

**Topic: Fall Arresting Systems**

**Nova Scotia**

**Fall Protection and Scaffolding Regulations, N.S. Reg. 2/96**

This document has been repealed and replaced by N.S. Reg. 52/2013.

**DEFINITIONS FOR PART 21**

21.1 In this Part:

"arborist" means a person trained and employed, in whole or in part, to climb trees for an economic or scientific purpose, including any of the following:

- (i) detecting and treating disease, infections or infestations,
- (ii) pruning, spraying or trimming,
- (iii) repairing damaged trees,
- (iv) assessing growth or harvesting potential,

"body belt" means a body support device that encircles the body at or about the waist;

"energy absorber" means a component of a fall-protection system consisting of a device that dissipates kinetic energy and does not return it to the fall-arrest system or into a person's body;

"fall distance" means the vertical distance a person may fall, measured from the surface where the weight of a person is supported to the surface the person could fall onto;

"fall-arrest system" means a fall-protection system consisting of an assembly of components that arrests a person's fall when properly assembled, used together and connected to a suitable anchorage;

"fall-protection system" means any secondary system that is intended to prevent a person from falling or arrests a fall that occurs, and includes guardrails, temporary flooring, travel-restraint systems, personnel safety nets and fall-arrest systems;

"full-body harness" means a body-holding device, similar to a parachute harness, that transfers suspension forces or impacts during a fall arrest to a person's pelvis or skeleton;

"guardrail" means a fall-protection system consisting of vertical and horizontal members that:

- (i) are capable of withstanding concentrated forces, as prescribed in these regulations or an applicable standard,
- (ii) warn of a fall hazard, and
- (iii) reduce the risk of a fall,

"horizontal lifeline" means a flexible line made from wire, fibre rope, wire rope, or rod, with end terminations at both ends, that extends horizontally from one end anchorage to another;

"lanyard" means a flexible line or strap used to secure a full-body harness to an energy absorber, fall-arrester, lifeline or anchorage;

"lifeline" means a component of a fall-protection system consisting of a vertical lifeline or a horizontal lifeline;

"personnel safety net" means a fall-protection system that uses at least 1 net to stop a person who is falling before the person makes contact with a lower level or obstruction;

"elevating work-platform" means a mobile horizontal working surface that provides access and support to a person at a workplace, and that is elevated and lowered by means of a mechanism that complies with Part 23: Scaffolds and Other Elevated Work-platforms;

"safe surface" means an area that meets all of the following criteria:

- (i) it is large enough and strong enough to adequately support a person who falls,
- (ii) it is level enough to prevent a further fall by a person who has fallen,

"self-retracting device" means a device that arrests a person's fall by performing a tethering function while allowing vertical movement below the device to the maximum working length of the device;

"temporary flooring" means a fall-protection system consisting of a horizontal working surface that is designed, constructed and installed to provide access to areas that do not have permanent flooring by protecting a person from falling through an unprotected opening;

"travel restraint system" means a fall-protection system that will prevent a person from reaching an unprotected edge or opening;

"vertical lifeline" means a flexible lifeline with an end termination on the top end that is connected to an anchorage or anchorage connector and hangs vertically from where it is connected;

"work-platform" means a raised temporary horizontal working surface that provides

access and support to a person at a workplace;

"work-positioning system" means an assembly of components that, when properly assembled and used together, supports a person in a position or location so that the person's hands are free in the work position, but does not include a boatswain's chair, ladder, rope access or scaffold.

### **FALL PROTECTION REQUIRED**

21.2 (1) Except as provided in subsections (3) to (5), fall protection is required if a person is at risk of falling from a work area where the fall distance is:

- (a) 3 m or more above the nearest safe surface or water;
- (b) less than 3 m and the work area is above 1 of the following:
  - (i) a surface or thing that could cause injury to the person on contact that is worse than an injury from landing on a solid, flat surface,
  - (ii) exposed hazardous material, such as in an open tank, pit or vat.

(2) If fall protection is required, an employer must ensure that at least 1 of the following means of fall protection is used, as appropriate in the circumstances:

- (a) a guardrail;
- (b) temporary flooring;
- (c) a personnel safety net;
- (d) a travel restraint system;
- (e) a fall-arrest system.

(3) Fall protection is not required for a person who is entering or exiting a work area by a safe means of access and egress.

(4) Fall protection is required only where reasonably practicable and to the extent reasonably practicable in any of the following circumstances:

- (a) if work must be performed on or from a vehicle, rail car or other mobile equipment;
- (b) if it is not reasonably practicable to perform work other than from a ladder and it is not reasonably practicable for the person performing the work to maintain adequate contact with the ladder while performing the work;
- (c) if the density of tree branches prevents an arborist from crotching.

(5) If it is not reasonably practicable to use fall protection in the circumstances described in subsection (4), an employer must ensure that an alternate control measure is used to reduce, to the extent reasonably practicable, the risk of a fall.

### **WRITTEN FALL-PROTECTION SAFE-WORK PROCEDURE**

21.3 (1) Except as provided in subsection (2), an employer must establish a written fall-protection safe-work procedure for the type of work to be performed in any work area where fall protection is required and the maximum fall distance is less than 7.5 m.

(2) A written fall-protection safe-work procedure is not required under subsection (1) if any of the following conditions apply:

- (a) all persons performing the work are protected by a permanent guardrail;
- (b) the work is performed from a work-platform described in Sections 23.12 to 23.15 of Part 23: Scaffolds and Other Elevated Work-platforms and all persons performing the work are using adequate fall protection.

(3) A fall-protection safe-work procedure must be based on a hazard assessment of the work typically performed by the employer and must include all of the following information:

- (a) the nature of the work to be performed;
- (b) the typical duration of the work;
- (c) a description of the work;
- (d) a list of the primary tools or equipment used in the work;
- (e) reference to applicable health and safety legislation and regulations;
- (f) a list of potential fall hazards of the work and their associated risks;
- (g) the risk controls to be used to prevent injury to persons coming in contact with known hazards;
- (h) the effect of weather conditions;
- (i) the name of the person or position that has supervisory responsibility for the work, whether the person is present at the work area or not;
- (j) the training and qualifications required for persons who will perform the work, as determined by the employer;
- (k) a method for communicating the fall-protection safe-work procedure to any person who may be affected by the procedure.

### **WRITTEN FALL-PROTECTION SAFE-WORK PLAN**

21.4 (1) Except as provided in subsection (2), an employer must establish a specific written fall-protection safe-work plan for a specific work area where fall protection is required and the fall distance is 7.5 m or more.

(2) A specific written fall-protection safe-work plan is not required under subsection (1) if any of the following conditions apply:

- (a) all persons performing the work are protected by a permanent guardrail;
- (b) the work is performed from a work-platform described in Sections 23.12 to 23.15 of Part 23: Scaffolds and Other Elevated Work-platforms and all persons

- performing the work are using adequate fall protection;
- (c) the work is performed by an emergency services agency in accordance with Section 1.16.

(3) A fall-protection safe-work plan must be established based on a hazard assessment of the specific work to be performed in the work area and must include all of the following information:

- (a) the nature of the work to be performed;
- (b) the anticipated duration of the work;
- (c) a description of the work;
- (d) a list of the primary tools or equipment to be used in the work;
- (e) reference to applicable health and safety legislation and regulations;
- (f) a list of potential fall hazards of the work and their associated risks;
- (g) the fall-protection system or systems to be used at the work area;
- (h) any anchorages to be used during the work;
- (i) if a fall-arrest system is to be used, confirmation that the clearance distances below the work area are sufficient to prevent a person from striking;
  - (i) the nearest safe surface or water,
  - (ii) a surface or thing that could cause injury to the person on contact, or
  - (iii) exposed hazardous material, such as an open tank, pit or vat,
- (j) a procedure to address the risks associated with the potential for swing as a result of anchorage placement when a person is using a fall-arrest system;
- (k) the procedures to be used to assemble, maintain, inspect, use and disassemble a fall-protection system, as applicable;
- (l) schedules for inspecting any fall-protection systems and the names of any persons responsible for carrying out the inspections;
- (m) adequate written rescue procedures to be used if a person falls and requires rescue, including if a person is suspended by a fall-arrest system or personnel safety net;
- (n) the effect of weather conditions;
- (o) the name of a designated competent person to supervise the work area;
- (p) the training and qualifications required for persons who will perform the work, as determined by the employer;
- (q) a method for communicating the fall-protection safe-work plan to any person who may be affected by the plan.

(4) If a workplace has more than 1 work area for which a fall-protection safe-work plan is required, an employer may create a separate plan for each specific work area or one overall plan for the workplace that includes all of the requirements necessary for each specific plan.

## **GUARDRAILS**

21.5 (1) An employer must ensure that a guardrail that is used as a means of fall protection is installed at all of the following places in a work area:

- (a) around any uncovered opening in any surface;
- (b) at the perimeter or other open side of a work area.

(2) A guardrail must be designed and installed in compliance with the latest version of CSA standard CSA 797, "Code of Practice for Access Scaffolds".

(3) If there is a risk of falling at a doorway or the opening of a building floor, roof, walls or shaft, an employer must ensure that a guardrail is:

- (a) installed in accordance with this Section; and
- (b) marked with a warning sign that indicates the presence of a doorway or other opening.

### **TEMPORARY FLOORING**

21.6 An employer must ensure that temporary flooring that is used as a means of fall protection is able to withstand 4 times the maximum load likely to be on it and is installed so that it meets all of the following:

- (a) it extends over the entire work area with the exception of any openings necessary for the carrying out of work;
- (b) it is securely fastened to prevent lateral and upward movement.

### **PERSONNEL SAFETY NETS**

21.7 (1) An employer must ensure that a personnel safety net used as a means of fall protection is designed, manufactured, installed, used, inspected, tested and made of materials in accordance with the latest version of ANSI standard A10.11, "American National Standard for Construction and Demolition Operations - Personnel and Debris Nets".

(2) Despite any requirements set out in the standard required by subsection (1), a personnel safety net must be erected and installed in accordance with all of the following:

- (a) it must be erected and installed under the supervision of a competent person;
- (b) it must be positioned as close as reasonably practicable, but no more than 9 m below the work area and extend at least 2.4 m on all sides beyond the work area;
- (c) it must be positioned and maintained so that when arresting the fall of a person, the maximum deflection of the personnel safety net does not permit any portion of the person to contact another surface;
- (d) it must be free of debris, obstructions or intervening objects that may be struck by a person who falls from a workplace into the net.

### **TRAVEL RESTRAINT SYSTEMS**

21.8 An employer must ensure that a personal travel restraint system that is used as a means of fall protection to restrict movement meets the requirements of the latest version of CSA standard CSA 9.16, "Design of active fall-protection systems".

### **FALL-ARREST SYSTEMS**

21.9 An employer must ensure that a fall-arrest system that is used as a means of fall-protection is erected, installed, assembled, used, handled, stored, adjusted, maintained, repaired, inspected, serviced, tested, cleaned and dismantled in accordance with the manufacturer's specifications and designed in accordance with the requirements of the latest version of CSA standard CSA 9.16, "Design of active fall-protection systems".

### **FALL-ARREST FOR ARBORISTS**

21.10 (1) An arborist using a fall-arrest system as a means of fall protection must ensure that the fall-arrest system includes all of the following:

- (a) a work-positioning system and a travel restraint system, the design, markings and instructions of which comply with the latest version of CSA standard CSA Z259.1, "Body Belts and Saddles for Work Positioning and Travel Restraint";
- (b) if reasonably practicable, a second climbing rope or safety strap that is manufactured for the purpose of tree climbing and that meets all of the following criteria:
  - (i) it provides additional stability,
  - (ii) it provides back-up fall protection,
  - (iii) it is capable of withstanding the greater of the following,
    - (A) 2 times the maximum load likely to be on it;
    - (B) a load of 22 kN.

(2) An arborist must do all of the following before climbing in a work area:

- (a) visually assess the structural stability of the tree;
- (b) select and assess the safest path of ascent;
- (c) select an appropriate crotch position as a work area.

(3) While working in a tree with a fall-arrest system, and [an] arborist must do all of the following:

- (a) wherever practicable, work from a crotch position with the fall-arrest system secured to an anchorage above the crotch position;
- (b) when changing crotch positions, remain secured by the fall-arrest system to the anchorage for the previous crotch position until secured by the fall-arrest system to the anchorage for the next crotch position;
- (c) not change crotch positions without selecting the next crotch position in

- advance;
- (e)\* ensure that slack only occurs in ropes or lines that are part of the fall-arrest system, if it is;
    - (i) essential to the performance of the work, and
    - (ii) no greater than is consistent with the safe performance of the work,
  - (d)\* not climb above an anchorage unless secured by another fall-arrest system secured at or above the level of the arborist;
  - (g)\* not work in crews of fewer than 2;
  - (h)\* have at least 1 crew member remain on the ground at the work area;
  - (f)\* when transferring from an elevating work-platform to a tree, remain attached to an anchorage on the work-platform by way of a fall-arrest system until secured to an anchorage on the tree by way of a fall-arrest system.

**[\*Clause lettering as in original.]**

### **WORK-POSITIONING SYSTEMS**

21.11 (1) Unless otherwise prescribed in these regulations, an employer must ensure a work-positioning system is used in combination with a fall-arrest system in all of the following circumstances:

- (a) the centre of gravity of the person using the work-positioning system extends beyond the edge from which a person could fall;
- (b) the state or condition of the work surface creates a slipping or tripping hazard.

(2) A person must not use, and an employer must ensure a person does not use, a work-positioning system as a means of fall arrest.

### **FULL-BODY HARNESSES**

21.12 An employer must ensure that a person who is using a personal fall-arrest system wears a full-body harness and that the full-body harness is used and certified in compliance with the latest version of CSA standard CSA Z259.10, "Full Body Harnesses".

### **BODY BELTS**

21.13 (1) An employer must ensure that the design, markings and instructions of body belts used comply with the latest version of CSA standard CSA Z259.1, "Body Belts and Saddles for Work Positioning and Travel Restraint".

(2) An employer must ensure that body belts are not used as a component of a fall-arrest system.

(3) A person must not use a body belt as a component of a fall-arrest system.

### **ENERGY ABSORBERS AND LANYARDS**

21.14 (1) An employer must ensure that a lanyard or an energy absorber used in a fall-arrest system is used and certified in compliance with the latest version of CSA standard CSA Z259.11, "Energy Absorbers and Lanyards".

(2) An employer must ensure that a lanyard used in a fall-arrest system is equipped with an energy absorber, unless all of the following conditions are met:

- (a) the combined free-fall distance and the energy absorber deceleration distance exceed the distance between the work area and a safe surface or hazard;
- (b) the fall-arrest system is designed by a competent person to limit the free fall to less than 1.22 m and 8 kN arresting force;
- (c) the fall-arrest system does not permit the user to contact an unsafe surface.

### **ANCHORAGES**

21.15 An employer must ensure that all anchorages used as components of a fall-protection system are capable of withstanding the following forces in any direction in which the force may be applied:

- (a) 22 kN, for non-engineered anchorage;
- (b) 2 times the maximum arresting force anticipated, for an engineered anchorage.

### **HORIZONTAL AND VERTICAL LIFELINES**

21.16 (1) An employer must ensure that a horizontal lifeline used as a component of a fall-protection system meets all of the following:

- (a) it is designed and installed in compliance with the latest version of CSA standard CSA Z259.16, "Design of Active Fall-Protection Systems";
- (b) it is used, certified and made of material in compliance with the latest version of CSA standard CSA Z259.13, "Flexible Horizontal Lifeline Systems".

(2) An employer must ensure that a vertical lifeline used as a component of a fall-protection system is used and certified in accordance with the latest version of CSA standard CSA Z259.2.1, "Fall Arresters, Vertical Lifelines and Rails".

### **SELF-RETRACTING DEVICES**

21.17 (1) An employer must ensure the design, markings and instructions for a self-retracting device used as a component of a personal fall-arrest system comply with the latest version of CSA standard CSA Z259.2.2, "Self-Retracting Devices for Personal Fall-Arrest Systems".

(2) An employer must ensure a self-retracting device used as a component of a fall-

protection system is:

- (a) anchored above the user's head unless the manufacturer's specifications allow using a different anchorage location; and
- (b) used in a manner that;
  - (i) minimizes the hazards of swinging, and
  - (ii) if the user falls, limits the distance they drop during the swing to 1.2 m.

### **CONNECTING COMPONENTS**

21.18 (1) An employer must ensure all connecting components for a fall-arrest system are used and certified in compliance with the latest version of CSA standard CSA Z259.12, "Connecting Components for Personal Fall-Arrest Systems (PFAS)".

(2) An employer must ensure any carabiners and snap hooks used as components of a fall-arrest system are:

- (a) self-closing and self-locking; and
- (b) only capable of being opened by a minimum of 2 consecutive and deliberate manual actions.

(3) An employer must ensure that each component of a fall-protection system is compatible with all of the following, as indicated in the manufacturer's specifications and instructions for use of their equipment:

- (a) each other component and that the safe function of any component does not interfere with the safe function of another component;
- (b) the work conditions and conditions of the physical environment under which the equipment is to be used.

### **FALL-PROTECTION TRAINING REQUIRED**

21.19 (1) An employer must ensure that a person takes and successfully completes training on fall protection at all of the following times:

- (a) before they do any of the following;
  - (i) use fall protection,
  - (ii) work in, supervise or plan the work for a work area where fall protection is required, and
- (b) once at least every 3 years.

(2) A person must not use fall protection or work in, supervise or plan the work for a work area where fall protection is required before successfully completing training as required by this Section.

(3) In order to successfully complete training, a person must be deemed competent to

inspect and use fall protection by 1 of the following persons who conducted the training:

- (a) their employer;
- (b) a training organization.

(4) Training must be instructed by a competent person.

(5) The person conducting the training must identify a method of evaluating the person taking the training and determining whether a person successfully completes the training.

