If voice signals are being used that cannot be heard by workers who could be endangered by the movement of equipment, the equipment operator must not move the equipment until the operator has given a signal by means understandable to all those workers.

(6.1) If voice signals are being used to direct the operation of a grapple yarder, the signals specified in Table 26-8 must be used.

(7) If non-verbal signals such as whistles and hand signals are used to direct the operation of equipment, the signals specified in Tables 26-1 to 26-7 must be used.

(8) When audible signals are being used concurrently to direct the operation of more than one piece of equipment, the signal tones must be differentiated to clearly identify intended movement of each machine.

(9) Signalling devices must be tested at the start of each shift in a way that ensures that equipment will not be moved in response to the test.

(10) Defective signalling devices that might cause a hazard to workers must not be used, and repairs, alterations, or adjustments to signalling devices must be performed by qualified persons.

(11) A radio signalling device used to direct the movement of logging equipment must be designed, maintained and operated in accordance with a standard acceptable to the Board.

(12) Any signalling system using radio frequency transmission must operate on a frequency and at a transmission power assigned and coordinated by a person acceptable to the Board.

[am. B.C. Reg. 20/2008, App. A, s. 25.]

26.35 to **26.37** Repealed. [B.C. Reg. 20/2008, App. A, s. 26.]

Riding on rigging

26.38 (1) Subject to subsection (2), a worker must not be transported on any cable system unless

(a) the system is authorized for use in a rescue, an emergency, an inspection or maintenance and it is being used for that purpose,

(b) all other means for transportation are impracticable, and

(c) the system is capable of withstanding the loads and stresses to be placed on it.

(2) Subsection (1) does not apply if the system is designed

(a) by a professional engineer, and

(b) for the purpose of the transport of workers.

[en. B.C. Reg. 20/2008, App. A, s. 26.]

Safe location

26.39 (1) A worker must not be positioned within the bight of any running line under tension, nor in a position where the worker could be struck by a line if it were to break or come loose, or be tightened if slack.

(2) A worker must be positioned in the clear to avoid being exposed to moving logs, saplings, root wads, chunks, rigging or other material.

(3) A worker must be positioned clear of rigging which is stopped by an obstruction until the rigging has been slackened to reduce the hazard.

(4) Despite subsection (1), a worker may enter the bight of a slack line to deal with an obstruction or set chokers.

(5) If a worker enters the bight of a running line pursuant to subsection (4), the rigging must not be tightened until a clear go-ahead signal has been given by the worker.

[am. B.C. Reg. 20/2008, App. A, s. 27.]

Removal of potential hazards to rigging

26.39.1 (1) A tree must be felled if the tree could

(a) interfere with rig-up or with movement of lines and yarding equipment, or

(b) be pushed or pulled into an area where a worker is working.

(2) Saplings over 6 m (20 ft.) tall that

(a) are located in an area to be yarded, and

(b) constitute a reasonably foreseeable risk to workers

must be felled before yarding activity begins.

(3) If it is not practicable to comply with subsection (2), safe work practices acceptable to the Board that eliminate or minimize the risk to workers in the forestry operation may be used if these safe work practices are directed by a supervisor.

[en. B.C. Reg. 20/2008, App. A, s. 28.]

Anchors

26.40 (1) A standing tree may be used for anchoring lines or fastening blocks only if

(a) a suitable stump is not available, and

(b) the tree is effectively tied back to another anchor, except that a secondary anchor tree need not be tied back.

(1.1) A standing tree must not be used to anchor guylines if a worker would be endangered were the tree to be pulled over.

(2) A stump or tree must not be used as an anchor for a line or for fastening a block until it has been determined that it is suitable for use as an anchor, and it must be inspected daily to determine that it remains suitable for continued use.

(2.1) An anchor to which a haulback block is attached must have a notch of sufficient depth to retain the strap or must provide equivalent security by other effective means.

(3) and (4) Repealed. [B.C. Reg. 20/2008, App. A, s. 29 (b).]

(5) If a log, pipe or other apparatus buried in the ground is used to anchor a guyline or skyline, the method and equipment used must be acceptable to the Board and

(a) the guyline or skyline must not be directly attached to the anchor,

(b) a suitable strap or line of equal size and strength to the guyline or skyline with eyes in each end must be used, with one wrap around the anchor, and both eyes attached to the guyline or skyline with a shackle, and

(c) the eye connection of the anchor strap must be visible for inspection.

(6) Any anchor system not otherwise referred to in this section must be used in accordance with

(a) its design specifications and manufacturer's recommendations, or

(b) if those specifications or recommendations are not known, a method acceptable to the Board.

(7) Repealed. [B.C. Reg. 20/2008, App. A, s. 29 (c).]

(8) If an anchor system has 2 or more legs, bridle blocks of adequate strength must be used to distribute the load equally.

[am. B.C. Regs. 253/2001, s. 19; 20/2008, App. A, s. 29.]

Guylines

26.41 (1) Guylines for a mobile yarder must be positioned

(a) as specified by the manufacturer, or

(b) in a manner acceptable to the Board.

(2) Guylines must be rigged to provide a 45 degree or larger angle between the guyline and a line drawn plumb through the guyline fairlead.

(3) If it is not practicable to comply with subsection (1) or (2), or if suitable anchors are not available, additional steps must be taken to ensure the stability of the yarder.

(4) Guylines must be attached to the supported structure by guyline shackles, or other fastenings providing equivalent security.

(5) Safety devices with breaking strength at least equal to that of the guylines must be installed at the top of mobile spars to prevent guylines or their assemblies from falling.

(6) Guylines over a travelled road must be rigged to clear all traffic, or if this is not practicable,

(a) the guylines must be conspicuously marked, and

(b) signs warning of limited clearance must be posted on the road.

(7) A guyline must be secured to its anchor stump in the following manner:

(a) a notch of sufficient depth, or another means of equivalent security, must be used to retain the wrapping lines;

(b) sleeve shackles, knob and bell, screwy hooks or line clamps compatible with the guyline size must be used.

(8) If spikes are used to secure a guyline to an anchor stump, there must be at least

(a) 8 spikes in the first wrap, 3 spikes in the second wrap and 8 spikes in the last wrap if the guyline is attached to the yarder, or

(b) 3 spikes in the last wrap if the guyline is attached to a back spar.

(9) If spikes are used to secure a guyline to an anchor stump, there must be a minimum of 2 1/2 wraps of the guyline around the anchor stump.

[am. B.C. Reg. 20/2008, App. A, s. 30.]

Figure 26-1: Positioning guylines for mobile yarders

Repealed. [B.C. Reg. 20/2008, App. A, s. 30 (c).]

Rigging

26.42 (1) Rigging must be of a type and size for which the equipment is designed.

(2) Lines, blocks, and yarding and loading equipment must be rigged in accordance with accepted industry standards.

(3) Shackle pins on stationary lines must be secured with molly hogans or other acceptable means to prevent accidental dislodgment.

(4) Molly hogans must not be used to connect skylines, loading rigging, or any stationary lines.

(5) Screw pin shackles used on running lines must be tightened securely and routinely inspected.

(6) Rigging must be inspected at regular and frequent intervals by a qualified worker.

Supporting blocks

26.43 Straps for supporting blocks must

(a) be made from wire rope or synthetic fibre material, and

(b) be of sufficient size and condition to withstand the maximum anticipated loads.

[en. B.C. Reg. 20/2008, App. A, s. 31.]

Winches

26.44 (1) When properly anchored to a winch, the minimum number of wraps of cable left on a winch drum must be

(a) for skylines, 1 1/2 layers, and

(b) for other types of logging equipment, 3 complete wraps.

(2) Subsection (1) does not apply to a skidding winch mounted on ground-based skidding equipment.

Prohibition of knots

26.45 A knot must not be used in any winch line or other rigging, except

(a) to effect temporary repair in the event of line breakage, or

(b) for tag lines on grapple log loaders or for hooks on strawline eyes.

Skyline anchors

26.46 (1) A skyline must be anchored to

(a) a stump or to a suitable manufactured anchor,

(b) the base of a standing tree if the tree is tied back to a secondary anchor, or

(c) a suitable piece of mobile equipment.

(2) A skyline must be secured to an anchor by

(a) a choker using a large sleeve-type knockout pin shackle or an approved safety pin-type shackle over the skyline with the pin through the eye,

(b) a strap acceptable to the Board, with both eyes hung in a shackle and the knockout pin or safety pin through the eye of the skyline, or

(c) a wire rope clip system meeting the requirements of Part 15.

(3) If anchor stumps in standing timber are used for slackline or other skyline operations, the skyline must be prevented from striking trees in the area, or the trees must be felled.

[am. B.C. Reg. 20/2008, App. A, s. 32.]

Skyline extensions

26.47 If a skyline extension is used

(a) the breaking strength of the extension must be greater than or equal to that of the skyline,

(b) the extension must not alter the safe capacity of the tower, and

(c) if the carriage runs over it, the extension must be attached by a regular long splice or by a flush pin straight side shackle connecting the 2 eyes.

Skyline spars

26.48 (1) Each skyline spar must be of adequate strength.

(2) An intermediate spar must be used in a manner acceptable to the Board.

(3) Backspars must be topped unless workers are prohibited from entering the hazard area created when the skyline is loaded.

[am. B.C. Reg. 20/2008, App. A, s. 33.]

Skyline rigging

26.49 (1) When rigged in a backspar, a skyline must be anchored no more than 8° off-line from the rearward projection of the skyline.

(2) If a suitable anchor cannot be found to comply with subsection (1), another suitable anchor may be used provided that the backspar is stabilized by extra guylines.

(3) The rearward projection of the skyline must

(a) not be considered a guyline, and

(b) not make an angle greater than 50° measured from the horizontal as it leaves the backspar unless approved by a professional engineer.

(4) The method used to support a skyline at a backspar or intermediate spar must provide adequate support and protection for the line.

(5) A skyline must not be fastened directly to a backspar.

Backspar guylines

26.50 (1) A tree used as a backspar must be guyed with a sufficient number of guylines to ensure that the tree is adequately supported.

(2) If spikes are used to anchor a backspar guyline

(a) the guyline must have at least 2 1/2 wraps around the stump, and

(b) three spikes must be placed in sound wood on the last wrap.

(3) Repealed. [B.C. Reg. 20/2008, App. A, s. 34.]
[am. B.C. Reg. 20/2008, App. A, s. 34.]

Lift trees

26.51 A lift tree must be topped or guyed unless

(a) the tree is of adequate strength to withstand the loads that are placed on it during yarding activities,

(b) the lines run through tail-hold blocks located so as to minimize stress on the tree, and

(c) tail-holds are rigged and located to prevent a worker from being endangered if the tree is pulled over.

[en. B.C. Reg. 20/2008, App. A, s. 35.]

26.52 Repealed. [B.C. Reg. 20/2008, App. A, s. 35.]

Skidding

Ground skidding operations

26.53 Ground based skidding operations must be conducted using safe work practices acceptable to the Board, including, without limitation, the following:

(a) not winching at an angle that could cause an obstruction to upset the equipment;

(b) to avoid obstruction hang-up and rollover, if practicable, winching the turn up tight to the equipment before the equipment is moved;

(c) selecting a suitable gear to maintain control of the equipment before climbing or descending grades;

(d) dropping the turn to free the log if an unchoked log is picked up with a turn;

(e) avoiding abrupt turns of equipment on side hills.

[en. B.C. Reg. 20/2008, App. A, s. 35.]

26.54 Repealed. [B.C. Reg. 20/2008, App. A, s. 35.]

Damaged sweep arm

26.54.1 If a sweep arm attached to a ROPS on a skidder is bent or deformed, prior to the use of the skidder

(a) a qualified person must determine whether the ROPS may be structurally damaged as a consequence of the damage to the sweep arm, and

(b) if the ROPS may be structurally damaged, the ROPS must either be

(i) recertified by the manufacturer or a professional engineer as meeting the requirements of section 16.36, or

(ii) replaced.

[en. B.C. Reg. 139/2021, App. D, s. 12.]

Mainline release

26.55 A skidding winch on a ground based skidding machine must have a quick-release system to permit the winch line to run out freely and automatically disengage from its drum.

Forestry Work Areas

Work area arrangement

26.56 (1) In this section, **"work area"** includes any area in which any forestry work is done but does not include the travelled portion of a road unless that portion of the road is being used as a landing.

(2) Work in a work area in a forestry operation must be planned and the work area must be located, constructed, maintained and operated to ensure the following:

(a) logs can be moved safely in the area;

(b) log piles and equipment used to handle the logs do not become unstable or otherwise create a hazard;

(c) workers are able to work in locations clear of moving logs and equipment;

(d) workers are not exposed to incoming or runaway logs or other debris;

(e) the area is kept free from buildup of bark and other debris to the extent that it would pose a risk to workers;

(f) an effective method of dust control is used and maintained.

(3) Log piles must, to the extent practicable, be located on stable and relatively level ground.

(4) Log piles must not be higher than the safe operating reach of equipment being used to handle the logs.

[en. B.C. Reg. 20/2008, App. A, s. 36.]

26.57 and **26.58** Repealed. [B.C. Reg. 20/2008, App. A, s. 36.]

Suspended logs

26.59 (1) A log must not be passed over any worker or occupied vehicle or equipment.

(2) Despite subsection (1), a log may be passed over a vehicle or equipment that is being loaded, if the log

(a) does not pass over any portion of the vehicle or equipment that is occupied by a person, and

(b) does not constitute a hazard for the occupant of the vehicle or equipment.

(3) A worker must not stand or pass under a suspended log.

[en. B.C. Reg. 20/2008, App. A, s. 36.]

26.60 Repealed. [B.C. Reg. 20/2008, App. A, s. 36.]

Vehicle movements

26.61 (1) Effective means of communication must be used in a forestry operation to control vehicle movements in any location where

(a) a loader operator is unable to see the loading operation, or

(b) log transporters are moving at landings, load-out points, water dumps, dry land sorts or railway reloads.

(2) If, for the purposes of subsection (1), audible signals are used as the means of communication, the signals must meet the requirements of section 26.34 and Table 26.2.

[en. B.C. Reg. 20/2008, App. A, s. 36; am. B.C. Reg. 222/2021, App. F, s. 2.]

26.62 Repealed. [B.C. Reg. 20/2008, App. A, s. 36.]

Unauthorized persons

26.63 Only persons permitted by law or by the workplace safe work procedures may be at landings, load-out points, water dumps, dry land sorts and railway reloads.

[am. B.C. Reg. 20/2008, App. A, s. 37.]

Hauling

Bunk and stake assemblies

26.64 Bunk and stake assemblies, installed at a dry land sort for bundling logs, must have fixed stakes or be used with safe work procedures which ensure that no worker goes into the hazard area adjacent to or below self-tripping stakes unless the stakes are secured from releasing.

[am. B.C. Reg. 20/2008, App. A, s. 38.]

Cab guard

26.65 (1) In this section:

"cab guard" means a barrier guarding the back of the cab of a log transporter;

"certified welding inspector" means a person who is certified as a Level 2 or Level 3 welding inspector in accordance with *CSA Standard W178.2-08 (R2013), Certification of Welding Inspectors*;

"rated capacity", in relation to a cab guard, means the maximum cargo weight that may be transported by the log transporter and shift and contact the cab guard such that the cab guard is capable of withstanding a horizontal forward static load equal to 40% of that cargo weight, with this load uniformly distributed over the entire cab guard.

(2) For the protection of the driver of a log transporter, the log transporter must have a cab guard that meets all of the following requirements:

(a) subject to subsection (3), the cab guard is at least 15 cm (6 in) higher than the cab;

(b) the cab guard is at least as wide as the cab;

(c) the cab guard has no opening large enough to permit any item of cargo to pass through it;

(d) the cab guard is

(i) constructed with a main supporting structure made of steel, or

(ii) certified by a professional engineer as having a main supporting structure designed and constructed so that vibration and distortion generated by use of the log transporter cannot damage the cab guard;

(e) the cab guard is installed in a manner that ensures that the rated capacity of the cab guard is not diminished.

(3) The cab guard of a self-loading log transporter may be less than the height specified in subsection (2) (a) but must not be less than the cab height.

(4) The weight of cargo that is being transported by a log transporter and that may shift and contact the cab guard must not exceed the rated capacity of the cab guard.

(5) The operator of a log transporter must record the results of the inspection, made before the start of operation on the shift, of the cab guard of the log transporter.

(6) A log transporter must be removed from service if there are any cracks, damage or other conditions that will decrease the rated capacity of the cab guard of the log transporter.

(7) A log transporter removed from service under subsection (6) must not be returned to service until

(a) the cab guard is

(i) repaired, and

(ii) inspected and certified to meet the rated capacity by the manufacturer, a professional engineer or a certified welding inspector, or

(b) the cab guard is replaced by a cab guard that meets the requirements of this section.

(8) The cab guard of a log transporter must be

(a) permanently marked with

(i) the name and address of its manufacturer,

(ii) the model number or serial number of the cab guard, and

(iii) the rated capacity of the cab guard, or

(b) identified by carrying in the log transporter a copy of a letter that

(i) accurately describes the cab guard,

(ii) certifies the model number or serial number of the cab guard and the rated capacity of the cab guard, and

(iii) has been signed by the manufacturer or a professional engineer.