### **FALL-PROTECTION TRAINING TOPICS**

21.20 Training on fall protection must include all of the following, as applicable to the nature of the work:

- (a) a review of all applicable health and safety legislation, regulations and standards;
- (b) identification of fall hazards;
- (c) a review of the hierarchy of controls that may be used to eliminate or minimize risk of injury from a fall;
- (d) the different methods of fall protection and the most suitable application of the methods;
- (e) fall-protection and safe-work procedures;
- (f) instruction on assessing and selecting specific anchors that may be used for various applications;
- (g) instruction on selecting and correctly using fall-protection components, including connecting hardware;
- (h) information about the effect of a fall on the human body, including all of the following:
  - (i) free fall,
  - (ii) swing fall,
  - (iii) maximum arresting force, and
  - (iv) the purpose of energy absorbers,
- (i) pre-use inspections of equipment and systems;
- (j) emergency response procedures to be used if a fall occurs;
- (k) practice in all of the following:
  - (i) inspecting, fitting, adjusting and connecting fall-protection systems and components,
  - (ii) the emergency response procedures required by clause (j).

### **RECORD OF FALL-PROTECTION TRAINING**

21.21 (1) A record of fall-protection training required under Section 21.19 for each participant who successfully completes the training must be maintained by all of the following:

- (a) the employer;
- (b) any training organization that conducts the training.

(2) A record of training under this Section must include all the following information:

- (a) the name of the participant;
- (b) the date or dates of training;
- (c) the name of the instructor;
- (d) the name of the employer;
- (e) the name of the training organization, if training is not conducted by the employer;
- (f) a description of the training;
- (g) the expiry date before which training must be renewed.

(3) Each person who takes fall-protection training required by Section 21.19 must be given a copy of their record maintained under this Section.

### **FALL-PROTECTION TRAINING CERTIFICATE OR CARD**

21.22 (1) A person who conducts training must give each person who successfully completes the fallprotection training required by Section 21.20 a training certificate or card, signed by the instructor, with all of the following clearly indicated on it:

- (a) the name of the participant;
- (b) the date or dates of training;
- (c) the name of the employer and the training organization, if training is not conducted by the employer;
- (d) the type of training;
- (e) the expiry date for the training certificate or card before which training must be renewed.

(2) A person must have their fall-protection training certificate or card available at the workplace at all times.

## **Newfoundland**

### **Occupational Health and Safety Regulations, 2012, N.L.R. 5/12**

#### **DEFINITIONS**

138 In this Part:

- (a) "anchorage point" means a secure point of attachment for a lifeline or lanyard;
- (b) "arborist" means a worker trained and employed, in whole or in part, to climb trees for an economic or scientific purpose, including;

- (i) detection and treatment of disease, infections or infestations,
  - (ii) pruning, spraying or trimming,
  - (iii) repairing damaged trees,
  - (iv) assessing growth or harvesting potential, or
  - (v) scientific research,
- (c) "body belt" means a belt worn by a worker as a means of fall restraint;
  - (d) "debris net" means a net that is used to catch material and debris that can drop from work areas;
  - (e) "fall arrest system" means a system of physical components attached to a worker that stops a worker during a fall;
  - (f) "full body harness" means a harness consisting of leg and shoulder straps and an upper back suspension unit that distributes and reduces the impact force of a fall;
  - (g) "guardrail" means a system of vertical and horizontal members that warns of a fall hazard and reduces the risk of a fall;
  - (h) "lanyard" means a flexible line used to secure a worker to a lifeline, a static line or a fixed anchor point;
  - (i) "lifeline" means a vertical line attached to a fixed anchor point or a static line and to which a lanyard and a ropegrab may be attached;
  - (j) "means of fall protection" means a fall protection system and includes a harness, net, rope, body belt, structure or other equipment or device or means of:
    - (i) restraining a worker who is at risk of falling, or
    - (ii) stopping a worker who has fallen,
  - (k) "personnel safety net" means a net that is used to catch a worker during a fall;
  - (l) "ropegrab" means a mechanical fall-arrest device that:
    - (i) is attached to a lifeline and a lanyard, and
    - (ii) locks itself immediately on the lifeline in the event of a fall,
  - (m) "safe surface" means a surface at a workplace that:
    - (i) has sufficient size and strength to adequately support a worker who falls on to the surface, and
    - (ii) is sufficiently horizontal to prevent a further fall from the surface by a worker who has fallen on to the surface,
  - (n) "softener" means padding or hoses that are used with a lifeline or static line to prevent a rope from being cut or chafed; and
  - (o) "static line" or "horizontal life line" means a rope;
    - (i) that is attached horizontally to 2 or more fixed anchor points, and
    - (ii) to which a fall arrest system is attached.

### **TRAINING REQUIREMENT**

139 A worker shall not use fall protection equipment after January 1, 2012 unless he or she has completed a training program on fall protection prescribed by the commission.

### **FALL PROTECTION SYSTEMS**

140 Where an employer determines it is impractical to provide adequate work platforms

or staging, the employer shall ensure that fall protection systems are used by all workers who are exposed to the hazard of falling, as required in section 141.

### **GENERAL REQUIREMENTS**

141 Where a worker is exposed to the hazard of falling from a work area that is:

- (a) 3 metres or more above the nearest safe surface or water;
- (b) above a surface or thing that could cause injury to the worker if the worker were to fall on the surface or thing; or
- (c) above an open tank, pit or vat containing hazardous material, the employer shall ensure that;
- (d) the worker is provided with a fall arrest system that meets the requirements of section 142;
- (e) a guardrail that meets the requirements of section 28 is constructed or installed at the work area;
- (f) a personnel safety net that meets the requirements of section 143 is installed at the work area;
- (g) temporary flooring that meets the requirements of section 146 is constructed or installed at the work area; or
- (h) the worker is provided with another means of fall protection that provides a level of safety equal to or greater than a fall arrest system that meets the requirements of section 142.

### **FALL ARREST SYSTEM**

142 (1) A fall arrest system that is provided in accordance with section 141 shall:

- (a) be adequately secured to;
  - (i) an anchorage point, or
  - (ii) a lifeline that is,
    - (A) securely fastened to anchor points; or
    - (B) attached to a static line that is securely fastened to anchorage points and that is capable of withstanding either the maximum load likely to be imposed on the anchorage point or a load of 22.2 kilonewtons, whichever is the greater;
- (b) include a lanyard;
  - (i) that is attached to an anchorage point or lifeline, where practicable, above the shoulder of the worker, and
  - (ii) that complies with CSA Standard Z259.11 "Energy Absorbers and Lanyards",
- (c) prevent a free fall greater than 1.22 metres where;
  - (i) the fall arrest system is not equipped with a shock absorption system that complies with CSA Standard Z259.11 "Energy Absorbers and Lanyards" and that reduces the shock level of a fall to less than 4 kilonewtons, or
  - (ii) the combined free fall and shock absorbed deceleration distance exceeds

- the distance between the work area and a safe surface, and
- (d) include a full body harness that;
    - (i) is attached to a lanyard,
    - (ii) is adjusted to fit the user of the harness, and
    - (iii) complies with CSA Standard Z259.10 "Full Body Harnesses".

(2) Where a fall arrest system includes a lifeline, the lifeline shall:

- (a) comply with CSA Standard Z259.2.1 "Fall Arresters, Vertical Lifelines and Rails";
- (b) extend to a safe surface below the work area and be securely attached to an anchorage point;
- (c) be secured at the bottom of the lifeline to prevent tangling or disturbance of the line and be free of knots, lubricants and imperfections;
- (d) be free of splices, except where they are necessary to connect the lifeline to an anchorage point;
- (e) be provided with softeners at all sharp edges or corners to protect against cuts or chafing; and
- (f) be clearly identified as a lifeline by colour or by another means that provides an equivalent level of safety.

(3) No worker shall:

- (a) use a lifeline in a fall arrest system while that fall arrest system is being used by another worker; or
- (b) provide a rope for use, or permit a rope to be used, as a lifeline in a fall arrest system where the rope has been used for another purpose.

(4) Where a fall arrest system provided to a worker includes a ropegrab, the ropegrab used shall comply with CSA Standard Z259.2.1 "Fall Arresters, Vertical Lifelines and Rails".

(5) An employer who provides a worker with a fall arrest system shall ensure the fall arrest system is inspected by a qualified person before each work shift undertaken by the worker.

(6) A qualified person who carries out an inspection of a fall arrest system shall advise the employer where a component of the system is defective in condition or function and the employer shall ensure that the system is not used until the defective component is replaced or repaired.

(7) Where a fall arrest system has arrested the fall of a worker at a work area, the employer shall ensure that the fall arrest system:

- (a) is removed from service and inspected by a qualified person; and
- (b) is repaired, before it is reused, to the original manufacturer's specifications, where an inspection under paragraph (a) reveals that a component of the system

is defective.

(8) Where a fall arrest system includes a static line, the static line shall:

- (a) have a nominal diameter of at least 12.7 millimetres and be made of improved plow wire rope;
- (b) be equipped with vertical supports at least every 9 metres and have a maximum deflection, when taut, of no greater than 381 millimetres for a 9 metre span;
- (c) be equipped with turnbuckles or other comparable tightening devices that provide an equivalent level of protection, at the ends of the static line;
- (d) be equipped with softeners at all sharp edges or corners to protect against cuts or chafing;
- (e) be made only of components that are able to withstand either the maximum load likely to be imposed on the components or a load of 8 kilonewtons, whichever is the greater; and
- (f) comply with CSA Standard Z259.13 "Flexible Horizontal Lifeline Systems" and CSA Standard Z259.16 "Design of Active Fall Protection Systems".

(9) Where a fall arrest system is provided to an arborist, the fall arrest system shall:

- (a) include a tree climbing or tree trimming harness or saddle;
- (b) be adequately secured to;
  - (i) an anchorage point, or
  - (ii) a lifeline that is,
    - (A) securely fastened to anchorage points; or
    - (B) attached to a static line that is securely fastened to anchorage points;
- (c) include a climbing rope or safety strap;
- (d) where practicable, include a second climbing rope or safety strap that;
  - (i) provides additional stability, and
  - (ii) back-up fall protection, and
- (e) be capable of withstanding either the maximum load likely to be imposed or a load of 22.2 kilonewtons, whichever is the greater.

(10) Where an employer uses a fall arrest system or a personnel safety net as a means of fall protection, the employer shall have a written fall protection plan that specifies:

- (a) the procedure to assemble, maintain, inspect, use and disassemble the fall arrest system or personnel safety net; and
- (b) the procedure for the rescue of a worker who has fallen and is suspended by the fall arrest system or personnel safety net, but is unable to effect self-rescue.

### **NETS**

143 (1) Where a personnel safety net is installed in accordance with section 141, an employer shall ensure that it:

- (a) is installed;
  - (i) not more than 4.6 metres below the work area,
  - (ii) to ensure that no obstructions or intervening members may be struck by a worker during a fall between the work area and the personnel safety net, and
  - (iii) maintained so that the maximum deflection when arresting the fall of a worker does not allow a part of the worker to contact another surface,
- (b) extends 2.4 metres on all sides beyond the work area; and
- (c) where connected to another personnel safety net, the splice joints connecting it with the other personnel safety nets are equal to, or greater in strength than, the strength of the weakest of the personnel safety nets.

(2) Notwithstanding subsection (1), an employer shall ensure that a personnel safety net is manufactured, used, maintained, inspected and stored in accordance with ANSI Standard A10.11-1989 "Safety Nets Used During Construction, Repair and Demolition Operations".

### **DEBRIS NETS**

144 (1) Where a worker having access to an area below an elevated work area is exposed to the hazard of falling objects or debris from the work area, an employer shall ensure that:

- (a) a debris net is installed below the work area in accordance with subsection (2); or
- (b) other means of protection are provided that provide an equivalent level of protection from falling objects and debris.

(2) An employer shall ensure that a debris net under subsection (1) is:

- (a) manufactured, used, maintained, inspected and stored in accordance with ANSI Standard A10.11-1989 "Safety Nets Used during Construction, Repair and Demolition Operations"; and
- (b) installed not more than 4.6 metres below the elevated work area.

### **TRAVEL RESTRAINT**

145 An employer shall ensure that a body belt provided in accordance with section 141 complies with CSA Standard Z259 "Body Belts and Saddles for Work Positioning and Travel Restraint".

### **TEMPORARY FLOORING**

146 Temporary flooring that is constructed or installed in accordance with section 141 shall:

- (a) be constructed or installed at each floor level of the work area where work is in progress;

- (b) extend over the whole work area except for openings necessary for the carrying out of work;
- (c) be able to withstand 4 times the maximum load likely to be imposed on it; and
- (d) be securely fastened to and supported on members that are able to withstand 4 times the maximum load likely to be imposed on them.

See also:

### **DEFINITION**

147 In this Part, "eccentric loading" means a load that is applied off the central axis of a structural member.

### **PORTABLE LADDER STANDARDS**

148 (1) Except as otherwise permitted by this Part, portable ladder design, construction and use shall meet the requirements of:

- (a) CSA Standard CAN3-Z11 "Portable Ladders";
- (b) ANSI Standard A14.1-1990 "Safety Requirements for Portable Wood Ladders";
- (c) ANSI Standard A14.2-1990 "Safety Requirements for Portable Metal Ladders"; or
- (d) other standard acceptable to the minister.

(2) A manufactured portable ladder shall be:

- (a) marked for grade and use; and
- (b) used in accordance with the manufacturer's instructions.

### **JOB BUILT LADDERS**

149 Where a portable wooden ladder is constructed at the job site:

- (a) the side rails;
  - (i) shall be of 38 millimetres by 89 millimetres nominal dimensions for lengths up to 5 metres, and 38 millimetres by 140 millimetres nominal dimensions for lengths from 5 metres to 7.3 metres, and
  - (ii) shall not be notched, dapped, tapered or spliced, and the distance between the inner faces of the side rails shall not be less than 38 centimetres or more than 50 centimetres,
- (b) cleats shall be;
  - (i) 19 millimetres by 64 millimetres for ladder lengths up to 5 metres,
  - (ii) 19 millimetres by 89 millimetres for ladder lengths from 5 metres to 7.3 metres,
  - (iii) spaced at 30 centimetres centres, and
  - (iv) nailed directly onto the smaller surfaces of the side rails, using three 57 millimetres wire nails on each end of the 89 millimetre cleats, and two similar nails on each end of the 64 millimetre cleats,

- (c) the spaces on the side rails between the cleats shall be filled with close fitting and well secured filler pieces that are the same thickness as the cleats; and
- (d) a double cleat ladder shall have 3 rails evenly spaced, and be 107 centimetres to 127 centimetres wide and have continuous cleats which extend the full width of the ladder.

### **PROTECTIVE COATINGS**

150 A protective coating applied to a wooden ladder, other than a small amount for identification purposes, shall be transparent to allow defects to be discovered by inspection.

### **INSPECTION**

151 Portable ladders shall be inspected before use, and ladders with loose, broken or missing rungs, split side rails or other hazardous defects shall be removed from service.

### **INCLINATION AND SUPPORT**

152 Where a portable single or extension ladder is in use:

- (a) the ladder shall be placed so that the horizontal distance from the base to the vertical plane of support is approximately one-quarter of the ladder length between supports; and
- (b) the lower ends of the ladder side rails shall rest on a firm and level base and the upper support of the side rails shall be rested on a bearing surface strong enough to safely withstand the applied load.

### **LENGTH**

153 A ladder shall be of sufficient length to project approximately one metre above the level of the upper landing to which it provides access, except where there is limited clearance and the ladder is adequately secured.

### **RESTRICTIONS ON USE**

154 (1) Except as otherwise permitted by a manufacturer, a worker shall not work from either the top 2 rungs of a portable single or extension ladder or the top 2 steps of a stepladder.

(2) A ladder shall not be used as a scaffold component or as a horizontal walkway, ramp or work platform support except where the ladder is part of a premanufactured or engineered system.

(3) A worker shall maintain 3 points of contact when using a ladder.

(4) A worker may only work from a portable ladder without fall protection where:

- (a) the work is a light duty task of short duration at each location;
- (b) the worker's centre of gravity is maintained between the ladder side rails; and
- (c) the ladder is not positioned near an edge or floor opening that would significantly increase the potential fall distance.

### **FIXED LADDERS**

155 (1) A fixed ladder shall comply with the requirements of ANSI Standard A14.3 - 2002 "American National Standard for Ladders - Fixed Safety Requirements" or other standard acceptable to the minister.

(2) All fixed ladders, where a potential fall is more than 7.32 metres in length, shall be:

- (a) provided with platforms at intervals not greater than 7.32 metres;
- (b) provided with safety cages starting at 2.13 metres and a maximum of 2.44 metres from the base of the ladder; or
- (c) provided with acceptable devices to prevent workers from falling.

(3) Fixed ladders shall be anchored at intervals of not more than 3.05 metres for the entire length of the ladder.

(4) A continuous clearance of at least 17.78 centimetres shall be provided at the back of rungs of fixed ladders.

(5) Ladder rungs shall be omitted above the landing and the side rails shall extend at least 1.07 metres above the landing.

(6) Where acceptable devices to prevent workers from falling are used, platforms shall be provided at intervals not greater than 45.72 metres where the continuous length of climb is greater than 45.72 metres and every 45.72 metres afterward.

### **SPECIAL PURPOSE LADDERS**

156 A special purpose ladder, including a ship's ladder, escape ladder, individual rung ladder or a ladder visible to the audience in a theatre scenic unit or prop, shall be engineered or constructed to a standard acceptable to the minister.

### **DEFINITIONS**

157 For the purpose of this section and sections 158 to 200:

- (a) "building tie" means a connection between a standing scaffold and a permanent structure;
- (b) "double-pole scaffold" means a scaffold with both ends of the bearers supported

by connections to posts or uprights;

- (c) "heavy duty" means intended to support both workers and stored or stacked materials, including bricks and masonry, where the maximum load capacity does not exceed 366 kilograms a square metre;
- (d) "light duty" means intended to support workers, their personal hand tools and material for immediate use only where the maximum load capacity does not exceed 122 kilograms a square metre;
- (e) "painter's plank" means a single manufactured extension staging;
- (f) "running scaffold" means a double-pole scaffold comprised of 2 or more bays;
- (g) "scaffold" or "scaffolding" means a temporary work platform and its supporting structure used for supporting workers or materials or both; and
- (h) "single pole scaffold" means a scaffold with the outer ends of the bearers supported on ledgers secured to a single row of posts or uprights, and the inner ends of the bearers supported on or in a wall.