[en. B.C. Reg. 199/2014, App. I, s. 1.]

Bunks and stakes

26.66 (1) A log transporter carrying a log load must be equipped with bunks and stakes of adequate design and construction to safely perform their intended function.

(2) Bunks must be able to rotate freely upon their pivots, if designed to do so.

(3) Stakes, extensions and stake cables must be installed and maintained to ensure that when the log transporter is loaded

(a) the angle between the bunks and stakes at the base does not exceed 90°, and

(b) the angle between the bunks and the stakes and extensions above the base does not exceed the angle at which the stakes and extensions can safely withstand the maximum anticipated loads.

(4) Stakes must be constructed so that

(a) they can be released only from the opposite end of the bunk,

(b) keeper pins are secured against unintended release, and

(c) if they are over 1.2 m (4 ft) in height, springs or other mechanical means are fitted to facilitate their returning to a vertical position.

(4.1) A worker must not go on bunks and trailer assemblies to raise or lower stakes and extensions unless it is impracticable to do otherwise.

(4.2) If a worker must go on a bunk or trailer assembly to collapse stakes or extensions, the worker must be provided a safe means of getting on and off the bunk or trailer assembly.

(4.3) Procedures must be developed and implemented for collapsing stakes or extensions during adverse weather conditions.

(5) Stake extensions must be secured against inadvertent detachment from the stakes.

(6) Repealed. [B.C. Reg. 20/2008, App. A, s. 39 (c).]

(7) Stake cables must

(a) not be made from swaged wire rope, and

(b) conform to the following specifications.

Bunk width	Stake cable minimum diameter
< 2.6 m (8 ft 6 in)	22 mm (7/8 in)
≥ 2.6 m (8 ft 6 in) and ≤ 2.9 m (9 ft 6 in)	25 mm (1 in)
> 2.9 m (9 ft 6 in) and ≤ 3.7 m (12 ft)	29 mm (1 1/8 in)
> 3.7 m (12 ft)	32 mm (1 1/4 in)

(8) Stake and bunk assemblies must be inspected daily, and must not be used if they show signs of excessive wear.

(8.1) A record of all inspections conducted under subsection (8) must be maintained.

(9) Repealed. [B.C. Reg. 20/2008, App. A, s. 39 (e).]

[am. B.C. Regs. 312/2003, App. C, s. 10; 20/2008, App. A, s. 39; 222/2021, App. F, s. 4.]

Loading logs

26.67 (1) If logs are being loaded on a log transporter,

(a) there must be an effective means of communication between the transporter operator and any workers involved in the loading, and

(b) each worker involved in or in the vicinity of the loading must

(i) be in a safe location, and

(ii) without limiting subparagraph (i),

(A) be clear of any moving logs or logs that might move or fall,

(B) not be standing on the cab of a truck or between the cab of the truck and a log being loaded, and

(C) not be resting any part of the worker's body on a log.

(2) A log load on a log transporter must meet the following requirements:

(a) the log load and the log transporter

(i) are stable, without the use of wrappers or tiedowns, during loading and prior to transportation, and

(ii) will remain stable, after the log load is secured in accordance with section 26.68, during transportation;

(b) the log load does not impair the free and full movement of the log transporter;

(c) the working load limits of stakes and stake cables are not exceeded;

(d) to ensure that stakes remain at a safe angle, the bottom layer of logs is laid tight and arranged to minimize slack in the stake cables;

(e) the bottom layer and side rows of the log load extend horizontally beyond at least 2 sets of stakes

(i) at least 30 cm (11.8 in) on compensating-reach-type trailers, or

(ii) at least 15 cm (5.9 in) on other types of log transporters;

(f) a log whose length is shorter than the distance between the stakes is not loaded above the top of the stakes unless the log is in a secure position;

(g) the horizontal centreline of the top log in a side row that is immediately adjacent to a stake is not higher than the top of the stake;

(h) if wrappers or tiedowns are used to secure a log stack of 3 or more layers, the top of the log stack is curved so that the middle part of the curve is higher than the sides of the curve;

(i) the length of each log does not exceed the design limitations of a highway or other surface that the log transporter travels on;

(j) the log load does not include limbs that

(i) pose a risk of injury to a person, or

(ii) impair the safe operation of the log transporter.

[en. B.C. Reg. 222/2021, App. F, s. 5.]

Securing log loads – general

26.68 (1) Subject to subsection (2), a log load must be secured in accordance with

(a) this section, and

(b) whichever of the following sections applies:

(i) section 26.68.1 *[highways and mixed transportation routes]*;

(ii) section 26.68.2 *[entirely off-highway transportation routes]*.

(2) A log transporter carrying a log load that is not yet secured as required by subsection (1) may be moved within a loading area if no person is exposed to the risk of logs, log chunks or debris falling off the log transporter.

(3) If a log load is secured on a log transporter using wrappers or tiedowns, the following requirements must be met:

(a) the wrappers and tiedowns must be installed

(i) in the loading area or at a location that is close to the loading area,

(ii) as soon as practicable after the log load is loaded on the log transporter and, if the log transporter is a trailer, before the trailer is connected to a truck, and

(iii) so that

(A) the log load is secure and no logs, log chunks or debris will fall off the log transporter while the log load is being transported,

(B) the wrappers and tiedowns can be safely removed while load restraining equipment is in position,

(C) no working load limit of a wrapper or tiedown is exceeded and each anchor point for a tiedown has at least the working load limit of the tiedown, and

(D) each tiedown is located within 60 cm (23.6 in) horizontally from a bunk, flatdeck or other load supporting surface;

(b) during transportation, the wrappers and tiedowns must be checked and kept tight;

(c) logs in the log load must not be shifted or moved while the wrappers and tiedowns are installed or adjusted.

(4) A tiedown must not be used to secure a log load on a log transporter unless the tiedown is marked with its working load limit.

(5) Subject to subsection (6), bundle straps and banding must not be used to secure a log load on a log transporter.

(6) Bundle straps and banding may be used to secure a log load on a log transporter in a loading area if no person is exposed to the risk of logs, log chunks or debris falling off the log transporter.

[en. B.C. Reg. 222/2021, App. F, s. 5.]

Securing log loads – highways and mixed transportation routes

26.68.1 (1) This section applies in relation to the transportation of a log load if all or part of the transportation route, other than a crossing, is a highway.

(2) A log load must be secured in accordance with the federal cargo securement standard and, for the purposes of this section, a reference in the standard to a highway is to be read as a reference to any road.

(3) Section 2.3 *[conflict with code or standard]* does not apply in relation to the federal cargo securement standard.

[en. B.C. Reg. 222/2021, App. F, s. 5.]

Securing log loads – entirely off-highway transportation routes

26.68.2 (1) This section applies in relation to the transportation of a log load if no part of the transportation route, other than a crossing, is a highway.

(2) A log load must be secured on a log transporter

(a) by installing, on each log stack and on any logs that are not part of a log stack, the following number of wrappers or tiedowns that conform to subsection (3):

(i) if the longest log that is to be secured by the wrappers or tiedowns is no more than 10.7 m (35 ft) long, at least 2 wrappers or tiedowns, each of which has a working load limit of at least 8.9 kN (2 000 lbf);

(ii) if the longest log that is to be secured by the wrappers or tiedowns is more than 10.7 m (35 ft) long, at least 3 wrappers or tiedowns, each of which has a working load limit of at least 13.3 kN (3 000 lbf), or

(b) without the use of wrappers or tiedowns by loading the logs

(i) lengthwise with the horizontal centrelines of all of the logs below the top of the stakes on the log transporter, and

(ii) in accordance with the requirements set out in a current risk assessment that conforms to subsection (4) for the log hauling operation.

(3) A wrapper or tiedown installed for the purposes of subsection (2) (a) must

(a) have a safety factor of at least the following:

(i) if wire rope, 4;

(ii) if polyester rope, 7;

(iii) if any other synthetic rope, 12;

(iv) if synthetic webbing, 3;

(v) if chain, 4, and

(b) if chain, have a grade of at least 70.

(4) For the purposes of subsection (2) (b), a risk assessment for a log hauling operation must

(a) be in writing,

(b) be prepared by a qualified person, based on the circumstances of the log hauling operation, including, without limitation,

(i) the speeds of the log transporters used in the operation,

(ii) the type, design and condition of the surfaces that the log transporters will travel on, including their grades,

(iii) the weather, and

(iv) the log characteristics,

(c) specify requirements for the loading, transportation and unloading of logs, and

(d) set out the opinion of the qualified person that no logs, log chunks or debris will fall off a log transporter during loading, transportation or unloading of logs if the specified requirements are met.

(5) A log load that is secured under subsection (2) (b) in reliance on a current risk assessment must be transported and unloaded in accordance with the requirements set out in that assessment.

[en. B.C. Reg. 222/2021, App. F, s. 5.]

Removing wrappers and tiedowns and releasing stakes

26.69 (1) In this section, **"removal station"** means a structure that is designed to protect a person from being struck by logs, log chunks or debris falling off a log transporter when

(a) a wrapper or tiedown installed on a log load is removed, or

(b) a stake securing logs on a log transporter is released.

(2) The following activities must be conducted in accordance with written safe work procedures prepared by a qualified person:

(a) removing a wrapper or tiedown installed on a log load;

(b) releasing a stake securing logs on a log transporter;

(c) using a removal station.

(3) The written safe work procedures referred to in subsection (2) must be

(a) posted in a conspicuous location at any place where the activities referred to in that subsection take place and maintained in a legible condition, or

(b) effectively communicated to the workers and supervisors who conduct those activities if it is not practicable to post the safe work procedures in a conspicuous location.

(4) Wrappers and tiedowns must not be removed and stakes securing logs on a log transporter must not be released when a person is preparing to unload logs from a log transporter unless

(a) the person is using a removal station, or

(b) the logs are otherwise restrained to prevent them from falling on the person who is removing the wrappers or tiedowns or releasing the stakes.

(5) Once a wrapper or tiedown has been removed from a log load, the log load must not be moved if any person is exposed to the risk of logs, log chunks or debris falling off the log transporter.

(6) A removal station must not be used unless it is certified by a professional engineer as capable of performing its intended function.

[en. B.C. Reg. 222/2021, App. F, s. 5.]

26.70 and **26.71** Repealed. [B.C. Reg. 20/2008, App. A, s. 42.]

Operating procedures

26.71.1 (1) The operator of a log transporter must follow safe operating procedures.

(2) Without limiting subsection (1), the operator referred to in subsection (1) must

(a) not overtake another moving industrial vehicle, except on a signal from the other vehicle operator,

(b) use extreme caution when approaching vehicles coming from the opposite direction,

(c) keep a safe distance when following crew transportation vehicles, having due regard for road and grade conditions and visibility,

(d) drive at a speed appropriate to the log transporter's capabilities, the road design and condition, the traffic, the visibility and the weather conditions, and

(e) not operate the log transporter while impaired by

(i) fatigue, or

(ii) any other cause, substance or matter

that could prevent the operator from operating the log transporter safely.

[en. B.C. Reg. 20/2008, App. A, s. 42.]

Daily log

26.71.2 (1) In this section, **"hauling cycle"** means the time allowed for each round trip.

(2) The operator of a log transporter must maintain a daily log into which must be entered the following information:

(a) the date of the entry;

(b) the printed name of the operator;

(c) the truck licence plate or unit number;

(d) the odometer reading of the truck at the beginning of the day, if the truck has an odometer;

(e) the name of each contractor or employer for whom the operator worked during the day;

(f) the start and stop time of each trip the operator makes;

(g) the distance driven for each trip the operator makes;

(h) the total distance driven by the operator during the day;

(i) the total driving hours during the day;

(j) the hauling cycle.

[en. B.C. Reg. 20/2008, App. A, s. 42.]

Warning devices

26.72 A log transporter must be equipped with a horn or whistle which, under normal conditions,

(a) is distinctly audible at a distance of 300 m (1 000 ft.), and

(b) has a tone distinct from the whistles used by yarders or loaders in the vicinity.

[am. B.C. Reg. 20/2008, App. A, s. 44.]

26.73 to **26.75** Repealed. [B.C. Reg. 20/2008, App. A, s. 45.]

Securing trailers

26.76 (1) Empty log transporter trailers, when loaded onto truck tractors, must be adequately secured against dislodgment.

(2) If a worker is required to manually assist in coupling a trailer reach to a truck tractor of a log transporter, handholds or other devices must be installed on the trailer reach to aid the worker.

[en. B.C. Reg. 222/2021, App. F, s. 6.]

26.77 Repealed. [B.C. Reg. 139/2021, App. D, s. 13.]

Transporting workers

26.78 An operator of a vehicle transporting workers in a forestry operation on a road must not overtake and pass a moving and loaded log transporter or low bed transport truck, unless

(a) that operator receives a signal to proceed from the operator of the loaded log transporter or the operator of the low bed transport truck, and

(b) the road conditions are suitable for that manoeuvre.

[en. B.C. Reg. 20/2008, App. A, s. 47.]

Roads and Road Maintenance

Haul road standards

26.79 Roads, bridges, elevated platforms, and other structures used by vehicles transporting workers, logs or other forest products in forestry operations must be constructed and maintained to a standard which will permit safe transit.

Creating additional hazards

26.80 Road or skid trail construction, including any blasting activity, must be carried out in a manner that prevents hangups, hanging broken tops or limbs, leaners, sidebind of pushed trees, or similar hazards which could endanger fallers or other workers.

Bull rails

26.81 The open sides of bridges, elevated truck weigh scales and associated elevated ramp approaches and other elevated structures used by logging trucks must be equipped with substantial and well secured continuous timber or log curbs or bull rails of sufficient height to prevent vehicles from running off the structure, but not less than 25 cm (10 in).

[am. B.C. Reg. 312/2003, App. D, s. 31.]

Roadside hazards

26.82 (1) Dangerous trees, loose rocks, stumps, or other unstable materials that are hazardous to road users must be removed or cleared for a safe distance back from roadsides or roadside banks.

(2) Brush, foliage or debris which prevents an adequate view by a vehicle operator of traffic approaching at roadway intersections or on sharp curves must be cleared and all possible precautions must otherwise be taken to control the hazards created by limited sight distance.

Traffic control systems

26.83 (1) An effective traffic control system must be used by all vehicles on a section of road that is too narrow to permit 2 or more vehicles to pass.

(2) The traffic control system must include

(a) turnouts, where required,

(b) vehicles operating with their headlights and, if fitted, flashing beacons, turned on,

(c) warning signs where required, and

(d) instructional signs, including kilometre and road name or number signs.

[am. B.C. Reg. 312/2012, App. H, s. 1.]

Radio traffic control

26.83.1 Instructional signs must be posted showing

(a) radio channels on a road or a section of a road where radio channels are being used for traffic control, or

(b) radio frequencies on a road or a section of a road where radio frequencies, but not radio channels, are being used for traffic control.

[en. B.C. Reg. 312/2012, App. H, s. 2.]

Weigh scales

26.84 (1) Repealed. [B.C. Reg. 312/2003, App. D, s. 32.]

(2) Weight recording house structures, forming part of a log transporter weigh scale unit, must

(a) be sufficiently offset from the scale balance platform to provide an adequate margin for log load clearance, or

(b) have an effective barrier erected between the weigh scale deck and the house.

[am. B.C. Regs. 312/2003, App. D, s. 32; 20/2008, App. A, s. 48.]

Water Operations

Condition of boats

26.85 (1) A boat used in or about a forestry operation must be maintained in good mechanical and seaworthy condition.

(2) A boat must be inspected daily before first use, and thereafter as required, and defects must

(a) be reported immediately in writing to the supervisor, and

(b) if they affect the safe operation of the boat, be remedied before the boat is used.

[am. B.C. Regs. 185/99, s. 73; 312/2003, App. E, s. 27; 20/2008, App. A, s. 49.]

Boat equipment

26.86 (1) A boat must be equipped with

(a) effective machinery guarding that meets the requirements of this Regulation,

(b) effective guards or insulation on hot exhaust pipes or stacks,

(c) suitable cabins, screens or guards to protect operators against injury from towline breakage if the boats are regularly required to pull logs, booms or barges,

(d) suitable cabins, screens, or guards meeting the requirements of *WCB Standard G606, Boom Boat Operator Protective Structures* if operators are subject to injury from logs or limbs intruding into the control area,

(e) suitable hydraulic or other steering systems that will not transmit forces that could cause injury to the operator through feedback of rudder reaction,

(f) deck matting or other surface cover which provides an effective grip for caulked footwear, and

(g) effective heating.

(2) A boat operated in navigable waters during the period from sunset to sunrise, or in conditions of restricted visibility, must

(a) Repealed. [B.C. Reg. 312/2003, App. E, s. 28 (b).]

(b) have deck and cabin lighting, where necessary to provide safe levels of illumination aboard the craft, and

(c) have searchlights or floodlights, where necessary to facilitate safe navigation and to illuminate working or boarding areas adjacent to the craft.

(3) Buoyancy equipment meeting the requirements of Part 8 (Personal Protective Clothing and Equipment) must be worn by each worker on a boom boat or in an open boat.

[am. B.C. Reg. 312/2003, App. E, s. 28.]

Boat size

26.87 (1) A boat used for breaking down unstable groups of logs which are criss-crossed or difficult to break free must be of sufficient size to ensure that vessel stability is not compromised.

(2) A boat must not be used to tow log booms or barges, that, by reason of weight, wind, current or sea conditions, are beyond the capacity of the towing craft to safely control.

[am. B.C. Reg. 20/2008, App. A, s. 50.]

Overloading

26.88 A boat must not be loaded with personnel or equipment so as to adversely affect its stability or seaworthiness.

Presence of operator

26.89 When a boat is used to push, pull or restrain log bundles during breaking operations, the operator must remain on the boat unless the boat is firmly securerd to the log bundles in a manner that allows the operator to get on and off safely.

[am. B.C. Reg. 20/2008, App. A, s. 51.]

Wind and sea conditions

26.90 A boat designed for use in calm waters must not be operated in wind or sea conditions that adversely affect its safe operation.

Hand signals

26.91 If the movement of a boat is regulated by hand signals, the code of signals authorized by the Board must be followed.

26.92 Repealed. [B.C. Reg. 20/2008, App. A, s. 52.]

General requirements for booming

26.93 (1) Log booms must be made up and sized with due regard for the size and quality of the available rigging.

(2) Booming grounds must be of sufficient width to safely accommodate booms that are being worked on.

(3) Booming grounds must be provided with safe access.

[am. B.C. Reg. 20/2008, App. A, s. 53.]

Rigging

26.94 (1) Booming chains, swifters and related items of rigging used in booming operations must be maintained in safe condition.

(2) Rigging which is damaged or deteriorated enough to be a danger to workers must be removed from service.

(3) The owner of the facility receiving a completed log boom must ensure that boomsticks are

(a) stripped of excess rigging before they are returned into service, and

(b) secured in a manner that will prevent entanglement during transit.

Winches

26.95 A boat that is used to make up or strip booms must use a winch appropriate to the task that

(a) is capable of withstanding the maximum stress that could be imposed while moving log bundles, and

(b) has a large enough diameter to hold all of the line that is needed to complete the task.

[en. B.C. Reg. 20/2008, App. A, s. 54.]

Manual boom stripping

26.96 If boom stripping is done manually, a sufficient number of workers must be available to handle the rigging safely.

[en. B.C. Reg. 20/2008, App. A, s. 54.]

26.97 Repealed. [B.C. Reg. 312/2003, App. B, s. 60.]

Dumping log bundles

26.98 A log or log bundle must not be dumped into water if there is a known or reasonably foreseeable risk to a worker.

[en. B.C. Reg. 20/2008, App. A, s. 55.]

26.99 Repealed. [B.C. Reg. 20/2008, App. A, s. 55.]

Table 26-1: Audible call signals

7 LONG whistles	ACCIDENT
1 LONG whistle, continued until emergent condition has ceased to exist	EMERGENCY HAZARD CONDITION
1 LONG – several SHORT whistles, repeated	FIRE
1 LONG whistle (*also used by the equipment operator to indicate a delay and must also be given before the equipment is again operated)	STARTING WHISTLE
4 LONG whistles	CALLING SUPERVISOR
3 LONG whistles	CALLING HOOKER
3 LONG – several SHORT whistles	CALLING HOOKING CREW
2 LONG – 1 SHORT whistles	CALLING SECOND RIGGER
2 LONG – several SHORT whistles	CALLING SECOND RIGGER AND BACK RIGGERS
1 SHORT – 1 LONG whistle	CALLING FOR WATER BAG
* When an operating delay has occurred and the equipment is ready to re-operate, the signal immediately following the “one LONG” re-start signal must be the repeat instruction signal.	

Table 26-2: Audible signals for vehicle operations

1 whistle	STOP
2 whistles	BACK UP
3 whistles	GO AHEAD

Table 26-3: Audible signals for high lead logging

3 SHORT	AHEAD* ON MAINLINE
3 SHORT – pause – 1 SHORT	AHEAD ON STRAWLINE
2 SHORT – pause – 2 SHORT	BACK* ON HAULBACK
2 SHORT – pause – series of SHORTS	SLACK HAULBACK
Series of SHORTS	SLACK MAINLINE
1 LONG (precedes any signal for slow operation)	SLOW
1 SHORT	STOP ALL LINES
3 SHORT – pause – 2 SHORT	TIGHTLINE
2 SHORT	SLACK HAULBACK AND MAINLINE SIMULTANEOUSLY
3 SHORT – 1 SHORT	WHEN BUTT RIGGING AT TREE SEND OUT STRAWLINE ON HAULBACK
3 SHORT – pause – 1 SHORT – pause – 1 SHORT for each extension	WHEN BUTT RIGGING AT TREE SEND OUT STRAWLINE EXTENSIONS
2 SHORT – followed by a number of LONGS indicates the number of chokers required	WHEN BUTT RIGGING IS AT TREE SEND OUT CHOKERS
2 LONG	WHEN BUTT RIGGING IS AT TREE PUT ON/TAKE OFF SCAB BLOCK
5 SHORT	WHEN BUTT RIGGING IS AT TREE INSPECT THE RIGGING

2 SHORT – pause – 2 SHORT – pause – 2 SHORT – pause – 1 SHORT	TIGHTEN GUYLINE
2 SHORT – pause – 2 SHORT – pause – 2 SHORT	SLACK GUYLINE

* "AHEAD" means haulage line moves toward machine
* "BACK" means haulage line moves away from machine

Table 26-4: Audible signals for slackline logging

a) Regular Signals:	
1 SHORT – pause – 2 SHORT	AHEAD ON SKYLINE
3 SHORT	AHEAD ON SKIDDING LINE
2 SHORT – pause – 2 SHORT	COME BACK ON HAULBACK
3 SHORT – pause – 1 SHORT	AHEAD ON STRAWLINE
3 SHORT – pause – 2 SHORT	TIGHTLINE
1 SHORT	STOP
Several SHORT	SLACK SKYLINE
3 SHORT – pause – several SHORT	SLACK SKIDDING LINE
2 SHORT – pause – several SHORT	SLACK HAULBACK
b) Slow Signals:	
Any regular signal preceded by a LONG whistle is a slow signal. Any signal that the Engineer is not sure of is a "STOP" signal	
c) Miscellaneous Signals:	
3 SHORT – when carriage is going back	HOLD SKIDDING LINE TIGHT AND KEEP ON COMING BACK UNTIL 'STOP' SIGNAL IS RECEIVED
2 SHORT – when carriage is going back	HOLD SKIDDING LINE TIGHT, START LOWERING SKYLINE, KEEP ON COMING BACK
A REPEAT – 2 SHORT	SLACK SKYLINE FASTER
2 SHORT – when carriage is going ahead	PICK UP ON SKYLINE
TIGHTLINE SIGNAL (3 SHORT – pause – 2 SHORT) when carriage is going ahead	SKIDDING LINE IS WRAPPED AROUND SKYLINE
When carriage is going back and "STOP" signal (one SHORT) comes in – Engineer stops carriage and starts lowering skyline. If a slack skidding line signal (three SHORT – pause – several SHORT) comes in while lowering the skyline, it means slack skidding and skyline at same time so that chokers come straight down.	
d) Signals to Chaser When Carriage is at Landing	
3 SHORT – pause – 1 SHORT	SEND BACK STRAWLINE ON HAULBACK
3 SHORT – pause – 1 SHORT followed by a number of evenly spaced SHORTS	SEND BACK THAT NUMBER OF COILS OF STRAWLINE
3 SHORT – pause – 1 SHORT – pause – 2 SHORT	SEND BACK END OF STRAWLINE HOOKED INTO CHOKER BELL FOR A DEAD LINE
2 SHORT – pause – a number of evenly spaced LONGS	SEND BACK THAT NUMBER OF CHOKERS
5 SHORT	INSPECT BUTT RIGGING

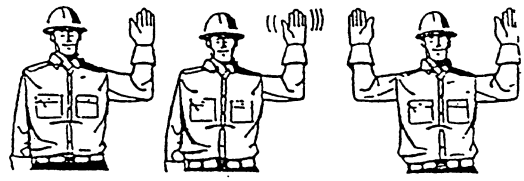
Table 26-5: Audible signals for mechanical slack pulling and drop line carriages on skyline yarders or running skyline yarders (as applicable)

a) Regular Signals:	
1 SHORT – pause – 2 SHORT	PICK UP SKYLINE
1 SHORT – pause – 2 SHORT – pause – several SHORTS	SLACK SKYLINE
2 SHORT – pause – 2 SHORT	COME BACK ON HAULBACK
1 SHORT – (when carriage is stopped by hooker then the machine operator automatically lowers chokers to ground by winding in slackpuller and paying out skidding line)	STOP ALL MOVING LINES
1 SHORT	STOP PULLING SLACK
5 SHORT	PULL SLACK AGAIN
1 SHORT – etc.	STOP PULLING SLACK
2 SHORT (this means HOLD haulback – slack the slackpuller – wind in skidding line)	PULL LOGS TO CARRIAGE
3 SHORT (this means wind in skidding line and slackpuller and pay out haulback)	AHEAD ON SKIDDING LINE (use interlock if available)
2 SHORT – pause – several SHORTS	SLACK HAULBACK
3 SHORT – pause – several SHORTS	SLACK SKIDDING LINE
3 SHORT – pause – 1 SHORT	AHEAD ON STRAWLINE
3 SHORT – pause – 1 SHORT – pause – several SHORTS	SLACK STRAWLINE
1 SHORT – pause – several SHORTS	SLACK SLACKPULLER
3 SHORT – pause – 2 SHORT (line is wrapped around skyline)	TIGHTLINE
b) Slow Signals:	
Any regular signal preceded by a LONG whistle is a slow signal. Any signal the machine operator is not sure of is a “STOP” signal	
c) Miscellaneous Signals:	
When carriage is going ahead to landing	
2 SHORT	STOP CARRIAGE AND PULL LOGS UP CLOSER TO CARRIAGE
Several quick SHORTS	PICK UP SLACKPULLER FASTER
1 SHORT – pause – 2 SHORT	PICK UP SKYLINE
Signals to chaser when carriage is at landing	
5 SHORT	INSPECT THE RIGGING
2 SHORT – pause – 1 LONG for each choker	SEND BACK THAT NUMBER OF CHOKERS
3 SHORT – pause – 1 SHORT	SEND OUT STRAWLINE ON HAULBACK
3 SHORT – pause – 1 SHORT – pause – 1 SHORT for each extension	SEND STRAWLINE EXTENSIONS (NOT COILS) ON HOOK
1 LONG – pause – 2 SHORT – pause – 2 SHORT	SEND PREARRANGED MISCELLANEOUS RIGGING TO BACK-END ON HOOK (E.G. STRAWLINE COILS)

Table 26-6: Requirements for radio controlled carriages

• These carriages are fitted with and controlled by an onboard computerized radio control system. This radio system is operated independently through a transmitter separated from that of the yarder.	
• The yarding and carriage frequencies must be separate, registered and coordinated through the WCB co-ordination system to ensure that one does not interfere with the other or with another operation. Contact the WCB for more information.	
• An audible signal must be sounded at the carriage and not at the yarder. This signal must have a tone different from that of the yarder signal.	
• Standard skyline signals will apply at the yarder.	
a) Audible radio signals for hydraulic accumulator or motor driven slack pulling and dropline carriages with or without skyline lock	
2 SHORT	LOCK SKYLINE CLAMP
5 SHORT	SLACK THE DROPLINE
1 SHORT	STOP PULLING SLACK
5 SHORT, etc.	PULL SLACK AGAIN
2 SHORT – pause – 1 LONG	UNLOCK SKYLINE CLAMP
If fitted with engine controls	
1 SHORT – pause – 1 LONG	STOP ENGINE
1 LONG – pause – 1 SHORT	START ENGINE
Carriages with variable dropline speeds must have a special signal for the speed changes. These signals must be different from standard yarding signals.	
b) Audible radio signals for radio-controlled motorized self-contained yarding carriages with or without skyline locks	
2 SHORT	LOCK SKYLINE CLAMP
5 SHORT	SLACK THE DROPLINE
1 SHORT	STOP THE DROPLINE
3 SHORT	PICK UP THE DROPLINE
2 SHORT – pause – 1 LONG	UNLOCK SKYLINE CLAMP
If fitted with engine controls	
1 SHORT – pause – 1 LONG	STOP ENGINE
1 LONG – pause – 1 SHORT	START ENGINE
Carriages with variable dropline speeds must have a special signal for the speed changes. These signals must be different from standard yarding signals.	

Table 26-7: Hand signals
A – Cable logging



Mainline ahead, normal. Raise one arm.

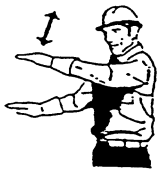
Mainline ahead, fast. One arm raised, hand "fluttering".

Mainline ahead, slow. Both arms raised.

Haulback ahead, slow. Both arms extended, rotating.

Slack the haulback. Hands in front of body using chopping motion.

Tightline. Hands overhead, fingertips touching.



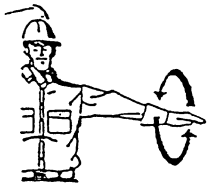
Slack the strawline. Pat back of hand with other hand.

Stop any moving line and hold.

Hold dog drum or lock brake lever. Clasp one hand with the other.

Slack the mainline, easy. Both hands extended at sides, hands fluttering.

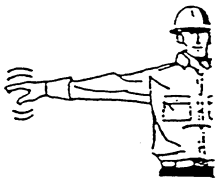
Ahead on strawline. Touch hand to bent elbow.



Ahead on haulback, normal speed. One arm extended, rotating.

and then

Ahead on strawline, slow.



Slack mainline all off. Arm extended at side, flipping wrist.

Table 26-7 (continued): Hand signals
A – Cable logging

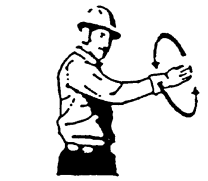
LOWER SKYLINE or guyline
pat top of head as applicable

Arms Crossed
SLACK THE DROPLINE
Cross arms in front and away from body flipping wrists

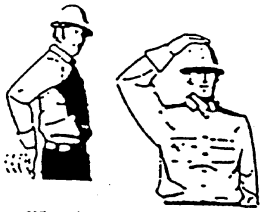
AHEAD ON THE DROPLINE
Cross arms in front

RAISE SKYLINE/GUYLINE
Move hand up from top of head several times.

Table 26-7 (continued): Hand signals
B – Skidding



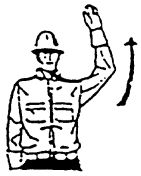
To back up the tractor — rotate the hand.



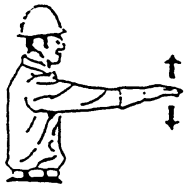
When hooker wants tractor to back in he slaps his butt. If tractor is to head in he puts finger on top of his head.

Tractor hooker's signal to tractor driver as to where he wants chokers dropped. Hooker faces in direction he wants tractor to stop and stands where he wants chokers dropped. He indicates what is to be done by swinging both hands in front of him, hands open with thumbs up.

To use upper winch, pat back of wrist with palm of other hand. Follow by standard signals.



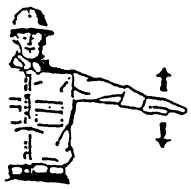
Ahead on mainline.



To slack mainline to unhook choker — wave hand extended, palm down.

Stop any moving line and hold.

To stop tractor — hold one hand out with palm down.



Go ahead on tractor.

Table 26-8: Voice commands for grapple yarders

[en. B.C. Reg. 20/2008, App. A, s. 56; am. B.C. Reg. 14/2019, App. F, s. 4.]

Item	To instruct operator to:	Signaller says:
1	Grapple log and go ahead	TAKE IT
2	Close grapple but not go ahead	CLOSE
3	Stop rigging	STOP
4	Open grapple	OPEN
5	Move empty grapple ahead	AHEAD
6	Move empty grapple back	BACK
7	Go ahead on strawline	AHEAD ON THE STRAWLINE
8	Slack mainline	MAINLINE
9	Slack haulback	HAULBACK
10	Lower grapple	DOWN
11	Slack strawline	SLACK STRAWLINE
12	Swing to operator's left	SWING LEFT
13	Swing to operator's right	SWING RIGHT
14	Hold haulback and go ahead on mainline	TIGHTLINE

PART 27 – WOOD PRODUCTS MANUFACTURING

Application

27.1 This Part applies to workplaces that process logs or other wood into lumber, shakes, shingles, chips, plywood, particleboard or other wood products.

General Requirements

Protection from flying debris

27.2 Equipment used to manufacture wood products must be designed or fitted with effective guarding or screening to protect workers from flying chips, debris, or hazards in the event of the failure of equipment components.

Kickback and kickout protection

27.3 (1) Edgers and other wood processing equipment which expose workers to the danger of material being thrown back by the saws must be fitted with effective kickback fingers, and if the danger remains when the kickback fingers are raised, a substantial barrier must be provided to protect workers.