### **RESPONSIBILITIES**

158 (1) Employers shall ensure that scaffolds used by their workers are in safe condition, regardless of who erected the scaffolds.

(2) A scaffold shall be erected, altered and dismantled by, or under the direct supervision of, qualified workers.

(3) A scaffold shall be inspected daily before use and after a modification.

(4) A damaged scaffold component shall not be used until it has been effectively repaired.

### **STANDARDS**

159 Unless otherwise permitted by this Part, a scaffold shall be designed, erected and maintained in accordance with the requirements of:

- (a) ANSI Standard A10.8 -1988 "American National Standard for Construction and Demolition Operations - Scaffolding - Safety Requirements";
- (b) ANSI Standard A14.7- 1991 "Safety Requirements for Mobile Ladder Stands and Mobile Ladder Stand Platforms";
- (c) CSA Standard CAN/CSA-Z271 "Safety Code for Suspended Powered Platforms";
- (d) another standard acceptable to the minister; or
- (e) the written requirements of a professional engineer.

### **SCAFFOLD STABILITY**

160 (1) A scaffold shall be erected with vertical members plumb and ledgers and bearers level.

(2) The lower end of the vertical support of a scaffold shall be supported by firm and adequately sized foundations or sills.

(3) The poles, legs and uprights of a scaffold shall be securely and rigidly braced to prevent swaying and displacement.

(4) A scaffold shall be effectively guyed or secured to a building or structure where the height of the scaffold exceeds 3 times its minimum base.

(5) Where building ties or guys are used:

(a) the first level of ties or guys shall be placed at a height not exceeding 3 times the scaffold minimum base dimension, and additional building ties or guys placed at vertical intervals not exceeding 6 metres; and

(b) the ties or guys shall be placed at horizontal intervals of every third bay or 6.4 metres, whichever is the lesser, and at the ends of the scaffold.

(6) A building tie shall be capable of resisting a working load of 4 kilonewtons, applied horizontally and perpendicular to the structure, or a proportionately equivalent load where ties are spaced closer together or guying is employed.

(7) Where a scaffold is enclosed by a tarp or other cover, bracing for the scaffold shall be installed in accordance with the manufacturer's instructions or those of a professional engineer to meet design criteria for induced loads.

### **GUARDRAILS AND TOEBOARDS**

161 (1) Except as otherwise provided by subsection (2), a work platform 1.22 metres or more above grade or floor level shall have guardrails on all open sides and ends which comply with the requirements of sections 28 and 30.

(2) Where an edge of the work platform is adjacent to a structure that provides protection equivalent to guardrails, guardrails may be omitted on that edge and there may be an open space of up to 30 centimetres between the work platform and the structure.

(3) Toeboards shall be provided and comply with all the requirements for toeboards set out in these regulations.

### **GROUNDING**

162 A metal scaffold located in proximity to a high voltage energized electrical conductor or equipment shall be effectively grounded where a hazardous level of electrical charge is likely to be induced in the scaffold.

### **LUMBER PLANKS**

163 (1) Scaffold planks shall:

- (a) be rough sawn and of not less than 5.08 centimetres by 25.40 centimetre dimensions;
- (b) extend not less than 15.24 centimetres and not more than 30.48 centimetres beyond the supporting members;
- (c) be supported at intervals not exceeding 3.05 metres for light work and 2.13 metres for heavy work, including bricklaying and masonry;
- (d) be of uniform thickness in adjoining planks; and
- (e) have maximum allowable deflection not exceeding the span length divided by 80.

(2) Each lumber scaffold plank shall be visually inspected for defects before each installation and shall be removed from service where it is found to be defective.

### **MANUFACTURED PLANKS**

164 (1) A manufactured scaffold plank shall meet the requirements of section 163 and shall be used in accordance with the manufacturer's instructions and limitations, except as provided in subsection (2).

(2) A single manufactured extension staging painter's plank may be used for the support of one worker only.

### **SECURING PLANKS**

165 Each lumber and manufactured scaffold plank installed for use shall be secured against dislodgement.

### **ACCESS TO SCAFFOLDS**

166 (1) Access to otherwise inaccessible working levels of a scaffold up to 9 metres above a floor or grade shall be provided by:

- (a) end frames providing a ladder-like structure having horizontal members uniformly spaced at approximately 30 centimetres on centre; or
- (b) a vertical or portable ladder or stairway, attached to the scaffold.

(2) Access to otherwise inaccessible working levels of a scaffold over 9 metres above a floor or grade shall be provided by:

- (a) a stairway erected for the full height of the scaffold;
- (b) a temporary passenger hoist approved for use under the Public Safety Act;
- (c) an attached vertical ladder, with rest platforms at least every 6.1 metres which are fully guarded except at the ladder location; or

(d) end frames with a ladder-like structure having horizontal members uniformly spaced at 30 centimetres on centre, and rest platforms at least every 6.10 metres which are fully guarded except at the ladder location.

(3) A worker shall not climb the outside of scaffold frames between landings.

### **VERTICAL LADDERS**

167 (1) A vertical ladder providing access to working levels of a scaffold shall:

- (a) be adequately fastened to the scaffold;
- (b) be configured so that its siderails extend approximately one metre above the uppermost working level; and
- (c) have rungs spaced at 30 centimetres on centre and have a clear space of at least 15 centimetres behind each rung.

(2) A ladder attached to a scaffold shall be positioned so that its use will not cause the scaffold to become unstable.

### **ERECTION AND DISMANTLING**

168 The requirements of sections 141 to 146 apply to the erection and dismantling of a scaffold.

### **SPACING OF COMPONENTS**

169 The horizontal spacing between uprights, guardrail posts and bearers in a wood scaffold shall not exceed:

- (a) 3 metres for a light duty scaffold; or
- (b) 2 metres for a heavy duty scaffold.

### **BRACING OF UPRIGHTS**

170 Adjacent uprights shall be connected with horizontal runners (ledgers and bearers) to ensure that the unbraced vertical length of an upright does not exceed 2.4 metres.

### **CROSS BRACING**

171 A scaffold shall be adequately supported in 2 directions by a system of diagonal cross braces secured to the uprights as close to the ledgers as possible.

### **WOOD SCAFFOLDS**

172 (1) Components of a light duty single-pole wood scaffold shall have minimum nominal dimensions conforming to the following table:

Table

<b>Component</b>	<b>Dimensions</b>
Uprights up to 6.10 metres	5.08 by 10.16 centimetres
Uprights 6.10 to 15.24 metres	10.16 by 10.16 centimetres
Bearers- 91.44 centimetres span	2.54 by 15.24 centimetres
Bearers 152.40 centimetre span	5.08 by 15.24 centimetres
Ledgers	2.54 by 15.24 centimetres
Braces	2.54 by 15.24 centimetres
Wall-scabs and bearer blocks	5.08 by 15.24 centimetres
Minimum platform width	2-5.08 by 25.4 centimetres
Top guardrails	5.08 by 10.16 centimetres
Intermediate guardrails	2.54 by 15.24 centimetres
Toe-boards	2.54 by 10.16 centimetres

(2) Components of double-pole scaffolds shall have minimum nominal dimensions conforming to the following table:

Table

<b>Components</b>	<b>Dimensions</b>	
	<b>Light duty</b>	<b>Heavy duty</b>
Uprights to 6.10 metres	5.08 by 10.16 centimetres	5.08 by 15.24 centimetres
Uprights 6.10 metres to 15.24 metres	10.16 by 10.16 centimetres	10.16 by 15.24 centimetres
Bearers- 152.4 centimetres span	2-2.54 by 15.24 centimetres or 1-5.08 by 15.24 centimetres	2-5.08 by 15.24 centimetres or 1-5.08 by 25.4 centimetres
Ledgers	2.54 centimetres by 15.24 centimetres	2.54 by 15.24 centimetres
Braces	2.54 centimetres by 15.24 centimetres	2.54 centimetres by 15.24 centimetres
Minimum platform width	2-5.08 by 25.4 centimetres	4-5.08 by 25.4 centimetres
Top guardrails	5.08 by 10.16 centimetres	5.08 by 10.16 centimetres
Intermediate guardrails	2.54 by 15.24 centimetres	2.54 by 15.24 centimetres
Toeboards	2.54 by 10.16 centimetres	2.54 by 10.16 centimetres
Note: Spacing of building ties	Vertical: 4.57 metres	Horizontal: 6.10 metres

### **EXTENSION OF UPRIGHTS**

173 (1) A wood upright may only be extended using a butt joint, strengthened by two wooden splice plates not less than 1.2 metres long.

(2) The splice plates for wood uprights shall have a minimum thickness of 38 millimetres

and be of the same width as the spliced members.

(3) The combined cross-sectional area of the splice plates shall be at least that of the vertical upright member.

### **LAMINATED UPRIGHTS**

174 When wood uprights are fabricated by the lamination of two or more pieces of material to obtain the required cross-sectional dimensions, the distance between joints shall be at least 1.2 metres.

### **BEARER SUPPORTS**

175 (1) The inner ends of bearers on single-pole scaffolds shall be supported by bearer blocks and securely fastened to wall scabs.

(2) Manufactured bearer supports shall be:

- (a) of a design acceptable to the minister; and
- (b) secured to solid wall materials.

(3) Bearer hooks which engage holes in the wall sheathing shall be adequately supported by stiffeners secured to wood studs or blocking.

### **PUMPJACK SCAFFOLD**

176 (1) A pumpjack scaffold made of metal:

- (a) shall not be more than 13.7 metres in height; and
- (b) shall be braced every 4.6 metres, starting at the base of the scaffold.

(2) A pumpjack scaffold that includes one or more supports made of wood:

- (a) shall not be more than 7.3 metres in height; and
- (b) shall be braced every 3 metres, starting at the base of the scaffold.

(3) A pumpjack scaffold:

- (a) shall be used only as a light duty scaffold; and
- (b) shall not be used by more than 2 workers at one time.

(4) A pumpjack scaffold shall have guard rails in accordance with section 28.

### **DEFINITIONS**

177 For the purpose of this section and sections 178 to 200:

- (a) "end frame scaffold" means a system of fabricated tubular metal frames (panels) that are connected in the field with bracing members;
- (b) "system scaffold" means a scaffold consisting of posts with fixed connection points which accept runners, bearers and diagonal braces that can be interconnected at predetermined levels;
- (c) "tower scaffold" means a double-pole scaffold comprised of only one bay;
- (d) "tube and coupler scaffold" means an assembly of tubing members (posts, bearers, runners, diagonal braces, ties), a base supporting the posts and special couplers to connect the uprights and to join the various members; and
- (e) "tubular metal scaffold" means a scaffold with members made primarily of steel or aluminium tubing.

### **MANUFACTURERS SPECIFICATIONS**

178 Except as provided in section 179, a tubular metal scaffold shall:

- (a) be erected in accordance with the manufacturer's instructions and specifications, including bracing in both vertical and horizontal planes;
- (b) have all components installed and connected using the fasteners specified by the manufacturer, or fasteners of equivalent quality; and
- (c) be maintained in a condition which meets the manufacturer's specifications.

### **COMPATIBILITY**

179 Where a scaffold is erected using components made by different manufacturers, the employer shall ensure that the components are compatible.

### **ENGINEERING REQUIREMENTS**

180 A scaffold shall be erected and used in accordance with the written instructions of a professional engineer where the scaffold:

- (a) exceeds 25 metres in height;
- (b) exceeds 20 metres in height where stairways are included as part of the scaffold;
- (c) is used to support a temporary floor;
- (d) is subject to loads which can cause overturning; or
- (e) is suspended from a structure.

### **ADJUSTABLE HEIGHT BASES**

181 (1) A scaffold shall be erected plumb using adjustable height bases under the uprights to accommodate foundation settlement and uneven, sloping or stepped surfaces.

(2) Unless otherwise specified by the manufacturer, a height adjustment device shall not

extend more than the lesser of two-thirds of its total length or 60 centimetres.

### **SPACING**

182 Spacing between frames or uprights shall not exceed the maximum allowable span for work platform components and for the intended loading.

### **COUPLINGS**

183 (1) Vertical frames and uprights shall be joined using coupling or stacking pins to ensure proper vertical alignment.

(2) Where uplift could occur and cause components to separate, height adjusting screws, castors, coupling pins, frames and uprights shall be secured to prevent separation of components.

### **HEIGHT RESTRICTION**

184 The height of a free-standing tower or rolling scaffold shall not exceed 3 times its minimum base dimension.

### **OUTRIGGERS**

185 (1) Where outriggers are used to increase the minimum base dimension of a tower or rolling scaffold, the outriggers shall be installed on both sides of the scaffold structure.

(2) Notwithstanding subsection (1), where outriggers are used to increase the minimum base dimension of a tower or rolling scaffold erected adjacent to a building or other structure, the scaffold shall be braced against the structure, and outriggers used on the opposite side.

### **WHEELS**

186 (1) The wheels on at least one end of a rolling scaffold shall be the swivel type.

(2) The wheels of a rolling scaffold shall not be less than 13 centimetres in diameter and shall be secured in the scaffold leg to prevent the wheel from falling out while the scaffold is being erected, used or dismantled.

(3) Height adjusting screws for castors of a rolling scaffold shall extend not more than two-thirds of their total length or 30 centimetres whichever is the lesser.

(4) A wheel of a rolling scaffold shall be equipped with effective brakes or locking devices which shall be applied when workers are working on the scaffold.

(5) A rolling scaffold mounted on pneumatic tires shall have supports in addition to pneumatic tires while the scaffold is being erected or dismantled or when a worker is on it.

### **MOVING RESTRICTIONS**

187 A worker is not permitted on a rolling scaffold while it is being moved.

### **SURFACE CONDITIONS**

188 To ensure the stability of a rolling scaffold, the floor or surface over which it is moved shall be sufficiently firm, within 30 of level, and free from pits, holes, depressions and obstructions.

### **COMPONENTS OF TUBE AND COUPLER SCAFFOLD**

189 (1) Where 48 millimetres outside diameter aluminium or steel tube components are used in a tube and coupler scaffold:

- (a) the spacing of standards shall not exceed 3 metres;
- (b) standards shall be connected with ledgers and transoms at a vertical spacing not to exceed 2 metres; and
- (c) transoms constructed from 48 millimetres outside diameter aluminium or steel tubing shall be limited to 1.2 metre bearing length.

(2) A tube and coupler scaffold system which does not comply with the requirements of subsection (1) shall be constructed in accordance with the design of a professional engineer.

### **CROSS BRACING**

190 (1) A running scaffold shall have internal horizontal cross-bracing installed in the bay immediately adjacent to and at the level of a building tie unless equivalent bracing is achieved by use of fabricated scaffold planks secured by end hooks to provide a fully decked work platform at this level.

(2) A double-pole tube and coupler scaffold shall have internal bracing in accordance with subsection (1).

### **WORK PLATFORMS SUPPORTED BY A CRANE OR HOIST**

191 A work platform suspended from a crane or hoist, or attached to a crane boom shall be approved and certified by a professional engineer.

### **CRANE CAPACITY**

192 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, shall not exceed 25% of the crane's rated capacity at the working radius.

### **ECCENTRIC LOADING**

193 Where a work platform attached to a crane boom causes eccentric loading on the boom, the rated capacity of the crane shall be reduced and shall be determined and certified by the crane manufacturer or a professional engineer.

### **RIGGING**

194 Rigging used to suspend a work platform from a crane or hoist shall have a safety factor of at least 10, and shall be used exclusively for suspending the work platform.

### **TWO BLOCK PREVENTION**

195 Where a crane or hoist is being used to hoist personnel with a load line, the line shall have a device to prevent two-blocking.

### **POWERED BOOMS AND WINCHES**

196 (1) A crane used to suspend a work platform shall have a powered boom or a fixed boom.

(2) A hoist used to raise or lower a work platform suspended from a crane shall be capable of lowering under power.

(3) A free running boom or hoisting winch, controlled only by brakes, shall not be used to raise or lower a work platform.

(4) Hoisting and lowering speed of a crane or hoist shall be kept as slow as practicable while supporting a work platform.

### **FALL PROTECTION - SUSPENDED WORK PLATFORMS**

197 (1) An occupant of a work platform suspended from a crane or hoist shall use a personal fall arrest system with a shock absorbing lanyard secured to a designated anchorage point on the platform or above the load hook.

(2) Where a work platform suspended by a crane or hoist is occupied by a worker with a personal fall arrest system attached to the platform, the platform shall have a safety strap that prevents the platform from falling more than 15 centimetres where the platform becomes dislodged from the hook.

(3) Each occupant of a work platform attached to a crane boom shall use a personal fall arrest system secured to a designated anchorage point on the boom.

### **ARTICULATING BOOMS PROHIBITED**

198 A work platform shall not be:

- (a) suspended from an articulating boom crane; or
- (b) attached to an articulating boom crane unless the installation is approved by the crane manufacturer.

199 Travelling with a worker in a work platform supported by a crane or hoist is not permitted except where the platform is supported by a rail-mounted crane.

### **COMMUNICATIONS**

200 The operator of a crane or hoist used to suspend a work platform shall have an effective means of constant communication with a person on the platform.

### **DEFINITIONS -ELEVATING WORK PLATFORMS**

201 For the purpose of this section and sections 202 to 217:

- (a) "aerial device" means a vehicle-mounted device having a boom which may be telescoping or articulating, or both, with a work platform on the boom, which is used to position personnel;
- (b) "aerial ladder" means a vehicle-mounted aerial device with a single or multiple-section ladder with or without a platform at the top;
- (c) "boom-supported elevating work platform" means an elevating work platform or aerial device which has its platform supported by an elevating device that elevates and rotates relative to the machine base;
- (d) "elevating work platform" means a work platform or aerial device which self-elevates to overhead work locations and includes other similar devices not covered elsewhere in these regulations; and
- (e) "self-propelled" means the capability of an elevating work platform to be power propelled with the primary controls on the work platform.

### **STANDARDS**

202 (1) A self-propelled work platform comprising a boom-supported elevating platform, which telescopes, articulates, rotates or extends beyond the base dimensions, and is not mounted on a separate self-propelled vehicle shall meet the requirements of:

- (a) CSA Standard CAN/CSA-B354.4 "Self-propelled Boom-Supported Elevating Work Platforms";

- (b) ANSI Standard ANSI/SIA A92.5 "Boom-Supported Elevating Work Platforms"; or
- (c) other standard acceptable to the minister.

(2) A self-propelled integral chassis elevating work platform having a platform that cannot be positioned laterally completely beyond the base and for which primary functions are controlled from the platform shall meet the requirements of:

- (a) CSA Standard CAN/CSA-B354.2 "Self-Propelled Elevating Work Platforms";
- (b) ANSI Standard ANSI/SIA A92.6 "American National Standard for Self-Propelled Elevating Work Platforms"; or
- (c) other standard acceptable to the minister.

(3) A manually propelled, integral chassis elevating work platform having a platform that cannot be positioned laterally completely beyond the base, which may be adjusted by manual or powered means and which shall not be occupied when moved horizontally, shall meet the requirements of:

- (a) CSA Standard CAN/CSA-B354.1 "Portable Elevating Work Platforms";
- (b) ANSI Standard ANSI/SIA A92.3 "American National Standard for Manually Propelled Elevating Aerial Platforms"; or
- (c) other standard acceptable to the minister.

(4) A telescopic aerial device, aerial ladder, articulating aerial device, vertical tower, material-lifting aerial device or a combination of these, when vehicle-mounted, whether powered or manually operated, shall meet the requirements of CSA Standard CAN/CSA-C225 "Vehicle-Mounted Aerial Devices" or other standard acceptable to the minister.

(5) An elevating work platform of a type other than that referred to in subsections (1) to (4) shall meet a standard acceptable to the minister.

### **OPERATING AND MAINTENANCE MANUALS**

203 (1) The equipment manufacturer's:

- (a) operation manual; and
- (b) maintenance manual, containing maintenance instructions and replacement part information for each elevating work platform in use at the workplace shall be available at the workplace.

(2) Where either of the manuals referred to in subsection (1) is not available, the equipment shall not be used until the manual is obtained, or until written instructions for the safe operation and maintenance of the equipment are supplied by a professional engineer.

### **INSPECTION AND MAINTENANCE RECORDS**

204 (1) Records of inspection, maintenance, repair and modification shall be kept for an elevating work platform by the equipment operator and a person inspecting and maintaining the equipment.

(2) Where the inspection and maintenance records required under subsection (1) are not available, an elevating work platform shall be inspected and certified by a professional engineer before use, and an inspection and maintenance recording system shall be established as required by subsection (1).

### **SHIFT INSPECTION**

205 An elevating work platform shall be inspected by the operator before use on each shift and a condition that could endanger workers shall be remedied before the platform may be used.

### **ANNUAL INSPECTION AND CERTIFICATION**

206 (1) An elevating work platform shall be inspected, maintained, repaired and modified in accordance with:

- (a) the manufacturer's instructions;
- (b) the relevant CSA Standard as specified in section 202;
- (c) the direction of a professional engineer; or
- (d) another standard acceptable to the minister.

(2) An insulated aerial device shall be dielectrically tested at least annually in accordance with CSA Standard CAN/CSA-C225 "Vehicle Mounted Aerial Devices" or other standard acceptable to the minister and the insulating capability of the aerial device shall be certified by the testing agency.

### **FALL PROTECTION - ELEVATING WORK PLATFORM**

207 (1) A person on an elevating work platform shall wear a personal fall arrest system secured to an anchorage point that is approved by the manufacturer or professional engineer.

(2) A worker on an aerial ladder shall be continuously protected by means of a personal fall arrest system as required by Part X or shall maintain 3 points of contact with the ladder at all times.

### **SAFE ACCESS**

208 Safe means shall be provided to get on and off the platform of an elevating work platform.

### **RATED CAPACITY**

209 The rated capacity of an elevating work platform:

- (a) shall be marked on the platform; and
- (b) shall not be exceeded.

### **OUTRIGGERS**

210 (1) An outrigger on an elevating work platform shall be used in accordance with the manufacturer's instructions.

(2) Where an elevating work platform has outriggers, notices indicating the circumstances specified by the manufacturer for which the outriggers are to be used shall be clearly displayed at the operating controls for the platform.

### **CONTROLS**

211 (1) Each control on an elevating work platform shall be clearly identified to indicate its function.

(2) Controls on an elevating work platform shall be 'hold-to-run' (continuous pressure) type that return to the neutral or stop position when released.

(3) Controls on an elevating work platform shall be protected against inadvertent operation.

(4) Each set of operating controls of an elevating work platform shall be provided with an emergency stop device.

(5) An emergency stop device referred to in subsection (4) shall be:

- (a) within easy reach of the operator;
- (b) clearly labelled 'STOP'; and
- (c) red in colour.

(6) An elevating work platform shall have a clearly marked overriding lowering control to enable a worker at the lower controls to stop and lower the platform in the event of an emergency.

### **IMMOBILIZATION OF VEHICLES**

212 (1) The carrier vehicle of an elevating work platform shall be secured against inadvertent movement before a worker occupies the platform.

(2) Where a manufacturer permits an elevating work platform to be elevated on sloping

ground, the vehicle's wheels shall be secured according to the manufacturer's instructions and where no instructions have been provided, the wheels shall be chocked.

### **SHEAR HAZARD**

213 An elevating work platform lifting mechanism which creates a shear hazard to workers shall be adequately guarded or identified with signs, decals or similar markings warning of the hazard.

### **WARNING DEVICES**

214 An elevating work platform, other than a vehicle-mounted aerial device which complies with the requirements of CSA Standard CAN/CSA-C225 "Vehicle Mounted Aerial Device", shall have a warning system consisting of an intermittent horn and flashing light which is automatically activated during motion of the work platform.

### **TRANSPORTING WORKERS**

215 A worker may not be transported on an elevated work platform unless the transport is in accordance with the manufacturer's instructions.

### **LIFT TRUCK PLATFORM**

216 A work platform mounted on the forks of a lift truck shall be designed by an engineer or conform to a standard acceptable to the minister and:

- (a) securely attached to the lifting carriage or forks;
- (b) provided with perimeter guardrails meeting the requirements of sections 28 and 30;
- (c) equipped with guarding to prevent occupants from contacting a hazardous part of the lifting machinery; and
- (d) clearly marked with the rated load of the platform.

### **FALL PROTECTION - LIFT TRUCK**

217 Where a worker is elevated on a work platform supported by a lift truck:

- (a) the lift truck operator shall remain at the controls of the lift truck;
- (b) the lift truck mast shall be kept vertical;
- (c) the lift truck shall not be moved except for minor adjustments necessary to facilitate positioning of the platform; and
- (d) a platform occupant shall use a personal fall protection system as required by Part X.

## **SWING STAGES - DEFINITIONS**

218 For the purpose of this section and sections 219 to 242

- (a) "bridging" means using a deck or planking to span a gap between two independent work platforms;
- (b) "rated load" means the maximum load, designated by the manufacturer, that may be placed safely on a swing stage, and includes the weight of the workers, their tools and equipment, material to be transported and allowances for loads including trailing electric power supply cords, compressed air supply lines, abrasive blasting feed supply lines, or other loads, but does not include the weight of the work platform or its supporting rigging;
- (c) "safe lower landing" means an area onto which a swing stage or other suspended platform system can be lowered that is capable of safely supporting the weight of the swing stage plus the rated load of the system and which can be accessed safely by workers;
- (d) "static load" means;
  - (i) for suspension by 2 or more lines, the rated load of the swing stage plus half the weight of the stage including the working platform, hangers or stirrups, hoisting units and suspension lines, and
  - (ii) for suspension by a single line, the rated load plus the weight of the stage,
- (e) "suspension height" means the distance from the upper attachment points of the suspension line to the safe lower landing for the swing stage; and
- (f) "swing stage" means a temporary suspended work platform used to support workers, tools, equipment and materials, which is raised and lowered by manually controlled hoisting equipment.

## **RATED LOAD**

219 The rated load:

- (a) shall be permanently marked upon a swing stage and clearly readable by workers on the stage; and
- (b) shall not be exceeded.

## **WEIGHT IDENTIFICATION**

220 A swing stage platform and a hoist unit shall have its weight clearly marked on it.

## **PRIOR PERMISSION**

221 A swing stage shall not be used without the prior permission of the minister when:

- (a) there are 2 or more work platforms at different levels on one swing stage assembly;
- (b) one swing stage is used above or below a portion of another swing stage;

- (c) there is bridging between swing stages;
- (d) a work platform exceeds 10 metres in length; or
- (e) the suspension height exceeds 90 metres.

### **ATTACHMENT POINTS**

222 A swing stage shall be suspended from parapet clamps, cornice hooks, thrust-out beams or other solid anchorages having a working load limit that is at a minimum equivalent to that of the suspension system for the swing stage.

### **SECURING SUSPENSION LINES**

223 A suspension line for a swing stage shall be secured at the upper end using a safety hook, shackle or other method acceptable to the minister.

### **HOOK AND CLAMP WORKING LOAD LIMIT**

224 The working load limit of a cornice hook or parapet clamp shall be determined by the manufacturer or professional engineer and be clearly marked on the hook or clamp.

### **HOOK AND CLAMP ENGAGEMENT**

225 (1) A cornice hook or parapet clamp shall be installed to engage structurally sound portions of a building or structure having adequate strength for the purpose.

(2) Where the structural adequacy of the building or structure at the point of attachment of a cornice hook or parapet clamp is not known, a professional engineer shall determine and certify the attachment points.

### **TIEBACKS**

226 (1) A cornice hook, parapet clamp or thrust-out beam shall be secured by a tieback to a solid anchorage on the building or structure or to another parapet clamp secured on the far side of the structure.

(2) The securing, rigging and anchorage required under subsection (1) shall have an ultimate strength of at least 22.2 kilonewtons.

(3) A tieback referred to in subsection (1) shall, to the extent practicable, be rigged at a right angle to the building face.

### **THRUST-OUT BEAMS**

227 (1) A thrust-out beam used to support a swing stage shall provide a minimum safety factor of 4, based on the ratio of the ultimate load carrying capacity of the thrust-out beam to the static load.

(2) The rated load for the allowable thrust-out beam projections shall be determined by the beam manufacturer or a professional engineer and clearly marked on the beam.

### **COUNTERBALANCE OF THRUST-OUT BEAMS**

228 (1) A thrust-out beam used for supporting a swing stage shall be counterbalanced to support a load of at least 4 times the static load.

(2) A counterweight used to counterbalance a thrust-out beam shall be:

- (a) clearly marked to indicate its weight;
- (b) of solid material not subject to loss of weight through attrition; and
- (c) secured to the thrust-out beam.

### **HOOK CLOSURES**

229 (1) A hook used in a swing stage suspension system shall be moused or have a safety latch.

(2) Subsection (1) does not apply to the connection between a cornice hook and the structure.

### **PROTECTION AGAINST DAMAGE**

230 (1) Where a suspension line, tieback, lifeline or other part of the rigging for a swing stage comes into contact with a rough or sharp edge, the line shall be protected from damage.

(2) Padding shall be used to minimize loss of rope strength where a line supporting a swing stage makes a sharp bend over an edge.

### **FIBRE ROPE SUSPENSION**

231 Fibre rope used to suspend a swing stage or similar equipment shall:

- (a) provide a safety factor of at least 10, based on the ratio of the rope manufacturer's rated breaking strength for the rope to the load on the rope due to the static load;
- (b) be made of synthetic fibre having a breaking strength of at least 22 kilonewtons;
- (c) be reeved through a block and tackle system comprising at least one double upper and one single lower block, for each hanger;
- (d) have the hauling line secured to prevent free running of the line;
- (e) be free of knots or splices except for terminal eye-splices; and
- (f) not be used where exposed to adverse effects of chemicals, unless the rope is made of materials inert to the chemicals.

### **WIRE ROPE SUSPENSION**

232 Wire rope used to suspend a swing stage or similar equipment shall:

- (a) provide a safety factor of at least 10, based on the ratio of the manufacturer's rated breaking strength of the wire rope on the load on the rope due to the static load;
- (b) be a type recommended for that use by the rope manufacturer, and recommended for use by the hoist manufacturer; and
- (c) be continuous and unspliced, except for terminal eye-splices or other types of terminal connections required under Part XV, but fold back eyes secured by only a pressed metal sleeve shall only be used where the sleeve manufacturer approves the use of the sleeve for this application, and the eyes are made in accordance with the manufacturer's instruction and proof tested.

### **LENGTH OF SUSPENSION ROPES**

233 (1) Suspension ropes for a swing stage shall be of sufficient length to permit the work platform to be lowered to a safe lower landing.

(2) Where a swing stage or platform is suspended over water, or where it is impractical to lower the work platform to a safe lower landing, lower limit travel devices, compatible for safe use with the hoist system, shall be used to ensure the working platform shall not be lowered beyond the safe lower limit of travel.

### **HOISTING DEVICES**

234 Winches and other mechanical devices used for hoisting and lowering swing stages or similar equipment shall have automatically operated locking mechanisms that prevent slipping of the suspension ropes.

### **HANGERS OR STIRRUPS**

235 A hanger or stirrup used for supporting a swing stage shall:

- (a) be made of mild steel or other metal having similar properties, but shall not be made of wire rope;
- (b) have a minimum safety factor of 10 based on the ratio of the ultimate load carrying capacity of the stirrup or hanger to the static load; and
- (c) be effectively fastened to the swing stage platform to prevent inadvertent separation.

### **PLATFORM WIDTH**

236 A swing stage work platform shall be at least 50 centimetres wide.

### **SAFETY FACTOR**

237 A swing stage work platform shall have a safety factor of at least 4, based on the ratio of the ultimate load carrying capacity of the work platform to the rated load.

### **RATED LOAD**

238 The rated load for a swing stage platform shall be established by the platform manufacturer or a professional engineer.

### **GUARDRAILS**

239 (1) A swing stage shall have guardrails with:

- (a) a top rail of 1.07 metres high on all sides of the platform and an intermediate rail, located midway between the top rail and the platform floor, or top of the toeboard, where applicable; or
- (b) other type of guarding providing equivalent protection and satisfactory to the minister.

(2) Guardrails on a swing stage shall be adequately supported and shall be able to withstand an ultimate load of 900N concentrated at any point on the top rail.

### **TOEBOARDS AND NETTING**

240 A swing stage on which loose material or equipment is carried shall have toeboards at least 10 centimetres high along all sides of the work platform, and netting with a mesh opening of less than 2.5 centimetres extending from the toeboard to the top rail on the backside.

### **EQUIPMENT INSPECTION**

241 (1) A swing stage and associated equipment shall be thoroughly inspected before use on each shift and defective equipment shall not be used.

(2) A swing stage that has been subjected to a sudden drop, contact with exposed energized electrical equipment or conductors, or shows signs of a structural failure shall be removed from service until certified safe for use by the manufacturer or a professional engineer.

### **FALL PROTECTION - SWING STAGE**

242 A worker on a swing stage which is 3 metres or more above grade or a safe lower landing, or where a fall from a lesser height may involve an unusual risk of injury, shall use a personal fall arrest system meeting the requirements of Part X secured to an anchor independent of the swing stage system.

## **BOATSWAIN'S CHAIRS**

243 (1) A boatswain's chair shall meet the requirements of the applicable CSA standard or be acceptable to a professional engineer.

(2) A boatswain's chair shall provide stable and adequate support for the user.

(3) A boatswain's chair shall be suspended from a parapet clamp, cornice hook, thrust-out beam or other solid anchorage having a working load limit at least equivalent to that of the suspension system for the boatswain's chair.

(4) A counter weight shall be:

- (a) positively secured to thrust outs; and
- (b) tied back to an anchorage that is capable of withstanding 22 kilonewtons static load where a counter weight configuration has not been designed into the building.

(5) Where a boatswain's chair is supported by block and tackle:

- (a) the rope shall be synthetic fibre rope with a breaking strength of at least 22 kilonewtons;
- (b) the rope shall be reeved through not less than one single lower block and one double upper block and secured to prevent the line from free running; and
- (c) block hooks shall be moused, or otherwise secured against dislodgement.

(6) Fibre rope used to suspend a boatswain's chair other than with a block and tackle system shall be synthetic fibre rope having a breaking strength of at least 27 kilonewtons and of a type compatible for use with the rigging hardware in the suspension system.

(7) Wire rope used to suspend a boatswain's chair shall be a type recommended for that use by the rope manufacturer or a professional engineer and suitable for the hoist being used.

(8) A worker in a boatswain's chair which is 3 metres or more above grade or a safe lower landing, or where a fall from a lesser height may involve an unusual risk of injury, shall use a personal fall arrest system meeting the requirements of Part X independent of the boatswain's chair system.

(9) A boatswain's chair shall not be used where the suspension height exceeds 92 metres without the prior permission of the minister.

(10) A thorough inspection shall be made of a boatswain's chair and associated equipment before use each day and defective equipment shall not be used.

## **DEFINITIONS**

244 For the purpose of sections 245 to 249:

- (a) "permanent powered platform" means a powered platform which is a permanent installation on a particular building or structure;
- (b) "portable powered platform" means a powered platform any part of which is not permanently installed or attached to a particular building or structure and which may be removed and relocated elsewhere where required; and
- (c) "powered platform" means a suspended swing stage which is raised or lowered by other than manual means.

## **PERMANENT POWERED PLATFORMS**

245 A permanent powered platform shall meet the requirements of CSA Standard CAN3-Z271 "Safety Code for Suspended Powered Platforms" or other standard acceptable to the minister and shall be of a design and construction certified by a professional engineer.

## **PORTABLE POWERED PLATFORMS**

246 (1) A portable powered platform shall meet:

- (a) the requirements for a swing stage regarding suspension, construction and use of fall protection; and
- (b) the requirements of CSA Standard CAN3-Z271 "Safety Code for Suspended Powered Platforms" for hoist units and controls.