(2) A worker must not be in front of raised kickback fingers while the saw is in motion.

(3) A worker must not be allowed at the outfeed end of an edger or other similar wood processing equipment where a kickout hazard exists, and inadvertent entry into such a danger area must be prevented.

(4) Edgers equipped with automatically activated kickback fingers must have interlocks to prevent forward motion of the feed rolls while the kickback fingers are in a raised position.

(5) Workers must be protected from the kickback or kickout dangers of plywood sanders.

Pressure rolls

27.4 (1) Edger pressure rolls must

(a) have a solid continuous rim surface, and

(b) be kept in contact with the material being cut.

(2) Only one piece of material at a time may be fed into any single set of pressure rolls for an edger, surfacer, or planer.

(3) A multiple feed edger must have separate pressure rolls for each feed.

Crossing green chains and decks

27.5 (1) A worker who is required to cross a green chain or transfer deck must

(a) be instructed in the hazards and proper procedures to follow,

(b) ensure the transfer deck is stopped before crossing, and is restarted only after the crossing is completed,

(c) cross only on fully decked locations where no hazard of falling exists and where safe means of access and egress have been provided, and

(d) cross only in a space clear of material.

(2) If a worker is required to access a transfer deck in order to control the flow of material as part of normal production work, the employer must ensure that

(a) safe work procedures are established and, where practicable, posted adjacent to the machinery,

(b) the worker is instructed in and follows the safe work procedures,

(c) the transfer deck is stopped before access,

(d) the worker accesses only fully decked areas, where there is no hazard of falling and where safe access and egress has been provided, and

(e) the stop control devices cannot be overridden by another control device, or by another worker.

Lumber package rollcase access

27.6 If a worker must access a lumber package rollcase for normal production work,

(a) the rollcase must be stopped, and

(b) the equipment and machinery must have effective safeguards to prevent injury to workers due to movement of material.

Mechanical handlers

27.7 A mechanical handler must be effectively safeguarded to prevent contact by workers.

Veneer clippers

27.8 A veneer clipper must be guarded to prevent a worker's hands or fingers being placed under the knife.

Kilns

27.9 (1) A dry kiln must have effective safety devices to prevent a door or carrier from falling.

(2) If a worker may be entrapped in a dry kiln, there must be an effective means of emergency escape, clearly identifiable by anyone inside the kiln.

Personnel hoists

27.10 A personnel hoist for a hot press, a pulp and paper dryer or a similar machine must

(a) have effective means to prevent the platform from falling if the power or equipment fails,

(b) Repealed. [B.C. Reg. 312/2003, App. B, s. 61 (a).]

(c) have critical components regularly inspected by a qualified person,

(d) have the rated load clearly marked on the hoist platform,

(e) have a log of inspections, maintenance and repairs meeting the requirements of Part 4 (General Conditions), and

(f) be fitted with guardrails and toeboards meeting the requirements of Part 4.

[am. B.C. Reg. 312/2003, App. B, s. 61.]

Hidden hazards

27.11 Where dangers, and dangerous equipment such as a jump saw, or automated equipment operated by photocells or proximity switches, are not readily visible to workers, the dangers must be made conspicuous by signs, placards or other effective means.

Communication

27.12 An effective means of communication must be provided and safe work procedures must be established to ensure the safety of workers when 2 or more workers are required to work as a team.

Water operations

27.13 Water operations must meet the requirements for such operations in Part 26 (Forestry Operations and Similar Activities).

Saws and Knives

Unattended machinery

27.14 An unattended saw and other woodworking machinery must not be left running if a worker could be endangered.

Sharpening saws and knives

27.15 Equipment used for grinding saws and knives must have an effective local exhaust ventilation system or other effective means of dust and mist control.

Babbitt melting

27.16 (1) Babbitt melting must be done at a controlled temperature.

(2) Exhaust hoods must be provided for melting and pouring operations or an equally effective air contaminant control method must be used.

(3) A babbitt pot must be covered.

(4) If practicable, a lead-free babbitt must be used.

Sharp-edged tools

27.17 The cutting edges of saws, knives, cutting heads, and other sharp-edged devices, must be

(a) guarded to prevent worker contact, when stored in operating areas, and

(b) handled and transported in a manner which will not endanger workers.

Circular saw guarding

27.18 (1) If there is a risk of injury to a worker from the blade of a circular saw, or flying debris from the saw blade, the portions of the blade outside the cutting area must be fully guarded.

(2) Guards must be arranged to allow cutting with a minimum amount of exposed blade.

Band saw guarding

27.19 (1) A band saw and its band wheels must be enclosed or otherwise effectively guarded except in the cutting area to prevent worker contact and to restrain the saw blade in the event of blade failure.

(2) If metal enclosures are used with shake band saw wheels, the top door panel must be fitted with an inside wooden liner.

(3) For a hand-fed shake band saw, the distance between the top of the table rollers and the top guide must not exceed 36 cm (14 in).

Slasher and trim saws

27.20 (1) Barriers to protect workers from ejected material must be installed in front of and behind all multiple slashers and multiple trim saws.

(2) If a worker may be caught or pulled into a saw or other danger area by a lug chain or similar transfer system, an emergency stopping device must be fitted on the conveyance to automatically stop the transfer system before the worker is pulled into the danger area.

Circular cutoff saws

27.21 A circular cutoff saw must be fully enclosed, guarded, or located to prevent inadvertent contact with the running saw when it is in the retracted position.

Splitters

27.22 (1) If a worker may be exposed to kickback from a circular saw with rip-type teeth, the saw must be fitted with an effective splitter.

(2) Subsection (1) does not apply to an edger or circular resaw which is equipped with anti-kickback fingers.

Chop, trim and swing cutoff saws

27.23 (1) Each swing cutoff saw must have

(a) a device to automatically return the saw to the back of the table,

(b) a limit chain, or similar device to prevent the saw from swinging beyond the front of the table and past a position where the gullets of the lowest teeth rise above the top of the table, and

(c) a latch or similar device to prevent saw rebound.

(2) A swing cutoff saw operator must be positioned so that no part of the operator's body is in line with the saw.

(3) Each chop, trim and swing cutoff saw must

(a) be effectively guarded,

(b) be guarded by location, or

(c) have other effective means that prevent the operator's hands being placed in the cutting area when the saw is activated.

Circular saw guides

27.24 (1) Circular head saws and scragg saws must be equipped with safety guides.

(2) If a top saw is only used occasionally, such as to cut flares off oversized logs, the requirements of subsection (1) do not apply.

(3) Guides that must be adjusted while the saw is in motion must have the adjustment controls located away from the danger area.

Cutoff saw interlocks

27.25 If a powered conveyor feeds material at right angles to the blade of a circular cutoff saw, the system must have interlock control devices to prevent side loading of the saw.

Saw operator location

27.26 Log and block cutoff saw operators must be positioned so that no part of the operator's body is in line with the saw unless adequate barriers have been installed.

27.27 Repealed. [B.C. Reg. 312/2003, App. B, s. 62.]

Saw maintenance

27.28 (1) A saw must be inspected frequently and maintained in a safe condition.

(2) A dull, badly set, improperly filed or tensioned saw, or an inserted tooth saw with poorly fitting shanks or worn bits, must be removed from service.

(3) A saw must be inspected for cracks and other defects each time the saw is sharpened, and a cracked saw must be removed from service until repaired by a qualified person.

(4) A saw or saw collar damaged by excessive heat or undue stress must be removed from service until inspected and repaired by a qualified person.

Cracks in circular saws

27.29 (1) A circular saw with a crack of any size adjacent to the collar line, or with a crack elsewhere which exceeds the limit specified in Table 27-1, must be removed from service until the crack is repaired and the saw retensioned by a qualified person.

(2) A circular saw with a crack near the periphery which does not exceed the limit specified in Table 27-1 must be removed from service until the crack is repaired or the lengthening of the crack has been arrested by slotting, centre punching, drilling or other effective means, and the saw is retensioned as necessary, by a qualified person.

Table 27-1: Circular saw crack limits

Saw diameter		Maximum length of crack	
Millimetres	**Inches**	**Millimetres**	**Inches**
up to 300	up to 12	13	1/2
300 to 610	12 to 24	25	1
610 to 915	24 to 36	38	1 1/2
915 to 1 220	36 to 48	50	2
1 220 to 1 525	48 to 60	64	2 1/2
over 1 525	over 60	76	3

Cracks in band saws

27.30 (1) A band saw, other than a shake band saw, with a crack exceeding the limit specified in Table 27-2 must be removed from service until the crack is repaired and the saw retensioned by a qualified person.

(2) A band saw, other than a shake band saw, with a crack not exceeding the limit specified in Table 27-2 must be removed from service until the crack is repaired or the lengthening of the crack has been arrested by centre punching or other effective means, and the saw retensioned as necessary, by a qualified person.

(3) A shake band saw with a crack must not be used.

Table 27-2: Band saw crack limits

Band saw width		Maximum length of crack	
Millimetres	**Inches**	**Millimetres**	**Inches**
up to 125	up to 5	1/10 of saw width	1/10 of saw width
125 to 300	5 to 12	13	1/2
over 300	over 12	19	3/4

Band saw wheel wear limits

27.31 (1) Unless otherwise specified by the manufacturer or a professional engineer, the minimum rim thickness of a cast steel band saw wheel measured 25 mm (1 in) inboard from the rim edge must be

(a) 14 mm (9/16 in) for wheels up to and including 1.8 m (6 ft) diameter,

(b) 16 mm (5/8 in) for wheels over 1.8 m (6 ft) up to and including 2.75 m (9 ft) diameter, and

(c) 17.5 mm (11/16 in) for wheels over 2.75 m (9 ft) diameter.

(2) A band saw wheel over 1.2 m (48 in) diameter must be nondestructively tested for cracks by a qualified person at least once a year.

(3) A cracked wheel or a wheel which has been exposed to excessive heat must be removed from service until the wheel manufacturer, or a professional engineer, has certified it as safe for continued use.

Log Handling

Log-haul walkways

27.32 Unless clearly impracticable, every log-haul must have at least one walkway

(a) fitted with cleats and handrails, and

(b) of sufficient width to enable workers to stand clear of logs in the log haul.

Log hauling equipment

27.33 (1) The employer must ensure that, when log hauling and similar hoisting equipment is being used, workers are positioned so that they will not be endangered by logs as a result of power or equipment failure, or other similar cause during lifting and lowering operations.

(2) Log hauling and similar hoisting equipment must be equipped with

(a) devices which prevent logs from running back in the event of power failure, and

(b) an emergency stop control by which the operator can stop the equipment.

(3) The emergency stop control must not be capable of being overridden.

Rolling logs

27.34 Provisions must be made to protect workers from rolling logs.

Barker feed restraints

27.35 Logs must be restrained against dangerous movement at the infeed and outfeed sections of a mechanical ring barker.

Bundle breaking

27.36 When wires, strapping, or bundling cables are removed from bundled logs in booming grounds, millyards or dryland sorting areas, the following requirements must be met:

(a) specific written safe work procedures must be developed and followed by all workers involved in the operation;

(b) the load must be restrained to prevent logs or log chunks from rolling off the bundle, or otherwise endangering the workers;

(c) workers must not be allowed beneath a suspended load or equipment.

Headrigs

Buffer stops

27.37 Substantial stops, preferably with spring, pneumatic, or hydraulic buffers, must be installed at each end of the carriage travel area.

Locking control levers

27.38 The employer must ensure that means are provided and used to eliminate inadvertent operation of the headrig log-turning and carriage-feed controls.

Carriage track barriers

27.39 (1) If a headrig sawyer may be exposed to the hazard of logs, sawn material, or chunks entering the booth or operator's area, the sawyer must be protected by

(a) a substantial barrier between the sawyer and carriage track, extending from the floor of the booth to 60 cm (2 ft) above the rollcase, and

(b) a substantial barrier at the log loading area.

(2) Where necessary to deflect sawn material away from the sawyer, a substantial barrier must be installed between the sawyer booth and the saw.

Preventing contact

27.40 Headrigs must have safety devices which prevent carriage equipment or dogs from contacting the saw or slabber head.

Chippers, Hogs and Planers

Hog and chipper chutes

27.41 (1) Hog and chipper feed chutes must be equipped with baffles or other effective means to prevent material from being thrown from the equipment.

(2) A worker feeding or clearing a hog or chipper must be restrained by a safety belt and lanyard, unless otherwise protected from falling into the conveyor or machine.

Hogs, chippers and cutting heads

27.42 (1) Until the rotor has stopped turning, no attempt must be made to remove a guard, hood, shroud or inspection plate from a hog, chipper, or cutter head.

(2) A makeshift device that may cause injury to a worker must not be used to brake or slow down a rotor or cutter head.

(3) A mill chipper with a shroud, hood or inspection plate that can be removed before the rotor has stopped must have an effective brake.

(4) Subsection (3) does not apply to a whole log chipper.

(5) A hog or chipper must have a means of determining if rotating parts are in motion or have stopped.

(6) A production planer installed after January 1, 1999 must be equipped with brakes on the heads, and all production planers must have brakes on the heads by January 1, 2000.

Materials Handling

Height of chip and sawdust piles

27.43 (1) The height of any excavated or unstable face of a chip, hog fuel or sawdust pile must not exceed the safe reach of the mobile equipment being used to handle the material.

(2) Workers unprotected by equipment or barriers must not enter a hazardous area near the face of a chip, hog fuel or sawdust pile.

Wood products storage

27.44 (1) A pile of lumber, veneer, plywood or similar wood product must be erected plumb and level, and be maintained in a stable condition.

(2) Spacing blocks which permit stable piling and unobstructed access for the forks of lift trucks must be placed beneath each pile and between loads.

(3) Veneer loads must be supported by at least 3 spacing blocks of sufficient size to permit stable piling and unobstructed access for the forks of lift trucks, and individual load height must not exceed 1 m (3.3 ft).

(4) Loads of lumber built up for storage or transportation must be stabilized

(a) using stripping material which, where feasible, does not protrude beyond the side of the load or package, or

(b) by other effective means.

(5) If wood products are piled on a foundation that is firm and level

(a) loads of lumber may be piled up to approximately 4.5 m (15 ft) high,

(b) unitized loads of lumber or loads of lumber 15 cm (6 in) or more in width may be piled up to approximately 6 m (20 ft) high, except for the outer pile which must not exceed 4.5 m (15 ft),

(c) if 3 or more loads of any size lumber are cross-tied at each successive level, the loads may be piled up to approximately 11 m (35 ft) high,

(d) veneer piled in the vicinity of passageways or work areas must be adequately supported to prevent falling,

(e) veneer storage piles must not exceed 4.5 m (15 ft) high, and

(f) loads of plywood and similar wood products may be piled up to approximately 6 m (20 ft) high except for the outer stack which must not exceed 4.5 m (15 ft).

Shake and Shingle Mills

Shake splitters and cubers

27.45 Foot pedal controls on shake splitters and cubers must be fitted with effective guards to prevent inadvertent operation of the equipment.

Block size and pile height

27.46 (1) Blocks must be securely piled not more than one tier high when on the sawyer's table, and no higher than 1.8 m (6 ft) elsewhere.

(2) Blocks must be of a size that does not interfere with the safe loading of the carriage jaws.

Shingle saws

27.47 A shingle machine with a circular head saw must have a sawtooth guard which

(a) projects at least 38 mm (1 1/2 in) beyond the exposed cutting edge of the headsaw,

(b) will prevent the headsaw leaving the arbor should the securing nut fail, and

(c) is located and maintained not more than 13 mm (1/2 in) from the side of the saw.

Shake resaw arm guards

27.48 A hand-fed shake resaw must have a substantial arm guard on the working side of the blade to prevent the operator from contacting the blade.

Clipper saw guards

27.49 (1) Except for the portion that is exposed to trim shingles, a clipper saw must be effectively guarded by a substantial metal guard of at least 16 mm (5/8 in) diameter round stock, or a flat bar of equivalent strength, installed not more than 100 mm (4 in) above the saw and not more than 13 mm (1/2 in) from the plane of the saw.

(2) Clipper saw boards must have substantial finger guards, not less than 130 mm (5 in) long and 32 mm (1 1/4 in) deep, designed and adjusted to prevent the operator's fingers from contacting any exposed saw teeth below the clipper board.

Clipper saw brakes

27.50 (1) An independently motor driven clipper saw must be equipped with an effective braking device, automatically activated when the motor power ceases, and which is capable of bringing the saw to a stop in not more than 20 seconds.

(2) Braking devices must be of a design acceptable to the Board.

Treadle controls

27.51 (1) A shingle machine jaw treadle must be arranged so that the operator must activate the clutch control to start the machine after the treadle is released, and the use of devices to permit the machine to automatically start when the jaw treadle is released is prohibited.

(2) Shingle machine jaw treadles must be constructed of, or covered with, non-skid material.

Set works and reciprocating parts

27.52 (1) Ratchet levers on the set works of a shingle cutting machine must be guarded.

(2) Reciprocating parts of shingle machine carriage drives must be guarded to prevent contact by workers.