(2) Where a portable powered platform is raised and lowered by 2 separately controlled hoists operated by a single occupant on the platform, the controls shall be located so that they can be used simultaneously by the occupant.

## **FALL PROTECTION - POWERED PLATFORM**

247 (1) Except as permitted by subsection (2), where a powered platform is 3 metres or more above a grade or a safe lower landing or where a fall from a lesser height may involve an unusual risk of injury, a worker on the platform shall use a personal fall arrest system meeting the requirements of Part X secured to an anchor independent of the powered platform system.

(2) A worker supported on a permanent powered platform having 4 or more suspension ropes shall be attached to a secure anchorage on the platform by means of a personal fall arrest system and the installation shall meet the requirements of CSA Standard CAN3-Z271 "Safety Code for Suspended Powered Platforms" or other standard acceptable to the minister.

### **MAINTENANCE AND OPERATING RECORDS**

248 Records of inspection and maintenance shall be maintained for 5 years by the operator and another person inspecting and maintaining a permanent powered platform.

### **WINDOW CLEANING**

249 A window cleaning operation shall be conducted in accordance with the requirements of CSA Standard CAN/CSA-Z91 "Health and Safety Code for Suspended Equipment Operations" or other standard that the minister may consider appropriate.

## **New Brunswick**

### **General Regulation - Occupational Health And Safety Act, N.B. Reg. 91-191**

#### **FALL-PROTECTION SYSTEM**

49 (1) The employer shall provide and the employee shall continually use a fall-protection system when an employee works from:

- (a) an unguarded work area that is;
  - (i) 3 m or more above water or the nearest permanent safe level,
  - (ii) above any surface or object that could cause injury to the employee upon contact, or
  - (iii) above any open top tank, bin, hopper or vat,
- (b) a work area that is 3 m or more above a permanent safe level and from which a person may fall if the work area tips or fails; or
- (c) a work area where an officer has determined that it is necessary for safety reasons to use a fall-protection system.

(2) If an employee is required to work from a communication or power transmission tower or other similar structure 3 m or more above a permanent safe level, the employer shall provide and the employee shall continually use a fall-protection system when at rest and at the working level.

(3) If an employee referred to in subsection (2) is ascending or descending a communication or power transmission tower or other similar structure, the employer shall provide and the employee shall continually use a fall-arresting system.

(4) If an employee is required to work from a wood pole or other similar wood pole structure 3 m or more above a permanent safe level, the employer shall provide and the employee shall continually use:

- (a) a fall-arresting system when the employee is ascending, descending or at rest;  
and

(b) a work positioning system in addition to the fall-arresting system when the employee is performing work at the working level.

(5) If it is impracticable to use a fall-arresting system and a work positioning system, the employer shall provide and the employee referred to in subsection (4) shall continually use a fall restricting system when ascending or descending and to secure themselves to the wood pole when at rest or at the working level.

(6) This section does not apply to the following situations:

- (a) if the employee will at all times remain further than 3 m from the unguarded edge of a surface with a slope of 3 in 12 or less;
- (b) where a firefighter is engaged in structural firefighting;
- (c) where an employee is engaged in the installation, maintenance or removal of a fall-protection system and another form of fall-protection is impracticable, provided the employee has been fully instructed in work procedures and hazards and in how to protect himself or herself from falling; or
- (d) if it is impracticable to use a fall-protection system where an employee is engaged in the weatherproofing of a roof that has a total area of less than 23 m<sup>2</sup> or of a roof of a canopy or walkway that have slopes of 3 in 12 or less, provided the employee has been fully instructed in work procedures and hazards and in how to protect himself or herself from falling.

[N.B. Reg. 97-121, s. 11; 2010-159, s. 4]

49.1(1) An owner of a place of employment, an employer and a contractor shall each ensure that the components of a fall-protection system:

- (a) are designed in accordance with good engineering practices;
- (b) are erected, installed, assembled, used, handled, stored, adjusted, maintained, repaired and dismantled in accordance with the manufacturer's specifications; and
- (c) meet the requirements of the applicable standards.

(2) For the purposes of paragraph (1)(c), the following CSA standards apply:

- (a) Z259.1-05, "Body Belts and Saddles for Work Positioning and Travel Restraint" or Z259.1-95, "Safety Belts and Lanyards";
- (b) Z259.2.1-98, "Fall-arresters, Vertical life lines, and Rails" or Z259.2-M1979, "Fall-arresting Devices, Personnel Lowering Devices and Life Lines", if the fall-arrester complies with Z259.2-M1979 it must be modified to make the fall-arrester panic proof;
- (c) Z259.2.2-98, "Self-Retracting Devices for Personal Fall-Arrest Systems", or equivalent;
- (d) Z259.2.3-99, "Descent Control Devices", or equivalent;
- (e) Z259.10-06, "Full Body Harnesses" or Z259.10- M90, "Full Body Harness";
- (f) Z259.11-05, "Energy Absorbers and Lanyards" or Z259.11-M92, "Shock

Absorbers for Personal Fall- Arrest Systems";

- (g) Z259.12-01, "Connecting Components for Personal Fall-Arrest Systems", or equivalent;
- (h) Z259.14-01, "Fall Restricting Equipment for Wood Pole Climbing", or equivalent;
- (i) Z259.13-04, "Flexible Horizontal Life Line Systems"; and

[N.B. Reg. 2010-159, s. 5]

49.2 (1) An owner of a place of employment, an employer and a contractor shall each ensure that any fall-arresting system consists of the following:

- (a) a full body harness that is designed and rated by the manufacturer for the employee's body type and adjusted to fit the employee;
- (b) a self-retracting lanyard, an energy absorbing lanyard or a lanyard and energy absorber that is rated by the manufacturer for the employee;
- (c) unless it is a horizontal life line, an anchor point that is capable of withstanding a 22 kN force or, if used under the direction of a competent person, four times the maximum load that may be generated in the fall-arresting system.

(2) An owner of a place of employment, an employer and a contractor shall each ensure that a fall-arresting system limits:

- (a) free falls to the shortest distance possible, which distance cannot exceed 1.8 m or a shock level on the body of 8 kN; and
- (b) the total fall distance to an amount less than the distance from the work area to any safe level, water or obstruction below.

(3) Despite subsection (2), if using an energy absorber is hazardous or impracticable, the fall-arresting system shall:

- (a) not include an energy absorber;
- (b) not use lanyards made of wire rope or other in-elastic material; and
- (c) limit free falls to 1.2 m.

(4) Before any use of a fall-arresting system by an employee, an owner of a place of employment, an employer or a contractor shall develop a procedure to be used for rescuing an employee in an emergency.

(5) An owner of a place of employment, an employer and a contractor shall each ensure that an employee is trained to use the procedures referred to in subsection (4) for rescuing another employee in an emergency.

(6) If a fall-arresting system arrests a fall, an owner of a place of employment, an employer and a contractor shall each ensure that all components, including connecting components of a fall-arresting system are:

- (a) removed from service and inspected by a competent person;

- (b) repaired to the designer's or manufacturer's specifications; or
- (c) destroyed when a defect is observed.

[N.B. Reg. 2010-159, s. 5.]

49.3 (1) An owner of a place of employment who permits the use of a fall-arresting system shall provide or ensure the use of a permanent or temporary anchor point that meets the requirements of paragraph 49.2(1)(c).

(2) If a permanent anchor point has been provided, an owner of a place of employment shall:

- (a) prepare sketches showing the anchor point;
- (b) provide a copy of the sketches to the employee who is using anchor points before the work begins; and
- (c) ensure a copy of the sketches are posted conspicuously near the entrance to the roof.

(3) An owner of a place of employment shall ensure that every anchor point is inspected and certified by a competent person:

- (a) before being used for the first time;
- (b) as recommended by the manufacturer, the installer or an engineer and at least every 12 months;
- (c) after any event or maintenance and repairs; and
- (d) when the owner of a place of employment is informed under subsection (4) of a defect or inadequacy.

(4) An employer or employee shall inform the owner of a place of employment immediately if they believe that any component of the anchor point is defective or inadequate.

(5) If the inspection under subsection (3) reveals a defect or inadequacy, no one shall use the anchor point and no owner of a place of employment, employer or contractor shall permit its use until the defect or inadequacy has been eliminated.

[N.B. Reg. 2010-159, s. 5]

49.4 (1) A vertical life line in a fall-arresting system shall:

- (a) extend to a safe level;
- (b) be adequately secured or weighted at the base of the life line to prevent tangling or disturbance of the life line;
- (c) be securely attached to an anchor point;
- (d) be free of imperfections;
- (e) be free of knots or splices, except for those that are necessary to connect the life line to an anchor point;
- (f) be provided with protective devices at all sharp edges or corners to protect

against cuts to or chafing of the life line; and  
(g) be clearly identified as a life line by colour or other means.

(2) A vertical life line in a fall-arresting system shall be used for its intended purpose only and shall be used by one employee at a time.

[N.B. Reg. 2010-159, s. 5]

49.5 (1) In this section "maximum arrest force" means the peak force exerted on an employee when a fall-arresting system stops a fall.

(2) When a horizontal life line system which is engineered to meet CSA standard Z259.16-04, "Design of Active Fall-Protection Systems" is used, an owner of a place of employment, an employer and a contractor shall each ensure:

- (a) signed and dated drawings and instructions for the life line are readily available at the workplace; and
- (b) that the system has been installed in accordance with the design documents.

(3) The drawings and instructions referred to in paragraph (2)(a) shall contain the following information:

- (a) the layout in plan and elevation, including anchor point locations, strengths, installation specifications, anchor point design and detailing; and
- (b) the specification of the horizontal life line system, including permissible free fall, the maximum arrest force, clearance to obstructions below, cable size, breaking strength, termination details, initial sag or tension, number of permitted employees, and inspection requirements.

[N.B. Reg. 2010-159, s. 5]

49.6 An owner of a place of employment, an employer and a contractor shall each ensure that a competent person installs a pre-engineered horizontal life line system in accordance with the manufacturer's specifications.

[N.B. Reg. 2010-159, s. 5]

49.7 (1) When a horizontal life line system is used which is neither designed nor certified by an engineer and is not a pre-engineered system, an owner of a place of employment, an employer and a contractor shall each ensure it meets the following requirements:

- (a) the wire rope must have a diameter of a minimum of 13 mm with a breaking strength specified by the manufacturer of at least 89 kN;
- (b) connecting hardware such as shackles and turnbuckles must have an ultimate load capacity of at least 71 kN;
- (c) end anchor points shall have a load capacity of at least 71 kN;
- (d) the horizontal life line must be free of splices except at the termination;
- (e) the span of the horizontal life line must be at least 6 m and not more than 18 m;

- (f) the horizontal life line must have an unloaded sag no greater than 1 in 60;
- (g) limit free falls to 1.2 m; and
- (h) a minimum of 5.5 m of unobstructed clearance must be available below the horizontal life line.

(2) When a horizontal life line system referred to in subsection (1) is used, no more than three employees may be secured to the horizontal life line and the horizontal life line must be positioned so it does not impede the safe movement of employees.

[N.B. Reg. 2010-159, s. 5]

49.8 (1) A personal safety net must meet the following requirements:

- (a) be installed and maintained so that the maximum deflection when arresting the fall of an employee does not allow the employee to come into contact with another surface;
- (b) be connected to any other safety net by splice joints that are equal or greater in strength to the strength of the nets; and
- (c) be installed so as to render it impossible for an employee to come into contact with another surface during a fall between the work area and the safety net.

(2) An owner of a place of employment, an employer and a contractor shall each ensure that a safety net is designed, selected, installed, used, stored, tested and maintained in accordance with ANSI standard A10.11-1989, "Personnel and Debris Nets".

[N.B. Reg. 2010-159, s. 5]

50 (1) An owner of a place of employment, an employer and a contractor shall each ensure that employees use fall-protection systems in following order of precedence:

- (a) a guardrail, a travel restraint system or a fall restricting system; or
- (b) a fall-arresting system.

(2) Despite subsection (1), the use of a guardrail is not permitted on a surface that has a slope exceeding 6 in 12.

(3) Despite subsection (1), where a fall-protection system is impractical an owner of a place of employment, an employer and a contractor shall each ensure an employee uses a control zone.

(4) Despite subsection (3), use of a control zone is not permitted on a working surface where the slope of the surface exceeds 3 in 12 or for scaffolds.

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

[N.B. Reg. 97-121, s. 12; 2010-159, s. 6]

50.1 Before an employee is allowed into an area where a risk of falling exists, an employer and a contractor shall each ensure the employee is instructed in the fall-protection system for the area and in the post-fall rescue procedure, if applicable, and that the employee is competent in the procedures to be followed.

[N.B. Reg. 2010-159, s. 7]

50.2 (1) An employer and a contractor shall each ensure that a fall-protection code of practice is written for a workplace if a fall-protection system is required for the workplace and:

- (a) the employees are working from a height of 7.5 m or more;
- (b) the employer uses a safety monitor and work procedures when weatherproofing as the means of fall-protection; or
- (c) an officer requires that the code of practice be written.

(2) The code of practice must be readily available at the workplace before work begins and employees must have received instruction with regards to the code of practice.

(3) The code of practice shall be developed in consultation with the joint health and safety committee or the health and safety representative, if any, or with the affected employees.

(4) The code of practice shall include the following information:

- (a) possible hazardous situations, including a description of the hazards and the possible effects on the health or safety of employees;
- (b) the identification of employees at risk;
- (c) the location where the code of practice might apply;
- (d) the methods and equipment to be used including inspections procedures;
- (e) the procedures and equipment which might be required in the event of an emergency;
- (f) the times, days, or events during which the code of practice might be applicable;
- (g) the identification of training needs;
- (h) the identification of the person responsible for implementing the code of practice; and
- (i) the name of the safety monitor, if applicable, and the training the safety monitor has received.

[N.B. Reg. 2010-159, s. 7]

50.3 (1) An employer shall ensure that a competent person trains an employee in the use, maintenance and inspection of a fall-protection system for the task being performed unless the fall-protection system is a guardrail.

(2) The employer shall ensure that the competent person referred to in subsection (1),

who provides the training, prepares a written training record which shall include the following information:

- (a) the name of the employee who received the training;
- (b) the date on which the training took place; and
- (c) the name of the competent person and the name of the agency if any.

(3) The training record for each employee shall be made available to an officer upon request.

(4) An employer shall, in consultation with the joint health and safety committee or health and safety representative, if any, review annually or more frequently, if required by a change in work conditions or in the fall protection field, the training provided to employees concerning fall protection to determine if retraining is necessary.

[N.B. Reg. 2010-159, s. 7]

50.4 (1) An owner of a place of employment, an employer and a contractor shall each ensure that each component of a fall-protection system is inspected as follows to determine whether there are any defective or inadequate components:

- (a) visually by the employee before use during a shift; and
- (b) by a competent person before initial use and periodically as recommended by the manufacturer, installer or an engineer.

(2) If the inspection reveals a defect or inadequacy, no one shall use the fall-protection system and no owner of a place of employment, employer or contractor shall permit its use until the defect or inadequacy has been eliminated.

(3) An owner of a place of employment, an employer and a contractor shall each ensure that all components of a fall-protection system are compatible with one another, the work environment and the type of work being done.

[N.B. Reg. 2010-159, s. 7]

50.5 (1) An employer and an employee shall each ensure that each component of a personal fall-protection system is inspected as follows to determine whether there are any defective or inadequate components:

- (a) by the employee prior to each use; and
- (b) periodically as recommended by the manufacturer's specifications.

(2) If the inspection reveals a defect or inadequacy, no one shall use the personal fall-protection system and no employer or contractor shall permit its use until the defect or inadequacy has been eliminated.

[N.B. Reg. 2010-159, s. 7]

51 (1) The following definitions apply in this section.

"automatically inflatable personal flotation device" means a device that provides buoyancy through an automatic inflation mechanism with an oral inflation system as a back-up and when worn correctly supports a conscious employee in an upright or backward leaning position, but is not designed to turn an employee from a face-down to a face-up position in the water;

"life jacket" means an inherently buoyant device that when worn correctly supports a conscious or unconscious employee in an upright or backward leaning position and is designed to turn an employee from a face-down to a face-up position in the water;

"personal flotation device" means an inherently buoyant device that when worn correctly supports a conscious employee in an upright or backward leaning position, but is not designed to turn an employee from a face-down to a face-up position in the water, and includes devices that are designed to protect an employee against hypothermia.

(2) If an employee is exposed to a risk of drowning, an owner of a place of employment, an employer and a contractor shall each ensure the employee uses one of the following:

- (a) a fall-protection system;
- (b) a life jacket that conforms to CGSB standard CAN/CGSB-65.7-M88, "Life Jackets, Inherently Buoyant Type";
- (c) a personal flotation device that conforms to CGSB standard CAN/CGSB-65.11-M88, "Personal Flotation Devices";
- (d) an automatically inflatable personal flotation device that meets UL1180-95, "Fully Inflatable Recreational Personal Flotation Devices"; or
- (e) a personal safety net that conforms to the requirements of section 49.8.

(3) The shell of a life jacket or flotation device referred to in paragraphs (2)(b) to (d) shall be bright yellow, orange or red and have retro-reflective material fitted on surfaces normally above the surface of the water.

(4) Despite subsection (2), an employee shall wear a life jacket when:

- (a) working alone; or
- (b) there are insufficient resources to provide a quick and effective rescue.

(5) An employer and a contractor shall each ensure that an employee wears a life jacket or flotation device referred to in paragraphs (2)(b) to (d) when being transported in a boat.

(6) If an employee works on ice and the water under the ice is more than 1 m in depth, an employer and a contractor shall each test the ice before beginning any work and after as necessary to ensure that the ice will support any load placed on it.

(7) If an automatically inflatable personal flotation device is used, the employer and the employee shall each ensure that:

- (a) the device is inspected and maintained by a competent person in accordance with the manufacturer's specifications; and
- (b) the date and details of the inspection and maintenance are recorded.

(8) If an employee may fall into water or any other liquid and may require assistance to return to a place of safety, an employer and contractor shall each ensure that a copy of emergency procedures is posted at the place of employment, and which copy shall contain:

- (a) a full description of the emergency procedures, including the responsibilities of all employees granted access to the place of employment; and
- (b) the location of any emergency equipment and the name of the employee designated to operate the equipment.