Carriage speed

27.53 Conventional shingle machine carriage speed must not exceed 34 strokes per minute.

Saw diameter

27.54 The head saw of a conventional shingle machine must have a minimum diameter of 1 m (39 in).

Unattended machines

27.55 The employer must ensure that a worker does not leave a shingle machine or clipper saw unattended if the saw is in motion.

PART 28 – AGRICULTURE

Definitions

28.1 In this Part:

"agricultural operations" include the production activities related to

(a) apiculture,

(b) berry farming,

(c) Christmas tree culture,

(d) composting,

(e) dairy farming,

(f) egg farming,

(g) forest seedling and seed production,

(h) grain and oilseed production,

(i) greenhouse operations,

(j) herb production,

(k) horticulture, including floriculture, tree nurseries and ornamental nurseries,

(l) insects raised for biological pest control,

(m) orchards,

(n) poultry farming,

(o) a riding academy, or the boarding or breeding of horses,

(p) seed production,

(q) sod or turf production,

(r) vegetable farming,

(s) wool, hide, feather or fur production, and

(t) the raising of crops or animals for human or animal consumption,

but do not include

(u) the production of agricultural byproducts or of manufactured derivatives from agricultural raw material,

(v) the breeding or raising of pets other than horses, or

(w) aquaculture;

"agricultural tractor" means a vehicle, with more than 20 engine horsepower, running on wheels, designed to furnish the power to pull, carry, propel or drive an implement that is designed or used for agriculture, but does not include a self-propelled implement;

"farm land" means land used for agricultural operations;

"low-profile tractor" means an agricultural tractor with the following characteristics:

(a) the front wheel spacing is equal to the rear wheel spacing, as measured from the centre line of each right wheel to the centre line of the corresponding left wheel;

(b) the clearance from the bottom of the tractor chassis to the ground does not exceed 46 cm (18 in);

(c) the highest point of the hood does not exceed 1.5 m (60 in);

(d) the tractor is designed so that the operator straddles the transmission when seated;

"orchard ladder" means a self-supporting portable ladder of the tripod type, wide at the bottom and tapering towards the top, non-adjustable in length, and consisting of side rails, flat steps and a hinged, single leg back section.

[en. B.C. Reg. 312/2004, s. 1.]

Application

28.2 This Part applies to agricultural operations on farm land.

[en. B.C. Reg. 312/2004, s. 1.]

Division 1 – General Conditions

Cold storage rooms

28.3 Cold storage rooms must have at least one door that can, at all times, be opened from inside the room.

[en. B.C. Reg. 312/2004, s. 1.]

Bridges and culverts

28.4 (1) Bridges and culverts under roadways within the agricultural workplace must be

(a) designed, constructed and maintained so as to safely support the heaviest load expected to be imposed on them, and

(b) of sufficient width to permit equipment and machinery to cross safely.

(2) A bridge within the agricultural workplace must also be provided with bullrails not less than 25 cm (10 in) in height.

[en. B.C. Reg. 312/2004, s. 1.]

Barriers for manure pits

28.5 (1) Where manure or other material is loaded into pits by self-propelled equipment, the employer must install barriers sufficient to prevent the equipment from falling or inadvertently entering the pit.

(2) If the use of barriers required by subsection (1) is not practicable, the employer must adopt procedures that provide equivalent protection for workers.

[en. B.C. Reg. 312/2004, s. 1.]

Instruction of seasonal, temporary and other workers

28.6 When workers, including seasonal and temporary workers, start employment, the employer and the employer's supervisor must ensure that they are instructed about the safe performance of their duties.

[en. B.C. Reg. 312/2004, s. 1.]

Rollover risk

28.6.1 If an agricultural tractor is proposed to be used without a ROPS under section 16.34 (2) (b), in addition to the factors listed in section 16.34 (1) to be considered in the rollover risk assessment, the qualified person must also consider the training and experience of the operator.

[en. B.C. Reg. 139/2021, App. D, s. 14.]

Animal handling

28.7 (1) An employer must ensure that workers have a safe means of escape from any enclosure occupied by animals that are potentially dangerous to workers.

(2) If a worker is required to handle animals, the employer must ensure that the worker is effectively instructed and trained and is competent to perform the assigned work.

[en. B.C. Reg. 312/2004, s. 1.]

Indoor air quality exception

28.8 Sections 4.70 to 4.80 (Indoor air quality) do not apply to a private residence.

[en. B.C. Reg. 312/2004, s. 1.]

Control of environmental tobacco smoke and e-cigarette vapour exception

28.9 Sections 4.81 and 4.82 (Environmental tobacco smoke and e-cigarette vapour) do not apply in a private residence, except when a worker, other than the occupant of the residence, is working in the residence.

[en. B.C. Reg. 312/2004, s. 1; am. B.C. Reg. 9/2017, App. C, s. 4.]

Drinking water

28.10 (1) An employer must ensure that an adequate supply of potable drinking water is available to workers during the workday.

(2) Water in irrigation ditches or other similar sources is not potable drinking water for the purposes of subsection (1).

(3) If drinking water is provided in portable dispensers, the dispensers must be

(a) equipped with a tap,

(b) capable of being covered, and

(c) maintained in a sanitary condition.

(4) Workers must be informed of any water supplies that are unsafe to drink.

[en. B.C. Reg. 312/2004, s. 1.]

Division 2 – Hazardous Substances

Personal hygiene

28.11 (1) Section 5.82 (2) (a) and (b) does not apply to agricultural operations on farm land.

(2) If work processes involving substances such as lead, mercury, asbestos, silica or pesticides are high hazard, the employer must ensure that workers are provided with adequate and appropriate shower and change facilities.

[en. B.C. Reg. 312/2004, s. 1.]

28.12 Repealed. [B.C. Reg. 199/2014, App. J, s. 1.]

Anhydrous ammonia

28.13 (1) Sections 6.116 to 6.132 (Toxic process gases) do not apply to anhydrous ammonia fertilization systems.

(2) If anhydrous ammonia is stored or used for the purpose of fertilization, the employer must ensure that

(a) the equipment containing anhydrous ammonia is inspected before each use, to prevent accidental leakage or spillage,

(b) the hose end-valves are in the closed position when the equipment is not operating, and

(c) the relief and vapour valves are positioned so that any discharge is directed upwards and away from the worker's operating position.

[en. B.C. Reg. 312/2004, s. 1.]

Ventilation of buildings near manure tanks

28.14 (1) A worker must not enter or remain in a building or structure adjoining a liquid manure tank while the manure is being agitated.

(2) Following agitation of the manure, any adjoining building or structure must be thoroughly ventilated before a worker is permitted to re-enter it.

[en. B.C. Reg. 312/2004, s. 1.]

Division 3 – Personal Protective Equipment

Horseback riding exception

28.15 Section 8.23 (Non-slip footwear) does not apply to a work activity involving horseback riding.

[en. B.C. Reg. 312/2004, s. 1.]

Division 4 – Equipment

Warning signs for power take-off devices

28.16 At conspicuous locations near rotating shafts driven by power take-off devices, warning signs must be located specifying that shields must be kept in place.

[en. B.C. Reg. 312/2004, s. 1.]

Signs and procedures for equipment guarding

28.17 If the removal of a guard or access door would expose a worker to a component that continues to rotate after the power to the component has been disengaged,

(a) the employer must apply a sign to the guard or access door warning of the danger, and

(b) the guard must not be removed or access door opened until enough time has elapsed to bring all components to a complete stop.

[en. B.C. Reg. 312/2004, s. 1.]

Hay balers

28.18 A worker using a hay baler must not attempt to clear hay from the collection area unless the engine is stopped and cannot be inadvertently started.

[en. B.C. Reg. 312/2004, s. 1.]

Round balers

28.19 A worker must keep clear of the discharge area of a round baler and the area under the hatch unless the hatch is blocked open.

[en. B.C. Reg. 312/2004, s. 1.]

Post-hole diggers

28.20 A post-hole digger must have

(a) the tractor or machine brakes set before digging,

(b) shear bolts as specified by the manufacturer, and

(c) a hold-to-run control when operated as a hand-held unit.

[en. B.C. Reg. 312/2004, s. 1.]

Post drivers

28.21 A worker operating a post driver must

(a) lower the hammer and stop the engine when adjustment or maintenance is required,

(b) if necessary for safety, steady the post with a steady fork or guide, and

(c) lower or block the hammer when the machine is not in use.

[en. B.C. Reg. 312/2004, s. 1.]

Chain saws exception

28.22 Section 12.72 does not apply to a chain saw used in agricultural operations on farm land, if the chain saw was purchased for first use before December 31, 1993.

[en. B.C. Reg. 312/2004, s. 1.]

Hand winch for auger conveyors

28.23 A hand winch for raising an auger conveyor must

(a) have a control that will hold the auger at any angle, and

(b) respond only when the handle is turned.

[en. B.C. Reg. 312/2004, s. 1.]

Alternative means of evaluation for automotive lifts and vehicle supports

28.24 (1) Despite section 12.76, if written instructions are not available from the manufacturer or a professional engineer, the instructions may be provided instead by any other person qualified to develop them.

(2) Despite sections 4.8 and 12.79, if a modification is made to a device listed in section 12.79 (1) or if the manufacturer's rated capacity is not known, the rated capacity may be determined by a person qualified to do so.

[en. B.C. Reg. 312/2004, s. 1.]

Orchard ladders exception

28.25 Sections 13.2 (1) and 13.5 (a), (b) and (c) do not apply to orchard ladders.

[en. B.C. Reg. 312/2004, s. 1; am. B.C. Reg. 422/2004, s. 3.]

Orchard ladders design

28.26 An orchard ladder must

(a) meet the construction requirements of *CSA Standard CAN3-Z11-M81, Portable Ladders*, except that the spreader requirement does not apply to orchard ladders,

(b) have a rail spread that increases at least an average of 6 cm (2.5 in) for each 30 cm (12 in) of ladder length, and

(c) when necessary for safety, have the feet of the ladder equipped with steel points or other non-slipping bases designed for the ground on which the ladder will be used.

[en. B.C. Reg. 312/2004, s. 1.]

Orchard ladders instructions and use

28.27 (1) An employer must ensure that

(a) the ladder used is appropriate for the task, and

(b) a worker using an orchard ladder is instructed in its proper use.

(2) Repealed. [B.C. Reg. 422/2004, s. 4.]

[en. B.C. Reg. 312/2004, s. 1; am. B.C. Reg. 422/2004, s. 4.]

Previously installed fixed ladders exception

28.28 Despite section 13.2 (1) (a), a fixed ladder existing on or before January 1, 2006, and not conforming to the current or an earlier edition of *ANSI Standard A14.3-1992, Safety Requirements for Fixed Ladders*, may remain in use subject to any modifications considered necessary by the Board.

[en. B.C. Reg. 312/2004, s. 1; am. B.C. Reg. 422/2004, s. 5.]

Small cranes and hoists exception

28.29 (1) Sections 14.2 to 14.33 and 14.44 do not apply to a job built crane or hoist for use on site with a rated capacity of less than 1 tonne (2 200 lbs) if

(a) the device is built or otherwise assembled by a person qualified to do the work,

(b) the rated capacity of the device, including support structures, is determined by a person qualified to make the assessment,

(c) the rated capacity is marked on the device and is not exceeded,

(d) the device is not used to support a worker,

(e) the device is operated so that a worker is not under the load,

(f) the device is inspected and maintained at a frequency and to the extent required to ensure that every component is capable of carrying out its original design function with an adequate margin of safety,

(g) inspection and maintenance records are maintained for the device consistent with Part 4 (General Conditions), and

(h) any modifications to the device are made by a person qualified to do the work.

(2) Despite subsection (1), the Board may require compliance with sections 14.2 to 14.33 and 14.44 if the design of the equipment or the circumstances of use indicate the need.

[en. B.C. Reg. 312/2004, s. 1.]

Altered application dates for cranes and hoists

28.30 (1) The certification of drop stops required under section 14.19 (2) must be completed by January 1, 2006.

(2) Section 14.54 applies to a bridge, overhead or gantry crane, if installed after January 1, 2006, or to a crane or its runway if it is modified after that date.

[en. B.C. Reg. 312/2004, s. 1.]

Alternative requirements for rigging identification

28.31 The requirements for identification of various rigging components in sections 15.5, 15.24 (3), 15.42, 15.46, 15.52, 15.55 and 15.59 may also be met if the employer is able to determine the information required for a particular device by any means of identification specific to it.

[en. B.C. Reg. 312/2004, s. 1.]

Evaluation of a rigging device

28.32 The requirements of sections 15.6 (2), 15.27, 15.28 (1), 15.32 and 15.36 for the competency of a person evaluating a device may be met by a person who is qualified to conduct the evaluation.

[en. B.C. Reg. 312/2004, s. 1.]

28.33 to **28.42** Repealed. [B.C. Reg. 139/2021, App. D, s. 15.]

General requirements for mobile elevating work platforms

28.43 A mobile elevating work platform used in an orchard must

(a) have a platform equipped with a non-skid surface,

(b) be provided with a drive system that ensures there will be no unintended movement of the unit, and

(c) not be operated on sloping ground unless

(i) specific instructions from the manufacturer for the operation are followed, and

(ii) the unit is equipped with a braking system capable of restraining the machine under any condition of use, or the unit is equipped with wheels that will not turn unless driven.

[en. B.C. Reg. 312/2004, s. 1.]

Mobile elevating work platform design standards

28.44 (1) Except as provided by subsection (2), a mobile elevating work platform used in an orchard must meet the requirements of section 13.2 (1).

(2) A mobile elevating work platform may be used in an orchard if it has

(a) a platform equipped with

(i) a gate that does not swing outward and that can be securely fastened in the closed position to minimize the risk of accidental opening,

(ii) a top rail approximately 90 cm (36 in) in height above the floor and capable of withstanding a load of 890 N (200 lbs) applied in any direction at any point on the top rail, and

(iii) a toe rail, on the sides not serviced by a gate, which is approximately 8 cm (3 in) in height with a maximum clearance between the floor and the bottom edge of the toe rail of 5 cm (2 in), and

(b) for equipment manufactured after December 31, 1993, a maximum platform height of 3.6 m (12 ft).

[en. B.C. Reg. 312/2004, s. 1; am. B.C. Reg. 422/2004, s. 6.]

Identification on mobile elevating work platforms

28.45 A mobile elevating work platform used in orchards, if manufactured after December 31, 1993, must have the following information permanently and conspicuously marked on it:

(a) certification to confirm the standard met by the device;

(b) the make, model, serial number and manufacturer's name;

(c) the rated platform workload;

(d) the maximum platform height and travel height;

(e) the maximum slope on which the device may be operated when the platform is elevated.

[en. B.C. Reg. 312/2004, s. 1.]

Fall protection exception

28.46 Section 13.33 (1) and Part 11 (Fall Protection) do not apply to a worker using a mobile elevating work platform in an orchard if the platform height is 3.6 m (12 ft) or less.

[en. B.C. Reg. 312/2004, s. 1; am. B.C. Reg. 422/2004, s. 7.]

Annual inspection and certification exception

28.47 For the purposes of application of sections 13.12 and 13.23 (1) (b), a person may make the inspection and determination of safety for continued use of a mobile elevating work platform used in orchards if the person is qualified to do so, and the work platform has a maximum operational height of 3.6 m (12 ft).

[en. B.C. Reg. 312/2004, s. 1; am. B.C. Regs. 422/2004, s. 8; 116/2022, App. B, s. 15.]

Operational devices exception

28.48 Sections 13.24 (2), 13.25 and 13.26 do not apply to mobile elevating work platforms when they are used in orchards at a height of 3.6 m (12 ft) or less.

[en. B.C. Reg. 312/2004, s. 1; am. B.C. Reg. 422/2004, s. 9.]

28.49 Repealed. [B.C. Reg. 139/2021, App. D, s. 15.]

Transportation of workers

28.50 Despite sections 16.8 and 16.20 and Part 17, a person other than the operator may be transported on mobile equipment that is not designed for the transportation of workers, if

(a) the person is safely seated, and

(b) the mobile equipment is operated at no more than 10 km/h (6 mph).

[en. B.C. Reg. 139/2021, App. D, s. 16.]

PART 29 – AIRCRAFT OPERATIONS

29.1 Repealed. [B.C. Reg. 312/2003, App. H, s. 3.]

General Requirements

Application

29.2 This Part applies to the use of aircraft in the workplace.

Pre-job planning and training

29.3 The employer must

(a) provide written safe work procedures for workers who are exposed to hazards from aircraft operations,

(b) ensure that workers are provided with adequate pre-job instruction and that the instruction is documented, and

(c) ensure that workers can demonstrate the ability to safely perform their tasks as required.

29.4 Repealed. [B.C. Reg. 312/2003, App. H, s. 4.]

Communications

29.5 (1) The employer must ensure that effective communication between air and ground crews has been established before initiating airlift operations.

(2) If hand signals are used to communicate between air and ground crews

(a) only internationally recognized hand signals may be used,

(b) the designated signaller must be identified to the pilot in command by means of high visibility apparel and position, and

(c) all workers exposed to hazards from the airlifting operation must know and understand the hand signals.

29.6 to **29.8** Repealed. [B.C. Reg. 312/2003, App. H, s. 5.]

Airlifted loads

29.9 (1) The employer must ensure that airlifted loads are not flown over workers.

(2) Workers must remain clear and in recognized safe areas when there is a hazard from airlifted loads.

Traffic control

29.10 The employer must ensure that effective traffic control measures are employed as required by Part 18 (Traffic Control) wherever airlifted loads will be flown over travelled roadways.

Rotorwash

29.11 The employer must ensure that helicopter rotorwash will not expose workers to undue risk.

Unstable materials

29.12 The employer must ensure that work areas are planned and maintained to avoid placing workers in hazardous proximity to unstable materials.

29.13 to **29.15** Repealed. [B.C. Reg. 312/2003, App. H, s. 6.]

Forestry Operations

Notification

29.16 (1) The owner, or the person engaged by the owner to be the prime contractor, must give notice to the Board at least 2 weeks before commencing any operation involving aerial transport of logs or other products made of wood.

(2) The notice must provide the

(a) name of the prime contractor and of the person responsible for the operation,

(b) location, scheduled start date and expected duration of the operation, and

(c) type of logging activity to be done.

[am. B.C. Reg. 185/99, s. 74; 14/2019, App. G, s. 1.]

Site supervision

29.17 The employer must assign a person on site the responsibility for supervising and coordinating airlift operations.

29.18 and **29.19** Repealed. [B.C. Reg. 312/2003, App. H, s. 7.]

Log loading areas

29.20 (1) Log loading areas must be separate from drop zones.

(2) Before accessing loading and drop zone areas, workers must communicate their intentions to aircraft and equipment operators, and get an "all clear" signal to proceed from the operators.

Pesticide Application

29.21 and **29.22** Repealed. [B.C. Reg. 312/2003, App. H, s. 8.]

Flagpersons

29.23 A flagperson who may be exposed to pesticide spray or drift must wear protective clothing covering the head, body, hands and feet, and a respirator appropriate for the pesticide being applied.

[en. B.C. Reg. 312/2003, App. H, s. 9.]

PART 30 – LABORATORIES

Definition

30.1 In this Part, **"biological agent"** means a biological agent designated as a hazardous substance under section 5.1.1.

[en. B.C. Reg. 312/2010, App. N, s. 4.]

Application

30.1.1 This Part applies to rooms, buildings or areas in buildings equipped with apparatus, equipment, chemicals or test animals and used for research, quality control, performance of tests, experiments or measurements, photographic development, or the preparation of drugs or other products in the natural sciences.

[am. B.C. Reg. 312/2010, App. N, s. 3.]

General Requirements

Equipment operation

30.2 Operators of laboratory equipment must be adequately instructed and trained in the safe use of laboratory equipment and the precautions to be taken when the equipment is used.

[en. B.C. Reg. 312/2003, App. B, s. 63.]

30.3 Repealed. [B.C. Reg. 312/2003, App. E, s. 29.]

Plumbing

30.4 (1) Laboratory water faucets with goosenecks must be protected by vacuum breaks meeting the requirements of *ANSI Standard ANSI/ASSE 1001-1990, Pipe Applied Atmospheric Type Vacuum Breakers*.

(2) Repealed. [B.C. Reg. 312/2003, App. B, s. 64 (b).]

(3) The location of an in-line vacuum break must be clearly identified.

[am. B.C. Reg. 312/2003, App. B, s. 64.]

Fire protection

30.5 (1) Repealed. [B.C. Reg. 312/2003, App. E, s. 30.]

(2) Suitable fire extinguishers of a size easily handled by laboratory workers must be immediately accessible wherever flammable materials are used or stored.

[am. B.C. Reg. 312/2003, App. E, s. 30.]

Guarding

30.6 (1) Laboratory equipment which presents a physical hazard to workers must be adequately guarded, shielded or isolated by location.

(2) Repealed. [B.C. Reg. 312/2003, App. D, s. 33.]

(3) Hazards of equipment use must be identified on the equipment.

[am. B.C. Reg. 312/2003, App. D, s. 33.]

Equipment ventilation

30.7 Laboratory equipment and instruments which may emit harmful quantities of a substance during their operation must be provided with an effective local exhaust ventilation system.

Definitions

30.7.1 In sections 30.8 to 30.11:

"laboratory fume hood" means an enclosed and mechanically ventilated workspace located in a laboratory, that is designed to

(a) draw air into the workspace and to prevent or minimize the escape of airborne contaminants out of the workspace, and

(b) allow a worker to conduct physical, chemical and biological manipulations inside the workspace;

"operational face opening" means an opening in a laboratory fume hood through which a worker may conduct work inside the hood;

"sash" means a vertical or horizontal panel on a laboratory fume hood that defines the operational face opening and provides a protective barrier between the worker conducting work inside the hood and the contents of the hood.

[en. B.C. Reg. 319/2007, App. B, s. 1.]

Fume hoods

30.8 (1) A laboratory fume hood and its related ductwork must be designed, installed and maintained in accordance with the *Industrial Ventilation, A Manual of Recommended Practice*, published by the American Conference of Governmental Industrial Hygienists, as amended from time to time.

(2) A laboratory fume hood must

(a) be connected to a local exhaust ventilation system,

(b) provide average face velocities of 0.4 m/s (80 fpm) to 0.6 m/s (120 fpm) across the operational face opening,

(c) not have face velocities of less than 80% of the average face velocity required in paragraph (b) at any point across its operational face opening, and

(d) not have face velocities of more than 120% of the average face velocity required in paragraph (b) at any point across its operational face opening.

(2.1) A laboratory fume hood must have a sash that is positioned to protect the upper body and face of a worker working in the laboratory fume hood from accidental releases of the contents of the hood while allowing hand and arm access to equipment inside the hood.

(2.2) A laboratory fume hood with a movable sash must be clearly marked to identify the maximum size of the operational face opening that will maintain the average face velocities required in subsection (2) (b).

(2.3) The employer must ensure

(a) that before it is used, a commercially manufactured laboratory fume hood has been certified as being tested by the manufacturer, and

(b) following installation and before it is used, a custom built laboratory fume hood is tested on site by a qualified person.

(2.4) A laboratory fume hood tested under subsection (2.3) must demonstrate containment not greater than the control level of 0.05 ppm when tested under "as manufactured" test conditions in accordance with the methods described in *ANSI/ASHRAE Standard 110-1995, Method of Testing Performance of Laboratory Fume Hoods*.

(2.5) The installation of a laboratory fume hood must be certified by a professional engineer.

(3) A laboratory fume hood must be located to prevent cross drafts or other disruptive forces from lowering the air flow across the operational face opening to unacceptable levels.

(4) A laboratory fume hood and its ductwork must be constructed from materials compatible with its use.

(5) A laboratory fume hood that will be or is being used for working with

(a) radioactive material in amounts that exceed the exemption quantity specified by the Canadian Nuclear Safety Commission, or

(b) perchloric acid

must be clearly labelled with applicable restrictions on its use.

(6) A laboratory fume hood must not be used for storage of chemicals unless it is used exclusively for this purpose and is labelled with this limitation.

(7) Controls for the operation of a laboratory fume hood and its service fixtures must be

(a) located on the outside of the laboratory fume hood, and

(b) immediately accessible to the worker conducting work in the laboratory fume hood.

(8) Despite subsection (7), water taps may be located inside a laboratory fume hood if the main shutoff valve for the water is located outside the laboratory fume hood.

(9) Equipment being used in a laboratory fume hood must

(a) be kept at least 15 cm (6 in.) from the operational face opening of the laboratory fume hood, and

(b) not adversely affect airflow into the laboratory fume hood.

(10) Written procedures must be developed and implemented to ensure safe use and operation of a laboratory fume hood.

[am. B.C. Regs. 315/2003, App. A, s. 15; 319/2007, App. B, s. 2.]

Airflow and containment monitoring

30.9 (1) Face velocities over the operational face opening of a laboratory fume hood must be quantitatively measured and recorded.

(2) The ability of a laboratory fume hood to

(a) maintain an inward flow of air across the operational face opening, and

(b) contain contaminants

must be assessed and recorded using a smoke tube or other suitable qualitative method.

(3) The actions described in subsections (1) and (2) must be performed

(a) after the laboratory fume hood is installed and before it is used,

(b) at least once in each 12 month period after installation, and

(c) after any repair or maintenance that could affect the air flow of the hood.

(4) If a laboratory fume hood is found to be operating with an average face velocity of less than 90% of the average face velocity required in section 30.8 (2), the employer must immediately take corrective action to bring the average face velocity within the required range of velocities.

(5) Airflow in a laboratory fume hood must be monitored continuously if loss of airflow will result in risk to a worker.

(6) A laboratory fume hood that is being installed must have an alarm capable of indicating when the average face velocity falls below the minimum average face velocity level required in section 30.8 (2) when the hood is in use.

[en. B.C. Reg. 319/2007, App. B, s. 3.]

Ducting

30.10 (1) Laboratory fume hoods located in the same room or separate rooms may be connected to a common exhaust duct or manifold system if the following conditions are satisfied:

(a) the requirements of section 5.3.2 of *ANSI/AIHA Standard Z9.5-2003, Laboratory Ventilation* are met;

(b) controls to prevent backdrafts and pressure imbalances between rooms are installed;

(c) the ventilation design and installation of the common exhaust duct or manifold system is certified by a professional engineer.

(2) Despite subsection (1), laboratory fume hoods that are or will be used for working with

(a) radioactive materials in amounts that exceed the exemption quantity specified by the Canadian Nuclear Safety Commission, or

(b) perchloric acid

must not be connected to a manifold system.

(3) Ducting used in the installation of a laboratory fume hood must be designed in accordance with established engineering principles.

[am. B.C. Regs. 312/2003, App. B, s. 65; 319/2007, App. B, s. 4.]

Exhaust discharge

30.11 Laboratory fume hood local exhaust ventilation systems must discharge to the atmosphere in such a manner that the discharged air will not be recirculated into the laboratory or other work areas.

[am. B.C. Reg. 319/2007, App. B, s. 5.]

Biological safety cabinets

30.12 (1) The limitations of a biological safety cabinet must be clearly posted on the unit and followed by workers.

(2) Biological safety cabinets must be certified by a qualified person at least annually and before use after

(a) initial installation,

(b) change of the HEPA (high efficiency particulate air) filter,

(c) moving of the unit, and

(d) any repair or maintenance that could affect the seal of the HEPA filter.

(3) Certification procedures used for compliance with subsection (2) must meet the requirements of the *National Sanitation Foundation (NSF) Standard 49-2002, Class II (Laminar Flow) Biohazard Cabinetry*, and a record of the results must be maintained.

(4) Recirculation of exhaust air into a workspace from a biological safety cabinet is not permitted where volatile toxic materials or flammable liquids or gases are used in the cabinet, or where volatile radioactive materials are used in amounts that exceed the exemption quantity specified by the Canadian Nuclear Safety Commission.

(5) Repealed. [B.C. Reg. 319/2007, App. B, s. 6 (c).]

(6) Biological safety cabinets used for handling a biological agent must be operated and ventilated in accordance with the *Laboratory Biosafety Guidelines 3rd edition, 2004*, issued by the Public Health Agency of Canada.

[am. B.C. Regs. 312/2003, App. A, s. 4; 319/2007, App. B, s. 6; 312/2010, App. N, s. 5.]

Centrifuges

30.13 (1) Centrifuge loads must be balanced by sample distribution.

(2) Aerosol-proof safety heads or cups or other equally effective means to prevent exposure of workers must be used where an aerosol containing a biological agent may be generated, where carcinogens are present or where radioactive samples pose a hazard to workers.

(3) Unless exempted by *CSA Standard C22.2 No. 151-M1986 Laboratory Equipment*, or other standard acceptable to the Board, centrifuge doors must be interlocked to prevent workers accessing spinning rotors.

(4) The interlock required by subsection (3) must prevent the door from opening while the rotor is spinning or cause the rotor to brake if the door is opened, or another equally effective means must be used to prevent a worker from accessing the spinning rotor.

(5) Spent as of January 1, 2001.

(6) Repealed. [B.C. Reg. 312/2003, App. B, s. 66.]

(7) Rotors must be stored in a manner which will prevent them from being damaged.

[am. B.C. Regs. 312/2003, App. B, s. 66; 312/2010, App. N, s. 6.]

Procedures

30.14 Written safe work procedures must be prepared for hazardous operations, including work methods involving hazardous chemicals, spill response, and handling of a material that contains a biological agent, and workers must be adequately instructed in and follow the procedures.

[am. B.C. Reg. 312/2010, App. N, s. 7.]

Permitted quantities

30.15 Only the minimum necessary amount of biological agents and substances that are combustible, flammable, corrosive, toxic or highly reactive may be kept in the working area of the laboratory.

[en. B.C. Reg. 312/2010, App. N, s. 8.]

Transport of containers

30.16 The transport of containers of flammable, corrosive, toxic or highly reactive substances or biological agents through a laboratory must be done in a manner that will not pose a danger of damage to the containers.

[am. B.C. Reg. 312/2010, App. N, s. 9.]

Personal protection

30.17 (1) A worker must wear protective laboratory clothing in a laboratory where a toxic or radioactive substance or a biological agent is handled.

(1.1) Protective laboratory clothing worn in circumstances referred to in subsection (1) must not

(a) be worn outside an area where a worker is required to wear the protective work clothing, and

(b) be stored in a manner or location that might expose a worker to a hazardous substance.

(2) Smoking, eating or drinking is not permitted in any laboratory area.

(3) Food for consumption must not be kept in the laboratory, and laboratory glassware, vessels and containers must not be used to prepare or store food or beverages for consumption.

(4) Substances must not be pipetted by mouth.

(5) If hazardous chemicals or materials are handled, all affected workers must receive instruction and training in the proper handling and disposal of such materials.

[am. B.C. Regs. 185/99, s. 75; 312/2010, App. N, s. 10.]

Spills and other emergencies

30.18 (1) Accidental release or spills of chemicals or other hazardous substances must be controlled immediately, and cleaned up under the supervision of persons knowledgeable in the hazards involved and the precautions to be taken during the cleanup operations.

(2) Personal protective equipment required during emergency cleanup or escape must be kept immediately available.

[am. B.C. Reg. 185/99, s. 75.]

Waste disposal

30.19 (1) Laboratory waste must be disposed of in a manner which ensures that workers are protected from injury.

(2) Repealed. [B.C. Reg. 312/2003, App. E, s. 31 (b).]

(3) Before disposal, organic solvents and flammable wastes must be collected in separate, tightly covered containers or in an equally effective manner.

(4) Before disposal, water solutions containing azides must first be inactivated, and contact with heavy metals or other incompatible contaminants must be prevented.

(5) Waste material that contains a biological agent must be collected in separate, tightly covered containers before disposal.

(6) Containers of segregated waste must be clearly identified as to their intended use.

[am. B.C. Regs. 312/2003, App. E, s. 31; 312/2010, App. N, s. 11.]

Specific Substances and Procedures

Explosive and highly reactive materials

30.20 (1) Quantities of explosive and highly reactive material available at the workbench or in the work area must be restricted to amounts immediately required for the work day.

(2) Storage facilities for explosive and highly reactive materials must be located and designed so as to prevent risk to workers.

(3) Explosive and highly reactive materials must be stored in a manner free from shock, vibration or other conditions which may compromise the stability of the material.

(4) If due to the nature of the laboratory work, explosions or implosions may result, the laboratory apparatus or equipment involved in such work must be adequately shielded and the operators must be provided with and must wear suitable personal protective devices, and wherever practicable the work must be safely isolated from workers by distance.

Perchloric acid

30.21 (1) Perchloric acid must be used in a fume hood designed exclusively for its use and posted with a notice which

(a) identifies the hood as being for perchloric acid use, and

(b) prohibits the use or storage of combustibles in the hood.

(2) Exhaust ducts must be as short as possible, routed directly outdoors with no interconnections to other exhaust ducts, and provided with washdown facilities.

(3) No more than 6.4 kg (14 lb.) of perchloric acid may be stored in a laboratory unless the laboratory facility consists of several smaller laboratories physically separated as fire compartments meeting the requirements of the *BC Fire Code*, in which case a maximum of 6.4 kg (14 lb.) of perchloric acid may be stored in each laboratory.

(4) Containers of perchloric acid must be stored in such a manner that, in the event of breakage, the spilled acid will not contact flammable materials, wood or similar combustible materials.

(5) Stored perchloric acid must be inspected at least monthly and if any discolouration is noted it must be disposed of immediately and in a safe manner.

(6) Anhydrous perchloric acid may only be used if freshly made, and any unused perchloric acid must be disposed of safely at the end of the experiment or procedure but must not be kept for more than one day.

(7) Direct flames, oil baths and electrical stirring equipment must not be used to heat perchloric acid.

(8) Rubber stoppers or equipment with rubber components must not be used with perchloric acid.

(9) Spilled perchloric acid must immediately be neutralized and cleaned up using safe procedures, and waste material from the cleanup must be kept moist, sealed in plastic bags, placed in a separate covered metal waste receptacle and disposed of as soon as possible.

Picric acid

30.22 (1) Solid picric acid must be stored with at least 10% moisture content and regular inspections must be made to ensure that the minimum moisture content is maintained.