(9) Emergency procedures shall include the following, as applicable:

- (a) with regards to water or another liquid;
  - (i) its temperature,
  - (ii) its depth, and
  - (iii) its flow,
- (b) any water traffic;
- (c) the distance to the rescue boat;
- (d) the distance to reach an employee;
- (e) any projections or objects beneath the surface;
- (f) any visibility issues;
- (g) the time of day; and
- (h) any adverse weather conditions.

(10) If an employee may fall into water or any other liquid and may require assistance to return to a place of safety, an employer and contractor shall each ensure that:

- (a) appropriate emergency equipment is ready to be used;
- (b) a person who is competent to operate the emergency equipment is readily available to provide assistance; and
- (c) an alarm system is provided to signal the need for a rescue.

(11) An employer and a contractor shall each ensure that an employee wears a life jacket or a personal flotation device when participating in a rescue.

(12) If an employer or contractor provides a boat for use in an emergency, the employer or contractor shall ensure:

- (a) that the rescue boat is equipped with a life ring or buoy that is attached to 30 m of rope and a boat hook; and
- (b) that the rescue boat is motorized if the water is likely to be rough or swift.

[N.B. Reg. 97-121, s. 13; 2001-33, s. 22;  
2010-159, s. 8]

### **EQUIPMENT FOR FIREFIGHTERS**

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

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

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

[N.B. Reg. 97-121, s. 14]

### **PROTECTIVE HEADWEAR**

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

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

[N.B. Reg. 97-121, s. 14]

### **PROTECTIVE FOOTWEAR**

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

- (a) meets or exceeds NFPA 1974, "Standard on Protective Footwear for Structural Fire Fighting", 1992 edition or the standard for Grade 1 footwear, with sole puncture protection and electric shock resistant soles, in CSA standard CAN/CSA Z195-M92, "Protective Footwear";
- (b) is water resistant for at least 12.7 cm above the bottom of the heel; and
- (c) has a slip-resistant outer sole.

[N.B. Reg. 97-121, s. 14]

### **PROTECTIVE HANDWEAR**

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

[N.B. Reg. 97-121, s. 14]

## **PROTECTIVE COAT AND TROUSERS**

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

- (a) meet or exceed NFPA 1971, "Standard on Protective Clothing for Structural Fire Fighting", 1991 edition or CGSB standard CAN-155.1- M88 (as amended Nov 90), "Fire Fighter's Protective Clothing for Protection Against Heat and Flame"; and
- (b) fit properly in sleeve length, coat length, chest girth, waist girth, trouser inseam length and crotch rise so as to minimize inefficient operations and unsafe situations resulting from the interference of one piece of clothing or equipment with another.

[N.B. Reg. 97-121, s. 14]

## **RESPIRATORY PROTECTIVE EQUIPMENT**

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

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

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

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

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

- (a) the training of users of self-contained respiratory protective equipment; and
- (b) the use, maintenance and testing of respiratory protective equipment.

[N.B. Reg. 97-121, s. 14]

## **BODY HARNESSES AND SAFETY ROPES**

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

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

[N.B. Reg. 97-121, s. 14]

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

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

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

[N.B. Reg. 97-121, s. 14]

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

[N.B. Reg. 97-121, s. 14]

## **PORTABLE LADDERS**

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

[N.B. Reg. 97-121, s. 14]

## **AERIAL DEVICES**

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

- (a) meets or exceeds NFPA 1904, "Standard for Testing Fire Department Aerial Devices", 1991 edition or Underwriters' Laboratories of Canada standard CAN/ULC-S515-M88, "Standard for Automobile Fire Fighting Apparatus"; or
- (b) is certified in writing by an engineer as being safe to elevate personnel to a work

site above ground when used for structural fire-fighting purposes.

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

[N.B. Reg. 97-121, s. 14]

### **INDUSTRIAL FIREFIGHTERS**

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

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

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

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

[N.B. Reg. 97-121, s. 14]

### **TRANSITIONAL PROVISION FOR PROTECTIVE EQUIPMENT**

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

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

- (a) in subsection 52.1(1) with respect to the use of protective headwear - NFPA 1972, "Standard for Helmets for Structural Fire Fighting", 1985 edition;
- (b) in paragraph 51.3(a) with respect to the use of protective footwear - NFPA 1974, "Standard on Protective Footwear for Structural Fire Fighting", 1986 edition or the standard for Grade 1 footwear, with sole puncture protection and electric shock resistant soles in CSA standard Z195-M1984, "Protective Footwear";
- (c) in section 51.4 with respect to the use of protective handwear - NFPA 1973, "Standard on Gloves for Structural Fire Fighters", 1988 edition;
- (d) in paragraph 51.5(a) with respect to the use of protective coat and trousers -

NFPA 1971, "Standard on Protective Clothing for Structural Fire Fighting", 1986 edition or CGSB standard CAN 155.1-M88, "Fire Fighter's Protective Clothing Against Heat and Flame";

- (e) in subsection 51.6(4) with respect to the use of a personal distress alarm device - NFPA 1982, "Standard on Personal Alert Safety Systems (PASS) for Fire Fighters", 1988 edition;
- (f) in subsections 51.7(2) and 51.8(2) with respect to the use of body harnesses - NFPA 1983, "Standard on Fire Service Life Ropes, Harnesses and Hardware", 1985 edition;
- (g) in subsection 51.8(1) with respect to the use of ropes and associated body harnesses and hardware - NFPA 1983, "Standard on Fire Service Life Safety Ropes, Harnesses and Hardware", 1985 edition.

[N.B. Reg. 97-121, s. 14]

### **ADDITIONAL REQUIREMENTS**

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

[N.B. Reg. 97-121, s. 14]

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

[N.B. Reg. 97-121, s. 14]

Also see:

### **CONSTRUCTION AND BUILDING SAFETY**

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

- (a) will support a minimum live load of 2.4 kPa;
- (b) has planks that are securely fastened and supported on each end 300 mm beyond the opening that is being covered; and
- (c) has no unsupported projection of a length that would be unstable if an employee were to stand on the projection or that exceeds 450 mm, whichever is the lesser.

(2) If it is impracticable to install a temporary working floor, an employer and a contractor shall each ensure that a safety net that meets the requirements of subsection 49.8(2) is installed under the area where an employee is working or a that a travel restraint system or fall-arresting system is used by the employee.

[N.B. Reg. 2010-159, s. 17]

### **ROOFS**

105 (1) An employer and a contractor shall each ensure that a warning line is:

- (a) not less than 2 m from the unguarded edge;
- (b) has a minimum diameter of 10 mm;
- (c) is suspended at a height of not less than 750 mm and not more than 900 mm;
- (d) is supported by corner and intermediate posts sufficient to keep the line taut; and

(e) has readily visible markers placed every 1.5 m along the length of the line.

(2) Despite paragraph (1)(a), a warning line may be 1 m from an unguarded edge at the dump point for snow removal or when an employee is engaged in weatherproofing, provided adequate precautions are taken to ensure the safety of the employee.

(3) An employer shall ensure that an employee who is working in the control zone uses another method of fall-protection in addition to the warning line.

(4) When employees are engaged in weatherproofing, a safety monitor may be used as the means of fall-protection for employees working in the control zone.

(5) The safety monitor referred to in subsection (4) shall ensure that tasks being performed in the control zone are performed in accordance with the fall-protection code of practice and in a manner that minimizes the potential for an employee to fall.

(6) A safety monitor referred in subsection (4) shall:

- (a) be experienced in the work overseen and trained in the role of safety monitor;
- (b) be present at all times when an employee is in the control zone;
- (c) have complete authority over the work as it relates to the prevention of falls;
- (d) be located so as to have a clear view of the work being performed by the employee;
- (e) be able to communicate with the employees being protected without needing to yell;
- (f) be instantly distinguishable from other workers;
- (g) engage in no other duties while acting as the safety monitor; and
- (h) monitor a maximum of eight workers.

(7) An employer shall ensure that no employee enters the control zone unless the employee is required to do so by reason of the employee's work duties.

(8) The owner of a place of employment, employer and contractor shall each ensure a travel restraint system:

- (a) is rigged to prevent the employee from reaching an unguarded edge;
- (b) is, subject to paragraph (c), attached to an anchor point capable of supporting two times the maximum load likely to be applied to it; or
- (c) when it is used on a roof with a slope greater than 3 in 12, is attached to an anchor point that is capable of withstanding a 22 kN force or, if used under the direction of a competent person, four times the maximum load that may be generated in the fall-arresting system.

[N.B. Reg. 96-60, s. 1; 2010-159, s. 18]

106.1 (1) In this section "perimeter work" means the work that must be performed at the edge of the roof.

(2) Despite paragraph 97(2)(b), where an employee is engaged in perimeter work and a guardrail is used as the method of fall-protection, a toeboard is not required.

## **OPENINGS**

111 (1) An owner of a place of employment, an employer and a contractor shall each ensure that an opening on a work surface into which an employee may fall is guarded as follows:

- (a) on all exposed sides by a guardrail; or
- (b) by a protective covering that;
  - (i) completely covers the opening,
  - (ii) is securely fastened,
  - (iii) is made from material adequate to support all loads to which the covering may be subjected, and
  - (iv) is marked as covering an opening.

(2) Despite subsection (1), if an opening is a hatchway, chute, pit or trap-door the owner of the place of employment, an employer and the contractor shall each ensure that openings are guarded as follows:

- (a) on all exposed sides by guardrails that are removable on not more than two sides and that are fixed on the other exposed sides; or
- (b) by a flush hinged protective covering that;
  - (i) completely covers the opening,
  - (ii) is securely fastened,
  - (iii) is of adequate strength,
  - (iv) is marked as covering an opening, and
  - (v) is adequately supported with attached railings so as to leave only one side of the opening exposed when the cover is open.

(3) Despite subsections (1) and (2), if an opening leads to a stairway or ladder, an owner of a place of employment, an employer and a contractor shall each ensure that the opening is guarded by guardrails on all exposed sides, except for the side leading to the entrance to the stairway or ladder.

(4) If a protective covering is used over an opening but is not in place, an owner of a place of employment, an employer and a contractor shall each ensure that the opening is constantly attended by an employee or is guarded by a guardrail on all exposed sides.

[N.B. Reg. 2010-159, s. 20]

## **FIXED LADDERS**

121 (1) An employer shall ensure that a fixed ladder:

- (a) is of adequate strength and length;
- (b) is clean and free from grease;
- (c) is maintained in a safe condition;
- (d) is securely held in place at the top and bottom and at such intermediate points as are required to prevent sway;
- (e) has a clearance of at least 165 mm maintained between the rungs and the structure to which the ladder is affixed;
- (f) does not have any rungs that extend above a landing;
- (g) has side rails or other secure hand holds that extend at least 1.07 m above the landing and are spaced not less than 685 mm apart; and
- (h) is removed from service when it has loose, broken or missing rungs, split side rails or other defects that may be hazardous to an employee.

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

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

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

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

[N.B. Reg. 96-106, s. 6; 2010-159, s. 22]

124 (1) An employer shall ensure that a portable ladder complies with and is used in accordance with CSA standard CAN3-Z11-M81, "Portable Ladders".

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

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

(iii) where the ladder exceeds 15 m and is 22 m or less, the overlap shall be 1.5 m.

(3) An employee working 3 m or more above the ground or floor level on a portable ladder may work without a fall-protection system if:

- (a) the work is a light duty task of short duration at each location;
- (b) the employee's centre of gravity is maintained between the two ladder side rails;
- (c) the employee will generally have one hand available to hold on to the ladder or another support; and
- (d) the ladder is not positioned near an edge or floor opening that would significantly increase the potential fall distance.

[N.B. Reg. 2010-159, s. 23]

### **FORKLIFT PLATFORMS**

129.1 (1) In this section:

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

(2) An employer shall ensure that a forklift platform:

- (a) is securely attached to the lift truck so as to prevent accidental movement of the platform or the tipping of the forklift;
- (b) is designed and constructed of material of sufficient strength to support safely the loads to which it may be subjected; and
- (c) if a manufactured platform, is erected, used, maintained and dismantled in accordance with the manufacturer's specifications.

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

- (a) is on a firm flat surface to ensure the truck's stability; and
- (b) is operated by a competent person.

(4) An employer shall ensure that a forklift platform is equipped with guardrails.

(5) Despite subsection (4), if it is impracticable to install guardrails when an employee is required to work from a moving forklift platform, the employer shall provide and the employee shall use a travel restraint system or fall-arresting system attached to an anchor point provided by the manufacturer or approved by an engineer.

(6) When a fall-arresting system is used, the employer shall ensure that the fall-arresting system does not interfere with the raising and lowering of the platform.

[N.B. Reg. 2001-33, s. 40; 2010-159, s. 24]

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

- (a) the industrial lift truck is on a firm flat surface; and
- (b) the platform is equipped with guardrails or a travel restraint system or fall-arresting system.

(2) Repealed. [N.B. Reg. 2010-159, s. 25]

[N.B. Reg. 2001-33, s. 40; 2010-159, s. 25]

### **ELEVATING WORK PLATFORMS**

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

- (a) CAN3-B354.1-M82, "Elevating Rolling Work Platforms";
- (b) CAN3-B354.2-M82, "Self-Propelled Elevating Work Platforms for Use on Paved/Slab Surfaces";
- (c) CAN3-B354.3-M82, "Self-Propelled Elevating Work Platforms for Use as 'Off-Slab' Units"; and
- (d) CAN3-B354.4-M82, "Boom-Type Elevating Work Platforms".

(2) If an employee is required to work from an elevating work platform described in paragraph (1)(a), (b) or (c), the employer shall provide and the employee shall continually use a travel restraint system or fall-arresting system attached to an anchor point on the elevating work platform.

(3) Despite subsection (2), an employee is not required to continually use a travel restraint system or fall-arresting system when an elevating work platform:

- (a) is on a firm and flat surface;
- (b) has all the manufacturer's guardrails and chains in place; and
- (c) is not moving horizontally or vertically.

[N.B. Reg. 2001-33, s. 41; 2010-159, s. 26]

### **SUSPENDED EQUIPMENT**

140.1 (1) An owner of a place of employment, an employer and a contractor shall each ensure that every employee who works on or from suspended equipment shall:

- (a) have an effective means of summoning assistance;
- (b) be protected from falling while getting on or off the suspended equipment; and
- (c) use a vertical life line that is:
  - (i) suspended independently from the suspended equipment, and
  - (ii) securely attached to an anchor point so that the failure of one means of support will not cause the life line to fail.

(2) An employer and a contractor shall each ensure that each component of the

suspended equipment is inspected by a competent person:

- (a) visually at least once daily;
- (b) before being used for the first time;
- (c) as recommended by manufacturer, installer or designer and at least every 12 months; and
- (d) after an event or after maintenance and repairs.

(3) If an inspection referred to in subsection (2) reveals a defect or inadequacy, no one shall use the suspended equipment and no employer shall permit its use until the defect or hazard has been eliminated.

(4) An employer and contractor shall each ensure:

- (a) that if the owner of a place of employment has provided the permanent or temporary anchor point that the anchor point complies with subsection 145.2(3); and
- (b) that all components of suspended equipment are compatible with one another, the work environment and the type of work being performed.

[N.B. Reg. 2010-159, s. 28]

### **SWING STAGING AND BOATSWAIN'S CHAIR**

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

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

(2) An employer shall ensure that:

- (a) a hook used to suspend swing staging or boatswain's chair;
  - (i) has safety devices to prevent dislodgement, and
  - (ii) is securely tied back to an anchor point capable of preventing the movement of the suspended equipment, and
- (b) a thrust-out used to suspend swing staging or boatswain's chair;
  - (i) is rigidly fastened to another thrust-out,
  - (ii) is securely tied back to an anchor point capable of preventing the movement of the suspended equipment,
  - (iii) is counter-balanced with sufficient solid material to ensure stability, and
  - (iv) has cleats or bolts fastened at the outer ends of the thrust-out to act as safety stops.

(3) An employer shall ensure that rope made of synthetic fibre or wire used to suspend swing staging or a boatswain's chair:

- (a) provides a safety factor of not less than ten, based on the ratio of the manufacturer's rated breaking strength of the rope to the static load;
- (b) is securely fastened to the drum of a winch, and is of sufficient length to allow for at least three turns of rope on the drum when the swing staging or a boatswain's chair is in its lowest position or in accordance with the manufacturer's specifications; and
- (c) is removed from use in accordance with the manufacturer's specifications.

(4) An employer shall ensure the materials used to support swing staging or a boatswain's chair meet the following requirements:

- (a) if hangers are used, the hangers are made of wrought iron or mild steel with a cross section equal to 10 mm by 32 mm or a diameter of at least 19 mm and are securely attached to the platform or chair;
- (b) if wire rope is used, the wire rope is at least 13 mm in diameter for the swing staging and 9 mm for the boatswain's chair; and
- (c) if another material is used, it has been certified by an engineer as being of a strength equivalent to that prescribed in paragraph (a) or (b).

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

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

**LADDER TYPE PLATFORMS FOR SWING STAGING**

Length of Side Stringers	Width Between Side Stringers	Cross Section of Side Stringers		Rungs		Tie Rods	
		At Ends	At Middle	Total No.	Diameter	Total No.	Diameter
4.6 m	500 mm	50 mm x 70 mm	50 mm x 100 mm	10	30 mm	4	8 mm
4.9 m	500 mm	50 mm x 70 mm	50 mm x 100 mm	11	30 mm	4	8 mm
5.5 m	500 mm	50 mm x 80 mm	50 mm x 100 mm	12	30 mm	4	8 mm
6.1 m	500 mm	50 mm x 80 mm	50 mm x 100 mm	13	30 mm	4	8 mm
7.3 m	500 mm	50 mm x 80 mm	50 mm x 120 mm	16	30 mm	5	8 mm

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

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

- (a) are made of wood and are a uniform thickness of not less than 50 mm;
- (b) are tied together on the underside by cleats;
  - (i) a minimum size of 25 mm by 150 mm,
  - (ii) securely fastened, and
  - (iii) spaced at intervals of not more than 1.2 m,
- (c) do not exceed 3.7 m in length; and
- (d) are located so that the span does not exceed 3 m between the fixed supports.

(9) An employer shall ensure that:

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

[N.B. Reg. 2001-33, s. 53; 2010-159, s. 32]

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

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

[N.B. Reg. 2010-159, s. 33]

144 Where an employee is working on swing staging or a boatswain's chair above another employee, the employee working above shall ensure that the employee below is protected from the hazards of objects falling from the higher level by tying off tools and other unsecured objects on the higher level.

[N.B. Reg. 2010-159, s. 34]

144.1 An employer shall ensure and an employee shall continually use a fall-arresting system that meets the requirements of section 49.2 while on the swing staging.

[N.B. Reg. 2010-159, s. 35]

144.2 The personal fall-protection system may only be attached to an anchor point on a swing staging when:

- (a) there are at least two independent means of support or suspension; and
- (b) it is designed, constructed and maintained so that the failure of one means of support or suspension will not upset the swing staging.

[N.B. Reg. 2010-159, s. 35]

145 An employer shall ensure that a boatswain's chair has a seat at least 600 mm long and 250 mm wide that is of one piece construction capable of supporting 224 kg that:

- (a) is supported by a sling that crosses underneath the seat, in accordance with paragraph 142(4)(b); or
- (b) is a manufactured system providing equivalent protection.

[N.B. Reg. 2010-159, s. 36]

145.1 (1) The boatswain's chair shall only be used to work within arm's reach of the employee who is freely suspended.

(2) An employer shall ensure that an employee in a boatswain's chair uses:

- (a) a fall-arresting system that meets the requirements of section 49.2; and
- (b) a descent control that;
  - (i) is classified as type 2W or 3W as per CSA standard Z259.2.3-99 "Descent Control Devices" or equivalent, and
  - (ii) is used in accordance with the manufacturer's specifications regarding installation, operating and maintenance.

[N.B. Reg. 2010-159, s. 37]

145.2 (1) Every owner of a place of employment who allows suspended equipment operations on a place of employment shall provide or ensure the use of permanent or temporary anchor points that meet the requirements of subsection 142(2).

(2) If a permanent anchor point has been provided, the owner of a place of employment shall:

- (a) prepare sketches showing the anchor point and related structures;
- (b) provide a copy of the sketches to the employee who is to work from suspended equipment before the work begins, and

(3) If a permanent or temporary anchor point has been provided, the owner of a place of employment shall ensure that the anchor point as well as the permanently installed suspended equipment are inspected and certified by a competent person:

- (a) before being used for the first time;
- (b) as recommended by manufacturer, installer or designer and at least every 12 months;
- (c) after an event or after maintenance and repairs; and
- (d) when the owner of a place of employment is informed under subsection (4) of a defect or inadequacy.

(4) An employer or employee shall inform the owner of a place of employment immediately if they believe that the anchor point or any component of the permanently installed suspended equipment is defective or inadequate.

(5) If the inspection under subsection (3) reveals a defect or inadequacy, no one shall use the anchor point or the permanently installed suspended equipment and no owner of a place of employment, employer or contractor shall permit their use until the defect or inadequacy has been eliminated.

[N.B. Reg. 2010-159, s. 37]

### **PERSONNEL CARRYING EQUIPMENT**

231 (1) In this section:

"personnel carrying device" means a cage, basket or similar structure suspended from a hoisting apparatus and designed to transport persons.

(2) An employer and an operator of a hoisting apparatus shall each ensure that an employee is not lifted or moved by the hoisting apparatus unless a personnel carrying device is attached to the hoisting apparatus.

(3) An employer shall ensure that the personnel carrying device referred to in subsection (2) is attached to the hook of the hoisting apparatus and has an auxiliary fastening device attached directly to the hoist line of a single part line or to the sheave block of a multi-part line if the sheave block has a safe place to attach the auxiliary fastening device.

(4) An employer shall ensure that the hoisting apparatus, the personnel carrying device, the primary connection and the auxiliary fastening device are certified in writing by an engineer as being capable of safely lifting or moving any load likely to be imposed on them.

(5) An employee occupying a personnel carrying device referred to in subsection (2) shall use a fall-arresting system that is securely anchored to the personnel carrying device.

[N.B. Reg. 2010-159, s. 39]

232 (1) An aerial device shall:

- (a) conform with CSA standard C225-M88, "Vehicle-Mounted Aerial Devices"; or
- (b) be certified in writing by an engineer as being safe to elevate personnel to a work site above ground level.

(2) If an employee is required to work from a moving boom supported elevating work platform or a moving aerial device, the employer shall provide and the employee shall continually use a fall-arresting system.

(3) The fall-arresting system referred to in subsection (2) shall be attached to:

- (a) an anchor point provided by the manufacturer; or
- (b) an anchor point that is approved by an engineer and secured to the upper boom

of the platform or aerial device.

[N.B. Reg. 2010-159, s. 40]

### **ARBORICULTURAL OPERATIONS**

374 An employer shall ensure that an employee working more than 3 m above the nearest safe level uses a fall-arresting system or:

- (a) wears a safety belt, a tree-trimming saddle belt or a saddle formed by a double bowline on a bight; and
- (b) uses as a life line, a rope designed for use in tree maintenance operations that is:
  - (i) inspected by the employee before each use,
  - (ii) properly knotted when in use, and
  - (iii) stored in a separate protective container.

[N.B. Reg. 2010-159, s. 45]

### **Underground Mine Regulation - Occupational Health and Safety Act, N.B. Reg. 96-105**

#### **FALL PROTECTION**

14 An employer shall ensure that no employee works near or in any raise, shaft, ore pass or any other steeply inclined opening unless the employee uses a fall-arresting system, or a safety net that meets the requirements of section 49.8 of the General Regulation - Occupational Health and Safety Act.

[N.B. Reg. 2010-160, s. 2]

### **Prince Edward Island**

#### **Occupational Health and Safety Act Regulations, E.C. 180/87**

##### **SAFETY BELTS**

14.1 Employees shall be provided with and shall wear approved safety belts with life line attached and properly anchored when working at elevations greater than 3 m (10 ft.) above grade where adequate working platforms or stagings are not provided.

##### **SAFETY HARNESS WITH LIFE LINE**

14.2 Employees shall be provided with and shall wear approved safety harnesses with life line attached and properly anchored when entering bins, hoppers, chambers or vessels where there is a danger of being trapped or buried by the movement of material, or where there is a danger of falling into pits, shafts or moving machinery.

##### **SENTINELS**

14.4 When employees are required to work in bins, hoppers, chambers or vessels

where there is danger of being overcome by contaminated air or lack of oxygen or where there is danger of being buried by movement of material, an employee shall be stationed in a position where he can readily effect the rescue of the employee exposed to the hazardous condition.

- Ropes for life lines shall be as specified in C.S.A. Standard Z259.2.
- Life lines shall be connected for use so that there will be the least practicable amount of slack line in order to limit the free fall of the employee.
- No more than one employee shall be attached to one life line.

### **HOISTING APPARATUS, DEFINED**

34.1 In this Part, "hoisting apparatus" includes an automotive lift, a mobile crane, a tower crane, an electric overhead travelling crane, a winch, a block and other similar apparatus but does not include an elevator or a dumbwaiter.

### **CONSTRUCTION 34.2**

(2) The employer shall ensure that hoisting apparatus provided by an employer for the use of a worker is designed, installed, erected, examined, inspected, operated and maintained in accordance with the applicable provisions of the following standards:

- (a) CSA Standards;
  - (i) B167 - General Purpose Electrical Overhead Travelling Cranes,
  - (ii) C22.2, No. 33 - Electrical Cranes and Hoists,
  - (iii) Z150 - Safety Code for Mobile Cranes,
  - (iv) Z150S1 - Supplement No. 1 to Z150,
  - (v) Z248 - Code for Tower Cranes,
- (b) ANSI/ALI ALOIM-2000 Standard for Automotive Lifts - Safety Requirements for Operation, Inspection and Maintenance.

See also:

### **FIXED LADDERS**

23.7 (1) The employer shall ensure that a fixed ladder more than 6 096 mm (20 ft.) in length is provided with:

- (a) a safety rail secured to the ladder; or
- (b) cage guards with offset platforms at intervals not greater than 9 144 mm (30 ft.);  
or
- (c) adequate fall arresting equipment.

(2) The employer shall ensure that employees working on fixed ladders more than 6 096 mm (20 ft.) in length shall wear adequate fall arresting equipment.

(3) Employees working on fixed ladders more than 6 096 mm (20 ft.) in length shall

wear adequate fall arresting equipment.

(4) Where a safety rail is used, the employer shall provide an approved safety belt designed to be attached to the rail and all employees shall wear the safety belt and attach it to the rail.

## **Fall Protection Regulations, EC2004-633**

### **DEFINITIONS**

1 (1) In these regulations:

- (a) "Act" means the Occupational Health and Safety Act;
- (b) "anchor point" means a secure point of attachment for a lifeline or lanyard;
- (c) "ANSI" means the American National Standards Institute;
- (d) "arborist" means a worker trained and employed, in whole or in part, to climb trees for any economic or scientific purpose, including;
  - (i) detection and treatment of disease, infections or infestations,
  - (ii) pruning, spraying or trimming,
  - (iii) repairing damaged trees,
  - (iv) assessing growth or harvesting potential, or
  - (v) scientific research,
- (e) "CGSB" means the Canadian General Standards Board;
- (f) "CSA" means the Canadian Standards Association;
- (g) "competent person" means a person who is;
  - (i) qualified because of that person's knowledge, training and experience to do the assigned work in a manner that will ensure the health and safety of persons in the workplace, and
  - (ii) knowledgeable about the provisions of the Act and the regulations that apply to the assigned work, and about potential or actual danger to health or safety associated with the assigned work,
- (h) "debris net" means a net that is used to catch material and debris that can drop from work areas;
- (i) "fall arrest system" means a system of physical components attached to a worker that stops a worker during a fall;
- (j) "full body harness" means a harness consisting of leg and shoulder straps and an upper back suspension unit that will distribute and reduce the impact force of any fall;
- (k) "guardrail" means a temporary system of vertical and horizontal members that warn of a fall hazard and reduce the risk of a fall;
- (l) "lanyard" means a flexible line used to secure a worker to a lifeline, a static line or a fixed anchor point;
- (m) "lifeline" means a vertical line attached to a fixed anchor point or a static line and to which a lanyard and a ropegrab may be attached;
- (n) "means of fall protection" means a harness, net, rope, safety belt, structure or other equipment, or device or means of;

- (i) restraining a worker who is at risk of falling, or
- (ii) stopping a worker who has fallen,
- (o) "personnel safety net" means a net that is used to catch a worker during a fall;
- (p) "practicable" means physically possible in light of current knowledge and invention;
- (q) "reasonably practicable" means practicable unless the person on whom a duty is placed can show that there is a gross disproportion between the benefit of the duty and the cost, in time, trouble and money, of the measures to secure the duty;
- (r) "ropegrab" means a mechanical fall-arrest device that;
  - (i) is attached to a lifeline and a lanyard, and
  - (ii) locks itself immediately on the lifeline in the event of a fall,
- (s) "safe means of access and egress" means equipment or a structure that is built to prevent falls by workers entering or leaving a work area;
- (t) "safe surface" means a surface at a workplace that;
  - (i) has sufficient size and strength to adequately support a worker who falls on to the surface, and
  - (ii) is sufficiently horizontal to prevent a further fall from the surface by a worker who has fallen on to the surface,
- (u) "safety belt" means a belt worn by a worker as a means of fall protection;
- (v) "softener" means padding or hoses that are used with a lifeline or static line to prevent a rope from being cut or chafed;
- (w) "static line" means a rope;
  - (i) that is attached horizontally to two or more fixed anchor points, and
  - (ii) to which a fall arrest system is attached,
- (x) "temporary flooring" means a horizontal working surface that;
  - (i) is designed to give access to areas that do not have permanent flooring, and
  - (ii) will prevent a worker from falling,
- (y) "work area" means a location at the workplace at which an worker is, or may be required or permitted to be, stationed and includes a work platform;
- (z) "work platform" means a temporary horizontal working surface that provides access to a work area and support to a worker at the work area.

(2) Where there is an inconsistency between a provision of these regulations and a standard or a manufacturer's specification incorporated by reference in these regulations and a requirement of this Part, the provision of these regulations prevails to the extent of the inconsistency.

(3) A duty or requirement that is imposed on an employer or a worker under these regulations applies to a self-employed person, with such modifications as the circumstances require.

(4) Measurements of lumber in these regulations are nominal for dressed dimensions, unless rough lumber or dimensions are specified.

## **EMPLOYER REQUIRED TO PROVIDE MEANS OF FALL PROTECTION**

2 (1) Where a worker is exposed to the hazard of falling from a work area that is:

- (a) 3 m or more above the nearest safe surface or water;
- (b) above a surface or thing that could cause injury to the worker if the worker were to fall on the surface or thing; or
- (c) above an open tank, pit or vat containing hazardous material, the employer of the worker shall ensure that;
- (d) the worker is provided with a fall arrest system that meets the requirements of section 3;
- (e) a guardrail that meets the requirements of section 4 is constructed or installed at the work area;
- (f) a personnel safety net that meets the requirements of section 6 is installed at the work area;
- (g) temporary flooring that meets the requirements of section 9 is constructed or installed at the work area; or
- (h) the worker is provided with another means of fall protection that provides a level of safety equal to or greater than a fall arrest system that meets the requirements of section 3.

(2) Where, in accordance with subsection (1), an employer provides a worker with a fall arrest system, or with another means of fall protection that includes a harness, safety belt or other item that is designed to be worn by the worker using it, the worker shall wear the fall arrest system or means of fall protection while the worker is in the work area.

(3) Where a worker is entering or exiting a work area by a safe means of access and egress, subsections (1) and (2) do not apply to the worker or the employer of the worker.

(4) Notwithstanding subsections (1) and (2), where, at a work area:

- (a) a worker must perform work on or from a vehicle or other mobile equipment;
- (b) it is only practicable for a worker to perform work from a ladder and it is not practicable for the worker to maintain three points of contact while performing the work from the ladder; or
- (c) a worker who is an arborist must perform work from a tree and the density of tree branches prevents the arborist from crotching, the employer of the worker shall provide a means of fall protection, and the worker shall wear it if it may be worn, only where and to the extent that is reasonably practicable.

## **REQUIRED TRAINING IN USE OF A MEANS OF FALL PROTECTION**

2.1 (1) Where, in accordance with subsection 2(1) or (4), an employer of a worker provides the worker with a means of fall protection for use at a work area, the employer shall ensure the worker is trained in the use of the means of fall protection by a competent person and that the training includes:

- (a) training in the use, care and inspection of the means of fall protection; and
- (b) a review of the provisions of these regulations that apply to the means of fall protection.

(2) An employer shall:

- (a) maintain a training record for each worker during, and for a period of two years following, the worker's employment with the employer; and
- (b) make the record available to an officer upon the officer's request.

(3) A training record referred to in subsection (2) shall include:

- (a) the name of the worker who received the training;
- (b) the date on which the training took place;
- (c) the name of the competent person providing the training; and
- (d) any training material provided to the worker.

[EC2012-304, s. 1]

### **FALL ARREST SYSTEMS**

3 (1) A fall arrest system that is provided, in accordance with subsection 2(1), to a worker at a work area as a means of fall protection shall:

- (a) be adequately secured to;
  - (i) an anchor point, or
  - (ii) a lifeline that is,
    - (A) securely fastened to an anchor point; or
    - (B) attached to a static line that is securely fastened to an anchor point that is capable of withstanding either the maximum load likely to be imposed on the anchor point or a load of 17.8 kN, whichever is greater;
- (b) include a lanyard;
  - (i) that is attached to an anchor point or lifeline, where practicable, above the shoulder of the worker, and
  - (ii) that complies with CSA Standard Z259.1-95 Safety Belts and Lanyards,
- (c) prevent a free fall greater than 1.22 m where;
  - (i) the fall arrest system is not equipped with a shock absorption system that complies with CSA Standard Z259.11-M92 Shock Absorbers for Personal Fall-Arrest Systems and that reduces the shock level of any fall to less than 4 kN, or
  - (ii) the combined free fall and shock absorbed deceleration distance exceeds the distance between the work area and a safe surface, and
- (d) include a full body harness that;
  - (i) is attached to a lanyard,
  - (ii) is adjusted to fit the user of the harness, and
  - (iii) complies with CSA Standard Z259.10-M90 Full Body Harnesses.

(2) Where a fall arrest system provided to a worker includes a lifeline, the lifeline shall:

- (a) comply with CSA Standard Z259.2.1-98 Fall Arresters, Vertical Lifelines and Rails;
- (b) extend to a safe surface below the work area;
- (c) be secured at the bottom of the lifeline to prevent tangling or disturbance of the line;
- (d) be securely attached to an anchor point;
- (e) be free of knots, lubricants and imperfections;
- (f) be free of splices, except as are necessary to connect the lifeline to an anchor point;
- (g) be provided with softeners at all sharp edges or corners to protect against cuts or chafing; and
- (h) be clearly identified as a lifeline by colour or by another means that provides an equivalent level of safety.

(3) No worker shall:

- (a) use a lifeline in a fall arrest system while that fall arrest system is being used by another worker; or
- (b) provide a rope for use, or permit a rope to be used, as a lifeline in a fall arrest system if the rope has been used for another purpose.

(4) Where a fall arrest system provided to a worker includes a ropegrab, the ropegrab used shall comply with CSA Standard Z259.2.1-98 Fall Arresters, Vertical Lifelines and Rails.

(5) An employer who provides a worker with a fall arrest system shall ensure the fall arrest system is inspected by a competent person prior to each work shift undertaken by the worker.

(6) A competent person who carries an inspection of a fall arrest system shall advise the employer as to whether any of the components of the fall arrest system are defective in condition or function.

(7) Where an employer is advised by a competent person that any of the components of a fall arrest system are defective in condition or function, the employer shall ensure that the fall arrest system is not used until every defective component is replaced or repaired.