(2) Solutions of picric acid must not be allowed to accumulate and dry around cap threads.

(3) Materials suspected of being in an unacceptable condition must be safely handled and disposed of by workers instructed in the applicable hazards, precautions and safe disposal methods.

Peroxide-forming compounds

30.23 (1) Peroxide-forming compounds must be inspected and tested for peroxides regularly after the container is first opened, and records of the tests must be maintained.

(2) Compounds contaminated with peroxide materials must be disposed of using safe work procedures or must be treated chemically to eliminate the peroxides.

Cryogenic liquids

30.24 (1) Containers used for storage, transport and dispensing of cryogenic liquids must be designed for that purpose.

(2) Indoor dispensing stations and storage locations for cryogenic liquids must be adequately ventilated and monitored to prevent the development of harmful atmospheres.

(3) Dispensing stations and freezers with automatic filling cycles for cryogenic liquids must be posted with a sign identifying the materials, the hazards and the precautions required.

Sharps

30.25 (1) Safe means of handling needles and other sharp materials must be provided and used.

(2) Recapping of needles before disposal is not permitted unless the recapping device is specifically designed for single handed use, or is otherwise safe for use.

Biological agents and human pathogens

30.26 (1) Adequate facilities must be readily available for personal decontamination of workers who come in contact with a biological agent.

(2) Work procedures which may generate aerosols containing a biological agent must be performed only under controlled conditions designed to minimize creation of the aerosols and prevent worker exposure to them.

(3) For Risk Group 2 human pathogens, sealed centrifuge safety heads, rotors or trunnion cups must be opened within a fume hood or biological safety cabinet unless there is a means of visually determining, by use of clear safety caps or other effective means, that no breakage or leaking has occurred.

(4) For Risk Group 3 human pathogens, sealed centrifuge safety heads, rotors or trunnion cups must be loaded and unloaded within a biological safety cabinet.

(5) Work involving Risk Group 4 human pathogens must be done as required by the *Laboratory Biosafety Guidelines 3rd edition, 2004*, issued by the Public Health Agency of Canada.

(6) In this section:

"Risk Group 2 human pathogens" mean the human pathogens that are classified by the Public Health Agency of Canada as Risk Group 2 human pathogens;

"Risk Group 3 human pathogens" mean the human pathogens that are classified by the Public Health Agency of Canada as Risk Group 3 human pathogens;

"Risk Group 4 human pathogens" mean the human pathogens that are classified by the Public Health Agency of Canada as Risk Group 4 human pathogens.

[am. B.C. Regs. 312/2003, App. A, s. 5; 312/2010, App. N, s. 12.]

Animal handling

30.27 (1) Animal quarters and handling areas must be maintained in a clean, hygienic state.

(2) Work procedures and handling methods must be designed to control the spread of aerosols.

(3) Animal health must be monitored by qualified personnel and quarantine measures must be taken as required for infected animals.

(4) Appropriate handling and restraint equipment must be available to workers, and workers must use this equipment, as required, to prevent injury due to bites or other accidents.

(5) Workers must be instructed and trained in effective animal handling techniques.

Microtomes

30.28 Microtome blades must be stored in a safe manner with the blade edge guarded.

Electrophoresis

30.29 (1) Electrophoresis apparatus must be designed and maintained so that any hazardous electrical current is shut off when the cover is opened.

(2) Equipment must display a label warning workers of the electrical hazard, and all high voltage components must be guarded to prevent worker contact.

PART 31 – FIREFIGHTING

Definitions

31.1 In this Part:

"emergency incident" means a specific emergency operation of a fire department or industrial fire brigade;

"fire chief" means the highest ranking person in charge of a fire department or industrial fire brigade;

"fire department" means a fire brigade operated as a public service by

(a) a municipality, a regional district or an improvement district,

(b) a board or commission having the management or conduct of work or services on behalf of any of the bodies referred to in paragraph (a), or

(c) a parks board;

"firefighter" means any worker employed in firefighting, fire inspection, fire investigation, the maintenance of firefighting equipment, the training for and direction of those activities, or other similar duties;

"firefighting vehicle" means an emergency vehicle used for firefighting;

"incident commander" means the firefighter in overall command of an emergency incident;

"industrial fire brigade" means an organization established by an employer to protect the employer's premises where the nature of the business creates specific hazards for which specialized training and equipment is required;

"structure" means a building, vehicle, vessel or similar enclosed location.

[am. B.C. Regs. 185/99, s. 76; 279/2019, App. D, s. 7.]

Application

31.2 This Part applies to employers and to workers who are employed in firefighting activities on a full or part time basis, including volunteer firefighting in municipal service and industrial fire brigades to which the compensation provisions of the *Workers Compensation Act* apply, but does not apply to forest fire fighting.

[am. B.C. Reg. 279/2019, App. D, s. 8.]

General Requirements

Health and safety committee

31.3 (1) If an employer is required under the OHS provisions of the *Workers Compensation Act* to establish a joint committee or worker health and safety representative, then a fire department or industrial fire brigade operated by the employer must have a separate joint committee or a worker health and safety representative, as applicable.

(2) Subsection (1) does not affect any obligation to have a workplace health and safety program for the whole of the employer's operations.

[am. B.C. Regs. 185/99, s. 77; 279/2019, App. D, s. 9.]

Instruction and direction

31.4 The employer must ensure the adequate instruction and direction of firefighters in the safe performance of their duties.

Procedures

31.5 (1) Written procedures must be established and followed by a fire department or industrial fire brigade to

(a) manage and track firefighters at an emergency incident,

(b) manage exposure to bloodborne pathogens,

(c) manage stress arising from an emergency incident that is likely to cause adverse health effects to firefighters,

(d) provide for effective traffic control at emergency incidents, and

(e) operate firefighting vehicles during emergency and non-emergency travel.

(2) Written procedures must be established and followed by a fire department or industrial fire brigade for the following situations, where applicable:

(a) fires in buildings 7 storeys or over;

(b) firefighting over water and underground;

(c) fires and other emergency incidents involving hazardous substances;

(d) rescue from high angles, confined spaces, trenches, excavations and water;

(e) disaster planning and response;

(f) electrical emergencies.

[am. B.C. Reg. 185/99, s. 78.]

Rest and rehabilitation

31.6 The emergency incident commander must make suitable provision for rest and rehabilitation for firefighters at an incident.

[am. B.C. Reg. 185/99, s. 79.]

Impounding equipment

31.7 If, in the course of an emergency incident, a firefighter suffers serious injury or death, or is involved in an accident involving a risk of serious injury or death, the senior firefighter present must immediately impound the protective and other equipment used by the firefighter and keep the equipment out of service until released by the Board.

[am. B.C. Reg. 185/99, s. 79.]

Equipment defects

31.8 The employer must, without delay, notify the Board of any structural failure or manufacturing defects detected in a firefighting vehicle, apparatus, or other emergency equipment referred to in this Part.

Test records

31.9 The employer must keep the test and inspection records required by this part available at the workplace for inspection by an officer or the joint committee or worker health and safety representative, as applicable.

[am. B.C. Reg. 185/99, s. 80.]

Personal Protective Clothing and Equipment

General requirement

31.10 Firefighters must wear personal protective clothing and equipment appropriate to the hazards to which they may be exposed.

Maintenance

31.11 (1) The employer must have written procedures for the inspection of protective clothing and equipment at regular intervals.

(2) Procedures for cleaning and drying protective clothing must be in accordance with the manufacturer's instructions.

(3) Defective items of protective clothing or equipment must be repaired or replaced.

Firefighter responsibility

31.12 Firefighters must ensure that the personal protective clothing and equipment used by them is maintained in good condition.

Safety headgear

31.13 (1) Safety headgear must be worn by firefighters required to approach the seat of a fire or enter a structure or other hazardous area during an incident.

(2) Safety headgear must meet the requirements of *NFPA 1972, Helmets for Structural Firefighting: Structural Fire Fighters Helmets, 1992 Edition*.

(3) Headgear meeting the requirements for safety headgear in Part 8 (Personal Protective Clothing and Equipment) may be used by firefighters

(a) while determining the cause of fires, or carrying out duties associated with preventing fires, or

(b) at the discretion of the incident commander, while fighting a fire in vegetation that is not within a structure.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Protective coats, pants and hoods

31.14 Firefighters required to approach the seat of a fire or enter a structure or other hazardous area during an incident must wear protective coats, pants and hoods meeting the requirements of

(a) *NFPA 1971, Protective Clothing for Structural Fire Fighting, 1991 Edition*, or

(b) *CGSB Standard CAN/CGSB-155.1-M88, Firefighters' Protective Clothing for Protection Against Heat and Flame*.

(c) Repealed. [B.C. Reg. 312/2003, App. A, s. 26 (c).]

[am. B.C. Reg. 312/2003, App. A, s. 26.]

Stationwear and personal garments

31.15 Firefighters required to approach the seat of a fire or enter a structure or other hazardous area during an emergency incident must not wear shirts, trousers, jackets or coveralls that have poor thermal stability or that ignite easily.

[am. B.C. Reg. 185/99, s. 79.]

Working gloves

31.16 Firefighters required to approach the seat of a fire or enter a structure or other hazardous area during an emergency incident must wear gloves meeting the requirements of *NFPA 1973, Gloves for Structural Fire Fighting, 1988 Edition*.

[am. B.C. Regs. 185/99, s. 79; 312/2003, App. A, s. 5.]

Fall protection

31.17 (1) A firefighter working on an aerial ladder must wear a safety belt and lanyard meeting the requirements of *CSA Standard Z259.1-95, Safety Belts and Lanyards*, and the securing lanyard must limit a fall to no more than 30 cm (12 in).

(2) A firefighter located on an aerial platform must wear a full body harness and lanyard meeting the requirements of Part 11 (Fall Protection).

(3) Rescue ropes, rappelling lines and safety belts and harnesses including safety hooks, rope grabs, lowering devices, and related equipment must meet the requirements of *NFPA 1983, Fire Service Life Safety Rope, Harness and Hardware, 1990 Edition*.

(4) The incident commander may depart from the requirements of Part 11 (Fall Protection) to use a fall protection system if, in the incident commander's opinion, such compliance is not practicable or may create a greater hazard, but subsections (1) to (3) of this section must be complied with.

[am. B.C. Regs. 312/2003, App. A, s. 4; 312/2003, App. A, ss. 4 and 5.]

Personal alert safety system

31.18 (1) A firefighter must be provided with and use a Personal Alert Safety System (PASS) when involved in duties which require a self-contained breathing apparatus to be worn.

(2) A PASS device must meet the requirements of *NFPA 1982, Personal Alert Safety Systems (PASS) for Fire Fighters, 1993 Edition*.

(3) A PASS device must be tested at least weekly and prior to use.

[am. B.C. Reg. 312/2003, App. B, s. 67.]

Respiratory Protection

General

31.19 Firefighters who may be exposed to an oxygen deficient atmosphere or to harmful concentrations of air contaminants must wear a self-contained breathing apparatus of a positive pressure type having a rated minimum duration of 30 minutes.

Fitness to use SCBA

31.20 A physician's certificate of fitness to use self-contained breathing apparatus must be provided to the employer by a firefighter who

(a) experiences breathing difficulty while using the apparatus, or

(b) is known to have heart disease, impaired pulmonary function, or any other condition that might make it dangerous for the firefighter to use self-contained breathing apparatus.

Operation of SCBA

31.21 Respirators must be used in accordance with *CSA Standard CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators, Clause 9.1*.

[am. B.C. Regs. 312/2003, App. A, s. 5; 20/2006, s. 8.]

Sealing and fit testing

31.22 (1) Firefighters who use a self-contained breathing apparatus must be clean shaven to ensure that the mask forms a positive seal against the face.

(2) Fit tests must be performed in accordance with procedures in *CSA Standard CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators*.

(2.1) A fit test must be carried out

(a) before initial use of a respirator,

(b) at least once a year,

(c) whenever there is a change in respirator facepiece, including the brand, model, and size, and

(d) whenever changes to the user's physical condition could affect the respirator fit.

(3) Personal protective equipment that is worn with self-contained breathing apparatus and might interfere with a proper fit must be worn during the fit test.

(4) Only corrective eyewear designed for use with self-contained breathing apparatus may be worn.

[am. B.C. Regs. 312/2003, App. A, s. 5; 20/2006, s. 9.]

Entry into buildings

31.23 (1) When self-contained breathing apparatus must be used to enter a building, or similar enclosed location, the entry must be made by a team of at least 2 firefighters.

(2) Effective voice communication must be maintained between firefighters inside and outside the enclosed location.

(3) During the initial attack stages of an incident at least one firefighter must remain outside.

(4) A suitably equipped rescue team of at least 2 firefighters must be established on the scene before sending in a second entry team and not more than 10 minutes after the initial attack.

(5) The rescue team required by subsection (4) must not engage in any duties that limit their ability to make a prompt response to rescue an endangered firefighter while interior structural firefighting is being conducted.

Air quality and sampling

31.24 (1) The employer must ensure that air used for breathing purposes meets the requirements of *CSA Standard CAN/CSA-Z180.1-00, Compressed Breathing Air and Systems*.

(2) The air must be tested at least once annually in a manner acceptable to the Board.

[am. B.C. Regs. 312/2003, App. A, s. 5; 20/2006, s. 10.]

Spare equipment

31.25 (1) When self-contained breathing apparatus are used, the employer must ensure there are at least 4 apparatus available.

(2) At least one spare compressed air cylinder, having a rated minimum duration of 30 minutes, must be maintained at full rated capacity and available for each self-contained breathing apparatus.

Maintenance and records

31.26 (1) Self-contained breathing apparatus, including regulators, must be serviced and repaired by qualified persons.

(2) Inspection of compressed air cylinders must be done in accordance with *CSA Standard CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators*.

(3) Compressed air cylinders must be hydrostatically tested in accordance with *CSA Standard CAN/CSA-B339-96, Cylinders, Spheres, and Tubes for the Transportation of Dangerous Goods*.

(4) Complete maintenance and repair records for each self-contained breathing apparatus and all air cylinders must be kept in accordance with the requirements of *CSA Standard CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators* (section 10.3.3.2.2-b to f, inclusive).

[am. B.C. Regs. 312/2003, App. B, s. 68; 20/2006, s. 11.]

Transportation

Seating

31.27 (1) Firefighters being transported by firefighting vehicles must ride in properly secured seats equipped with seat belts and providing not less than 41 cm (16 in) seating width for each occupant.

(2) The seats of all new firefighting vehicles ordered after April 15, 1998 must be equipped with headrests or other effective whiplash protection.

Communication

31.28 Crew cabs on firefighting vehicles must have an effective means of voice communication between the driver and passengers.

Enclosed crew cabs

31.29 (1) Enclosed crew cabs on firefighting vehicles must be equipped with interior lights, and adequately ventilated.

(2) New firefighting vehicles ordered after April 15, 1998 must have fully enclosed crew cabs meeting the requirements of *NFPA 1901, Automotive Fire Apparatus, 1991 Edition*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

31.30 and **31.31** Repealed. [B.C. Reg. 139/2021, App. D, s. 17.]

Vehicle exhaust in firehalls

31.32 Unless air monitoring shows that levels of vehicle exhaust gas components are below the exposure limits established under section 5.48, effective local venting for the exhaust gases must be provided in vehicle areas in firehalls.

[am. B.C. Reg. 315/2003, App. A, s. 16.]

Aerial Devices and Ground Ladders

General

31.33 An aerial device used for firefighting must meet the requirements of *NFPA 1904, Aerial Ladder and Elevating Platform Fire Apparatus, 1991 Edition*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Inspection and testing

31.34 (1) A fire department aerial device must be inspected and tested in accordance with good engineering practice at intervals not exceeding 12 months, and certified as safe for use by a professional engineer or the equipment manufacturer.

(2) The inspection and testing of a fire department aerial device must be done in accordance with the requirements of *NFPA 1914, Testing Fire Department Aerial Devices, 1991 Edition*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Controls

31.35 The turntable on an aerial device must be fitted with a positive locking device to hold it in any desired position.

Operator location

31.36 During the operation of an aerial device an operator must be present at the lower controls in sight of and in voice contact with any firefighters upon the device.

Ground ladders

31.37 (1) A ground ladder used by firefighters must meet the requirements of *NFPA 1931, Design of and Design Verification Tests for Fire Department Ground Ladders, 1989 Edition*.

(2) A ground ladder must be used, tested and maintained in accordance with the requirements of *NFPA 1932, Use, Maintenance, and Service Testing of Fire Department Ground Ladders, 1989 Edition*.

[am. B.C. Reg. 312/2003, App. A, s. 5.]

Other Equipment

Flashlights and hand lanterns

31.38 Battery operated flashlights and hand lanterns that are CSA approved for hazardous locations classified under the *CSA Standard C22.1-94, Canadian Electrical Code Part 1*, as Class 1, Division 2, Groups A, B, and C must be provided as follows:

(a) one flashlight for each firefighter;

(b) at least 4 hand lanterns for each firefighting vehicle.

Plaster hooks and pike poles

31.39 Plaster hooks and pike poles must be fitted with electrically non-conductive shafts.

PART 32 – EVACUATION AND RESCUE

32.1 Repealed. [B.C. Reg. 312/2003, App. D, s. 34.]

Training

32.2 (1) Workers designated to provide rescue or evacuation services must be adequately trained.

(2) The training program must include simulated rescue or evacuation exercises and regular retraining, appropriate to the type of rescue or evacuation being provided, and training records must be kept.

Equipment

32.3 (1) Workers performing rescue or evacuation must wear personal protective clothing and equipment appropriate to the hazards likely to be encountered.

(2) Harnesses must meet the requirements of the applicable standards or code issued by the International Union of Alpinist Associations, National Fire Protection Association or Canadian Standards Association.

(3) Repealed. [B.C. Reg. 312/2003, App. B, s. 69 (b).]

(4) When a platform suspended from a crane or hoist or attached to a crane boom is used for rescue, an injured worker on the platform is not required to use a personal fall protection system, if

(a) the worker is belted to a stretcher and the stretcher is securely fastened to the platform floor, and

(b) the platform has a safety strap that will prevent the platform from falling more than 15 cm (6 in) if the platform becomes dislodged from the hook.

[am. B.C. Reg. 312/2003, App. B, s. 69.]

Ropes

32.4 (1) Ropes and associated rigging equipment used only for rescue or evacuation or training in such procedures must

(a) be of low stretch (static) kernmantle construction or equivalent,

(b) when new, have a minimum safety factor of 10 to 1, based upon a one-person load of 140 kilograms (300 pounds), and

(c) be replaced at intervals stated by the manufacturer, but not exceeding 5 years.

(2) A worker suspended on a rope for rescue purposes other than from a helicopter must, where practicable, be secured to an independent lifeline or belay line.

Inspection of equipment

32.5 (1) Ropes and associated equipment must be inspected visually and physically by qualified workers after each use for rescue, evacuation or training purposes.

(2) Equipment must not be used after it

(a) has been overstressed,

(b) has been subject to temperatures above 150°C (300°F), or

(c) shows significant damage due to contact with chemicals or due to any other cause.

Maintenance records

32.6 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 70 (b).]

(2) Maintenance records must be kept, including but not limited to

(a) the name of manufacturer,

(b) the type of equipment,

(c) the date put into service,

(d) when and for what purpose the equipment has been used,

(e) the date of the last inspection and name of the inspecting person,

(f) any damage suffered, and

(g) the date and nature of any maintenance.

(3) Maintenance records must be available upon request to any worker concerned with the safe operation of the equipment or to an officer.

[am. B.C. Reg. 312/2003, App. B, s. 70.]

First aid

32.7 At least one member of a rescue team must be a first aid attendant trained to immobilize an injured worker.

[en. B.C. Reg. 348/2003, s. 11.]

Communications

32.8 Effective communications must be maintained between the workers engaged in rescue or evacuation and support persons.

Work areas over water

32.9 If workers are required to work in places from which they could fall and drown, and are not protected by guardrails or other means of fall protection permitted by this Regulation, the employer must provide

(a) a suitable rescue boat, equipped with a boat hook, available at the site and capable of being used for rescue at all times,

(b) a buoyant apparatus attached to a nylon rope not less than 9 mm (3/8 in) in diameter, and not less than 15 m (50 ft) in length, and

(c) a sufficient number of workers who are available when work is underway to implement rescue procedures and who are properly equipped and instructed in those procedures.

PART 33

33.1 to **33.52** Repealed. [B.C. Reg. 348/2003, s. 12.]

PART 34 – ROPE ACCESS

Definitions

34.1 In this Part:

"anchor", also known as an anchorage connector, means a component or subsystem of a rope access system used to connect other parts of the rope access system to an anchorage;

"anchorage" means anything to which an anchor can be connected or secured, including a building, structure, tree or rock;

"full body harness" means a body support device

(a) consisting of connected straps designed to distribute the forces resulting from the suspension or fall of a person over at least the person's thighs, shoulders and pelvis, and

(b) with provision for connecting a lanyard, a rope or other components;

"lanyard" means a flexible length of rope that is used to connect a sit harness or full body harness to other parts of a rope access system or to an anchorage;

"rope" means a length of cord or webbing made of parallel, twisted or braided synthetic fibres or steel wire;

"rope access" means a technique in which a rope access system is used to provide a person with access to and from a workplace, commonly including suspension at the workplace, in such a way that a fall is prevented or arrested;

"rope access system" means a system consisting of

(a) a sit harness or full body harness,

(b) rope, lanyards and other connecting equipment,

(c) anchors, and

(d) other components such as ascenders, descenders, belay devices, backup devices and fall arresters,

that usually employs 2 separately secured subsystems, one as a means of access and the other as a safety, secondary, belay or backup system, but does not include a boatswain's chair, also known as a bosun's chair, or a zipline;

"sit harness" means a body support device consisting of thigh and waist loops.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Scope of application

34.2 (1) Subject to subsection (2), this Part applies to the use of rope access in a workplace.

(2) This Part does not apply to the following:

(a) scaling operations described in sections 20.96 to 20.101;

(a.1) a qualified arborist or a trainee arborist, as defined in section 26.1;

(b) a climber, as defined in section 26.7.1 (1);

(c) firefighters and firefighting activities under Part 31;

(d) evacuation and rescue, and training in such procedures, under Part 32.

(3) The use of rope access in a workplace is subject to section 11.2.

[en. B.C. Reg. 199/2014, App. K, s. 2; am. B.C. Reg. 207/2021, App. B, s. 6.]

Rope access plan

34.3 (1) Before a rope access system is installed or used in a workplace, a written rope access plan must be prepared and be available at the workplace.

(2) The rope access plan must include all of the following information:

(a) the hazards associated with the work to be performed;

(b) how the hazards and associated risks will be eliminated or controlled;

(c) a description of the rope access system to be used at the workplace;

(d) a description of the types and locations of the anchorages to be used at the workplace;

(e) the procedures to be used to assemble, maintain, inspect, use and disassemble the rope access system;

(f) the name and duties of each member of the work team;

(g) the appropriate personal protective equipment to be used;

(h) the emergency response, evacuation and rescue procedures.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Training and certification

34.4 (1) Before allowing a person to perform rope access, the employer must ensure and document that the person

(a) has received training in the safe use of a rope access system, including, as appropriate to the work being done, the safe work practices, skills and practical experience hours described in one of the following groups of publications:

(i) *International Code of Practice* (2013) and *General requirements for certification of personnel engaged in industrial rope access methods*, Edition 6 (June 2009), published by the Industrial Rope Access Trade Association;

(ii) *Safe Practices for Rope Access Work* (August 2012) and *Certification Requirements for Rope Access Work* (November 2012), published by the Society of Professional Rope Access Technicians;

(iii) *Scope of Practice* (2012), *Technical Handbook for Professional Mountain Guides* (1999) and *Climbing Gym Instructor Technical Manual* (2003), published by the Association of Canadian Mountain Guides;

(iv) *Cave Guiding Standards for British Columbia and Alberta* (January 2004), published by the Canadian Cave Conservancy, and *Companion Rescue Workshop* (2011), published by British Columbia Cave Rescue, and

(b) holds a valid certificate of the training referred to in paragraph (a) issued by a body or association referred to in subparagraphs (i) to (iv) of that paragraph.

(2) The certificate referred to in subsection (1) (b) must be available at the workplace and produced for inspection on the request of an officer.

(3) Before allowing a person to perform rope access, the employer must ensure and document that the person is trained in the rope access plan and knows that person's duties under the plan.

[en. B.C. Reg. 199/2014, App. K, s. 2; am. B.C. Reg. 14/2019, App. F, s. 5.]

Safe work practices

34.5 A person performing rope access must comply with, as appropriate to the work being done, the safe work practices described in one of the groups of publications set out in section 34.4 (1) (a) (i) to (iv).

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Two-rope system

34.6 (1) In this section, **"two-rope system"** means a rope access system that includes a working line and a safety, secondary, belay or backup line.

(2) A person performing rope access must use a two-rope system unless one or both of the following apply:

(a) the primary means of support for the person performing rope access is provided by a building, a structure or the ground and not by a rope access system;

(b) in the case of rope access performed

(i) in the course of mountaineering or caving, or

(ii) in a climbing gym,

using a two-rope system may result in a greater hazard than if a single-rope system is used.

(3) In a two-rope system, the working line and the safety, secondary, belay or backup line must

(a) have independent connection points to the system's anchor or anchorage, and

(b) be independently connected to the harness of the person performing rope access.

(4) For the purposes of subsection (3) (b), the working line and the safety, secondary, belay or backup line may be independently connected to a single connection point on the harness of the person performing rope access.

(5) A person must not connect a safety, secondary, belay or backup line to a sternal connection point on the person's full body harness except as permitted by the manufacturer of the harness.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Personal log

34.7 (1) A person who performs rope access must maintain a personal log containing a record of the rope access performed by the person.

(2) The records in the personal log must be kept in chronological order and, unless otherwise provided for in a group of publications set out in section 34.4 (1) (a) (i) to (iv) that is appropriate to the work being done, the entry for each day of work must be verified and signed by the rope access supervisor or the manager in charge.

(3) The records in the personal log must include all of the following information:

(a) the date on which the rope access was performed;

(b) the type of work performed;

(c) the type of rope access system used for the work;

(d) the type of building or structure worked on;

(e) the number of hours worked using rope access.

(4) The person must keep the personal log current and available at the workplace for inspection by an officer.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Rescue

34.8 The employer must ensure that a person performing rope access can be promptly rescued, in accordance with the procedures described in the rope access plan referred to in section 34.3 (1), in the event of an equipment malfunction, a fall or an injury or the person's incapacity to self-rescue.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Equipment

34.9 (1) Equipment used for a rope access system must

(a) consist of components that are compatible and suitable for the intended use, and

(b) be suitable for the environment in which the equipment is used.

(2) Unless otherwise provided for under section 34.12 (1) or 34.13 (2), equipment of a type set out in Column 1 of Schedule 34-A must meet the requirements of, and

be used in accordance with, one of the applicable standards set out opposite that type of equipment in Column 2.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Inspection and maintenance

34.10 Equipment used for a rope access system must be

(a) inspected for defects by a person intending to use the rope access system before the rope access system is first used on each work shift,

(b) inspected in the manner and at the frequency required by the manufacturer of the equipment, and

(c) kept free from substances and conditions that could contribute to the deterioration of the equipment.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Anchors and anchorages

34.11 (1) An anchor for a rope access system must be reliable.

(2) A person must not connect or secure a rope access system to an anchorage unless the anchorage is reliable and capable of safely withstanding any forces that may be applied to the anchorage by persons using the rope access system.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Permanent anchors

34.12 (1) A permanent anchor for a rope access system must have an ultimate load capacity, in any direction in which the load may be applied, of at least 22.2 kN (5 000 lbf) for each person connected to the permanent anchor.

(2) In addition to the requirement under section 34.10 (b) and in accordance with sections 7.3.2, 7.3.3 and 7.4, as applicable, of *CSA Standard Z91-02 (R2013) Health and Safety Code for Suspended Equipment Operations*,

(a) a permanent anchor for a rope access system must be inspected, at least once a year, and tested, and

(b) the results of the inspection and testing must be documented.

(3) A permanent anchor for a rope access system, and its installation, must be certified by a professional engineer.

(4) Subsections (2) and (3) do not apply to a permanent anchor for a rope access system used in the course of mountaineering or caving.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Temporary anchors

34.13 (1) In this section, **"temporary anchor"** means an anchor that is removed from service immediately after use.

(2) A temporary anchor for a rope access system must have an ultimate load capacity, in any direction in which the load may be applied, of at least 12 kN (2 700 lbf) for each person connected to the temporary anchor.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Safety headgear

34.14 Despite section 8.11, a person performing rope access must wear headgear that

(a) is appropriate for the work being done,

(b) is equipped with a chin strap having at least 3 separate points of connection to the helmet shell,

(c) is secured in accordance with the specifications of the manufacturer of the headgear, and

(d) meets the requirements of one or more of the following standards:

(i) *CSA Standard CAN/CSA-Z94.1-05* or *CAN/CSA-Z94.1-15, Industrial protective headwear — Performance, selection, care, and use*;

(ii) *ANSI Standard ANSI/ISEA Z89.1-2009* or *ANSI/ISEA Z89.1-2014, American National Standard for Industrial Head Protection*;

(iii) *British Safety Institution Standard BS EN 12492:2012 Mountaineering equipment — Helmets for mountaineers — Safety requirements and test methods*;

(iv) *British Safety Institution Standard BS EN 397:2012+A1:2012 Industrial safety helmets*;

(v) *UIAA Standard UIAA 106 Mountaineering and Climbing Equipment — Helmets*.

[en. B.C. Reg. 199/2014, App. K, s. 2; am. B.C. Reg. 14/2019, App. A, s. 2.]

Maximum arrest force, clearance

34.15 (1) In this section, **"maximum arrest force"** means the peak shock load that a rope access system imposes on the body of a person connected to the rope access system when stopping the person's fall.

(2) A rope access system must

(a) limit the maximum arrest force to not more than 6 kN (1 350 lbf), and

(b) minimize the risk of a person connected to the rope access system striking a lower surface or object, or swinging and striking a surface or object, in a manner that could cause injury.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

Removal from service

34.16 (1) Equipment used for a rope access system must be removed from service

(a) as specified by the manufacturer of the equipment, or

(b) if the equipment is defective.

(2) Equipment that is removed from service must not be returned to service until it has been inspected and recertified, by the manufacturer or a professional engineer, as meeting the requirements of section 34.9.

[en. B.C. Reg. 199/2014, App. K, s. 2.]

SCHEDULE 34-A

[en. B.C. Reg. 199/2014, App. K, s. 2.]

STANDARDS FOR EQUIPMENT USED IN ROPE ACCESS SYSTEMS

Column 1 Type of Equipment	Column 2 Standards
Anchors	*CAN/CSA Z259.15-12 Anchorage Connectors* (published January, 2012) *CAN/CSA Z271-10 Safety code for suspended platforms* (published September, 2010) *EN 795:2012 Personal fall protection equipment – Anchor devices* (published September 30, 2013)
Connectors	*ANSI/ASSE 359.12-2009 Connecting Components for Personal Fall Arrest Systems* (published November 16, 2009) *CSA Z259.12-11 Connecting components for personal fall arrest systems (PFAS)* (published November, 2011) *EN 362:2004 Personal protective equipment against falls from a height – Connectors* (published June 30, 2005) *EN 12275:2013 Mountaineering equipment – Connectors – Safety requirements and test methods* (published October 31, 2013) *UIAA 121 Mountaineering and Climbing Equipment – Connectors/Karabiners* (published March 8, 2013)
Energy absorbers	*EN 355:2002 Personal protective equipment against falls from a height – Energy absorbers* (published November 30, 2002)
Harnesses	*CAN/CSA Z259.10-12 Full body harnesses* (published February, 2012) *EN 361:2002 Personal protective equipment against falls from a height – Full body harnesses* (published July 4, 2002) *EN 813:2008 Personal fall protection equipment – Sit harnesses* (published February 28, 2009) *EN 12277:2007 Mountaineering equipment – Harnesses – Safety requirements and test methods* (published August 31, 2007) *UIAA 105 Mountaineering and Climbing Equipment – Harnesses* (published May 30, 2014)
Lanyards	*EN 354:2010 Personal fall protection equipment – Lanyards* (published January 31, 2011)

Column 1 Type of Equipment	Column 2 Standards
Rope	*Cordage Institute CI 1801-07 Low Stretch and Static Kernmantle Life Safety Rope* (published October, 2007) *EN 892:2012 Mountaineering equipment – Dynamic mountaineering ropes – Safety requirements and test methods* (published February 28, 2013) *EN 1891:1998 Personal protective equipment for the prevention of falls from a height – Low stretch kernmantel ropes* (published October 31, 1998) *NFPA 1983 Standard on Life Safety Rope and Equipment for Emergency Services, 2012 Edition* (published January 2, 2012) *UIAA 101 Mountaineering and Climbing Equipment – Dynamic Ropes* (published June 26, 2014) *UIAA 107 Mountaineering and Climbing Equipment – Low Stretch Ropes* (published March 8, 2013)
Rope adjustment devices, including ascenders, back up devices, belay devices, descenders, fall arresters and rope clamps	*CAN/CSA Z259.2.3-12 Descent devices* (published January, 2012) *EN 341:2011 Personal fall protection equipment – Descender devices for rescue* (published December 31, 2011) *EN 353-2:2002 Personal protective equipment against falls from a height – Part 2: Guided type fall arresters including a flexible anchor line* (published November 30, 2002) *EN 567:2013 Mountaineering equipment – Rope clamps – Safety requirements and test methods* (published September 30, 2013) *EN 12841:2006 Personal fall protection equipment – Rope access systems – Rope adjustment devices* (published February 28, 2007) *UIAA 126 Mountaineering and Climbing Equipment – Rope Clamps* (published March 8, 2013)

SCHEDULES 1 TO 7

Repealed. [B.C. Reg. 348/2003, s. 13.]

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