(8) Where a fall arrest system has arrested the fall of a worker at a work area, the employer of the worker shall ensure that the fall arrest system:

- (a) is removed from service and inspected by a competent person; and
- (b) is repaired, before it is reused, to the original manufacturer's specifications, if the inspection of the competent person reveals that any component of the fall arrest

system is defective.

(9) Where a fall arrest system provided to a worker includes a static line, the static line shall:

- (a) have a nominal diameter of at least 12.7 mm;
- (b) be equipped with vertical supports at least every 9 m;
- (c) have a maximum deflection, when taut, of no greater than 381 mm for a 9 m span;
- (d) be equipped with turnbuckles or other comparable tightening devices that provide an equivalent level of protection, at the ends of the static line;
- (e) be made of Improved Plow Wire Rope;
- (f) be equipped with softeners at all sharp edges or corners to protect against cuts or chafing;
- (g) be made only of components that are able to withstand either the maximum load likely to be imposed on the components or a load of 8 kN, whichever is greater; and
- (h) comply with CSA Standard Z259.13-04 Flexible Horizontal Lifeline Systems and CSA Standard Z259.16-04 Design of Active Fall Protection Systems.

(10) Where a fall arrest system is provided to a worker who is an arborist, the fall arrest system shall:

- (a) include a tree climbing or tree trimming harness or saddle;
- (b) be adequately secured to:
  - (i) an anchor point, or
  - (ii) a lifeline that is,
    - (A) securely fastened to an anchor point; or
    - (B) attached to a static line that is securely fastened to an anchor point;
- (c) include a climbing rope or safety strap;
- (d) where practicable, include a second climbing rope or safety strap that:
  - (i) provides additional stability, and
  - (ii) back-up fall protection, and
- (e) be capable of withstanding either the maximum load likely to be imposed or a load of 17.8 kN, whichever is greater.

(11) Where an employer uses a fall arrest system or a personnel safety net as a means of fall protection, the employer shall have a written fall protection plan that specifies:

- (a) the procedure to assemble, maintain, inspect, use and disassemble the fall arrest system or personnel safety net; and
- (b) the procedure for the rescue of a worker who has fallen and is suspended by the fall arrest system or personnel safety net, but is unable to effect self rescue.

## **CONSTRUCTION AND INSTALLATION REQUIREMENTS**

4 (1) A guardrail that is constructed or installed at a work area, in accordance with subsection 2(1), shall:

- (a) extend around;
  - (i) any uncovered opening in a floor or other surface, and
  - (ii) the perimeter or other open side of a floor, mezzanine, balcony or other surface, at the work area from which a worker may be exposed to the hazards of a fall described in clauses 2(1)(a) to (c),
- (b) have posts that;
  - (i) are spaced at intervals of not more than 2.4 m, and
  - (ii) are secured against movement by the attachment of the posts to the structure under construction or that is otherwise being worked on, or by another means that provides an equivalent level of safety,
- (c) have a top railing that is between 0.91 and 1.06 m above the surface of the protected working area and that is securely fastened to posts secured in compliance with subclause (b)(ii);
- (d) have a toeboard, securely attached to the posts and the structure to which the posts are secured, extending from the base of the posts to a height of 102 mm; and
- (e) have an intermediate railing on the inner side of the posts midway between the top railing and the toeboard.

(2) Where a wooden guardrail is constructed or installed at a work area, the guardrail shall, in addition to the requirements of subsection (1):

- (a) have top and intermediate railings and posts that are at least 51 mm by 102 mm;
- (b) have a toeboard that is at least 25 mm by 75 mm; and
- (c) be made of;
  - (i) Grade Two or better spruce, or
  - (ii) other lumber that provides an equivalent level of safety to the type of lumber referred to in subclause (i).

(3) Where a guardrail that is constructed or installed at a work area has wire rope railings, the guardrail shall, in addition to the requirements of subsection (1):

- (a) have top and intermediate railings that are at least 8 mm in diameter;
- (b) be identified with high visibility markings placed every 1.5 m on the top railing; and
- (c) have top and intermediate railings that are equipped with turnbuckles or other means that provide adequate tension to ensure an equivalent level of protection to that provided by the wooden railings required under subsection (2).

(4) Notwithstanding anything to the contrary in subsection (1), an employer may have a manufactured guardrail installed or constructed at a work area if it provides an equivalent level of protection to that provided by a wooden guardrail that complies with the requirements of subsections (1) and (2).

## **BUILDING SHAFTS**

5 Where, at a work area:

- (a) there is no work platform installed at the level of a doorway or opening in a building shaft; and
- (b) the employer is required by these regulations to have a guardrail constructed or installed at the work area, the employer shall ensure that the guardrail is marked with a warning sign that indicates the presence of an open building shaft.

## **PERSONNEL SAFETY NETS**

6 (1) Where an employer has a personnel safety net installed at a work area, in accordance with subsection 2(1), the employer shall ensure that:

- (a) the personnel safety net is installed not more than 4.6 m below the work area;
- (b) the personnel safety net extends 2.4 m on all sides beyond the work area;
- (c) the personnel safety net is installed and maintained so that the maximum deflection when arresting the fall of a worker does not allow any portion of the worker to contact another surface;
- (d) the personnel safety net is installed to ensure that no obstructions or intervening members may be struck by a worker during a fall between the work area and the personnel safety net; and
- (e) if the personnel safety net is connected to one or more other personnel safety nets, the splice joints connecting it with the other personnel safety nets are equal or greater in strength to the strength of the weakest of these personnel safety nets.

(2) Subject to subsection (1), an employer who has a personnel safety net installed at a work area shall insure it is manufactured, used, maintained, inspected and stored in accordance with ANSI Standard A10.11-1989 Safety Nets Used During Construction, Repair and Demolition Operations.

## **DEBRIS NETS**

7 (1) Where a worker having access to an area below an elevated work area is exposed to the hazard of falling objects or debris from the work area, the employer of the worker shall ensure that:

- (a) a debris net is installed below the work area in accordance with subsection (2); or
- (b) some other means of protection is provided that provides an equivalent level of protection from falling objects and debris.

(2) An employer who, in accordance with subsection (1), has a debris net installed below an elevated work area shall ensure it:

- (a) is manufactured, used, maintained, inspected and stored in accordance with ANSI Standard A10.11-1989 Safety Nets Used During Construction, Repair and Demolition Operations; and
- (b) is installed not more than 4.6 m below the elevated work area.

### **STANDARDS**

8 Where an employer provides a safety belt to a worker, in accordance with subsection 2(1), the employer shall ensure that the safety belt complies with:

- (a) CSA Standard Z259.1-95 Safety Belts and Lanyards; or
- (b) CSA Standard Z259.3-M1978 Lineman's Body Belt and Lineman's Safety Strap.

### **REQUIREMENTS**

9 Where temporary flooring is constructed or installed at a work area, in accordance with subsection 2(1), it shall:

- (a) be constructed or installed at each floor level of the work area where work is in progress;
- (b) extend over the whole work area except for any openings necessary for the carrying out of work;
- (c) be able to withstand four times the maximum load likely to be imposed on it; and
- (d) be securely fastened to and supported on members that are able to withstand four times the maximum load likely to be imposed on them.

### **RISK OF DROWNING**

10 (1) Where a worker is exposed to the hazard of falling from a work area and there is a risk of drowning if the worker does fall, the employer shall:

- (a) provide to the worker a personal floatation device where the work area is less than 3 m above the surface of the water;
- (b) provide rescue equipment that includes;
  - (i) an adequate boat to ensure a safe and timely rescue,
  - (ii) a life buoy attached with 15 m of rope that is at least 10 mm in diameter and that is made from polypropylene or other material that provides an equivalent level of protection,
  - (iii) a boat hook,
  - (iv) an audible alarm system to notify of an accident and to initiate the rescue procedure, and
- (c) ensure that workers who are;
  - (i) designated to perform specific rescue tasks,
  - (ii) properly informed as to the proper rescue procedures, and
  - (iii) trained in the use of the rescue equipment in order to perform rescue

operations in a safe manner, are available in such numbers as are needed in the circumstances to perform rescue operations safely.

(2) Where, in accordance with subsection (1), an employer provides a worker with a personal floatation device, the worker shall wear the personal floatation device while the worker is in the work area.

(3) The employer shall ensure that a personal floatation device provided to a worker complies with CGSB Standard 65.11-M88 Personal Floatation Devices.

(4) Where work is being performed above water that has a fast current and where it is practicable, an employer shall ensure that a line is placed across the water that:

- (a) is at least 10 mm in diameter or is made of polypropylene or other material that provides an equivalent level of protection; and
- (b) has a buoy or some other floatation device attached.

(5) For greater certainty, an employer is not required to provide a worker with a personal floatation device under subsection (1) where the worker is protected by a means of fall protection in accordance with subsection 2(1).

### **COMMENCEMENT**

11 These regulations come into force on November 13, 2004.

### **Scaffolding Regulations, EC2006-44**

#### **SUSPENDED SCAFFOLDS - COMMERCIALY MANUFACTURED**

14 (20) An employer shall ensure that a fall arrest system, including a ropegrab and an independent life line, is used by workers:

- (a) working on or from a suspended scaffold; and
- (b) entering onto or leaving a suspended scaffold.

(21) Notwithstanding subsection (20), where a suspended scaffold has more than one means of support on each side of the work platform, either of which would prevent collapse of the scaffold in the event of the failure of the other, an employer may attach a fall arrest system to an adequate anchor point on the platform.

#### **USE OF INDUSTRIAL LIFT TRUCK**

17 (3) While a worker is working on a fork-lift platform, the employer of the worker shall ensure that the worker is wearing a fall arrest system and that the fall arrest system is attached to an anchor point on the platform.

### **POWER OPERATED ELEVATING WORK PLATFORM**

19 (11) An employer who provides a power operated elevating work platform for the use of a worker shall ensure that the work platform:

- (a) is not loaded in excess of its rated capacity;
- (b) is used on a firm, level surface unless otherwise specified by the manufacturer;
- (c) is used only in accordance with the manufacturer's specifications;
- (d) is not loaded and used in such a manner as to create an unstable condition or cause a hazard;
- (e) is not moved vertically or horizontally unless every worker on the scaffold, while it is being moved, is protected against falling by a fall arrest system that complies with the Fall Protection Regulations (EC633/04); and
- (f) is equipped with an emergency stop button.

(12) An employer of a worker who uses a power operated elevating work platform shall ensure that the worker is protected against falling by a fall arrest system that complies with the Fall Protection Regulations (EC633/04).

### **CRANE OR HOIST SUSPENDED WORK PLATFORMS**

20 (8) An employer who provides a crane supported work platform for the use of a worker shall ensure that a fall arrest system, attached to an anchor point on the work platform, is used by workers working from or otherwise present on the work platform.

## **Quebec**

### **Regulation respecting occupational health and safety, O.C. 885-2001**

#### **SAFETY HARNESSES**

347 A safety harness shall comply with the CAN/CSA Z259.10-M90 Safety Harness standard and be used with one of the following systems:

- (1) a shock absorber attached to a lifeline preventing a fall in excess of 1,2 metres;
- (2) a harness retractor that includes a shock absorber or that is attached thereto.

The shock absorber shall comply with the CAN/CSA Z259.11-M92 standard on personal fall arrest systems.

The lifeline shall comply with the CAN/CSA Z259.1-95 standard covering Safety Belts and Lanyards.

The harness retractor shall comply with the CAN/CSA Z259.2-M1979 standard covering shock absorbers, personal fall arrest systems and lowering devices.

### **ANCHORAGE POINT**

348 The anchorage point for a safety harness lifeline shall be attached in one of the following ways:

- (1) be anchored to some point with a tensile strength at break of at least 18 kilonewtons;
- (2) be attached to a sliding sleeve in compliance with the CAN/CSA Z259.2-M1979 standard covering shock absorbers, personal fall arrest systems and lowering devices 1979;
- (3) be attached to a horizontal lifeline and anchorage point system, designed by an engineer, as demonstrated by a plan or certification available on the premises where such work is performed.

### **VERTICAL LIFELINE**

349 A lifeline shall:

- (1) comply with the CAN/CSA Z259.2-M1979 standard covering shock absorbers, personal fall arrest systems and lowering devices;
- (2) be used by one person only;
- (3) be less than 90 metres in length;
- (4) be attached to an individual anchorage point with a tensile strength at break of at least 18 kilonewtons;
- (5) be protected so as not to come into contact with any sharp edges;
- (6) be free of knots, splices, except the terminations, and defects.

For the purposes of subparagraph 6 of the first paragraph, "splice" means rope strands that are interwoven to make a loop at the termination of the rope.

[O.C. 510-2008, s. 4]

### **SAFETY BELT**

350 Where a worker is equipped with a safety belt, it can be used only to limit the movement of a worker or to keep him in his working position.

Such a belt shall comply with the CAN/CSA Z259.1-95 standard covering Safety Belts and Lanyards.

A safety belt may not be used as individual protective equipment to stop the fall of a worker.

### **TWO-POINT SUSPENSION SCAFFOLD**

351 When a worker uses a two-point suspension scaffold with four lifting cables, the lifeline anchorage point shall be attached in one of the following ways:

- (1) by attaching it to a platform anchor with a tensile strength at break of at least 18 kilonewtons;
- (2) by attaching it to a wire cable of at least 8 millimetres in diameter, attached at the ends and in the centre to the platform.

### **SAFETY SNAP AND SAFETY LOCK**

352 When the life-line ends with a locking safety snap, the snap shall be equipped with a self-locking safety catch.

### **SAFETY NET**

353 A safety net shall be used in the following circumstances:

- (1) when the wearing of a safety harness can be harmful or be a source of danger to the worker;
- (2) when the protection offered by the safety harness and personal floatation device is not sufficient because of the nature of the work.

### **USING A SAFETY NET**

354 A safety net shall:

- (1) be placed in such a way as to prevent a person from falling more than 6 metres in free fall;
- (2) have sufficient surface spread to intercept a falling person;
- (3) be capable of supporting a mass of 115 kilograms falling from a maximum height of 6 metres and with a safety factor of 3;
- (4) be sufficiently flexible to break the fall and retain the person;
- (5) be resistant to atmospheric agents;
- (6) be free of all foreign matter;
- (7) have a mesh measuring about 150 millimetres by 150 millimetres;
- (8) be installed such that upon use the person falling into it will not strike any object above or below the net or be struck by any object whatsoever.

## **Safety Code for the construction industry R.R.Q. 1981, c. S-2.1, r. 6**

### **SAFETY MEASURES**

2.9.1 Workers shall be protected against falls in the following cases:

- (1) if they are at risk of falling more than 3 metres from the place where he is

- working;
- (2) if they are at risk of falling;
    - (a) into a dangerous liquid or substance;
    - (b) on a moving component;
    - (c) on equipment or material that constitute a danger;
    - (d) from a height of 1.2 metres or more where they use a wheelbarrow or a vehicle.

In such cases and subject to section 2.9.2, one or several of the following measures shall be taken by the employer to ensure the safety of workers:

- (1) change the work position of workers so that they can work on the ground or on another surface from which they are not at risk of falling;
- (2) install guard-rails or a system which, by limiting the movements of workers, prevent them from being at risk of falling;
- (3) use common protective devices and equipment, such as safety nets;
- (4) ensure that workers wear safety harnesses complying with section 2.10.12 when they are working;
- (5) use another means that ensures equivalent safety for workers.

[O.C. 35-2001, s. 5]

### **INSTALLATION OF GUARD-RAILS**

2.9.2 Guard-rails must be placed on open sides of a floor, roof, platform, ramp, or scaffoldings or stairs around an excavation or any area from which workers may fall:

- (1) into water;
- (2) a vertical distance of 1.2 metres or more where he uses a wheelbarrow or another vehicle; or
- (3) a height greater than 5 metres from the periphery of roofs and 3 metres in other cases.

Notwithstanding the foregoing, such a guard-rail may be removed during works if it is a nuisance. In such a case, workers must wear a safety harness complying with section 2.10.12 and the work area must be delimited in particular by means of a continuous barricade or trestle of a minimum height of 0.7 metre, so as to prevent access thereto by persons not working therein.

[O.C. 35-2001, s. 5]

### **SAFETY NET**

2.9.3 Where a safety net is installed, it must:

- (1) be installed so as to allow a free fall of no more than 6 metres;
- (2) have a sufficiently large area to intercept a person who has fallen;
- (3) be capable of supporting a mass of 115 kilograms falling from a maximum height

- of 6 metres and with a safety factor of 3;
- (4) be sufficiently flexible to form a pocket and retain any person who has fallen;
- (5) be weather resistant;
- (6) be free of all foreign matter;
- (7) have openings of about 150 millimetres X 150 millimetres;
- (8) be installed in such a way that, when used, the person who falls therein will not hit an obstacle under or above the net or be hit by an object.

[O.C. 35-2001, s. 5]

### **SAFETY HARNESS**

2.10.12 (1) A safety harness must comply with CAN/CSA Standard Z259.10-M90 "Full Body Harnesses" and be used with one of the following systems:

- (a) an energy absorber to which a lanyard not allowing a free fall of more than 1.2 metres is fastened;
- (b) a self retracting lanyard that includes an energy absorber or that is fastened thereto.

Energy absorbers must comply with CAN/CSA Standard Z259.11-M92 "Shock Absorbers for Personal Fall Arrest Systems".

Lanyards must comply with CAN/CSA Standard Z259.1-95 "Safety Belts and Lanyards".

Self retracting lanyards must comply with CSA Standard Z259.2-M1979 "Fall-Arresting Devices, Personnel Lowering Devices, and Life Lines".

- (2) The fastening point of a self retracting lanyard must be anchored to an element having a breaking strength of at least 18 kilonewtons.
- (3) The fastening point of the lanyard must be fastened in one of the following manners:
  - (a) anchored to an element having a breaking strength of at least 18 kilonewtons;
  - (b) attached to a rope grab in compliance with CSA Standard Z259.2-M1979 "Fall-Arresting Devices, Personnel Lowering Devices, and Life Lines", fastened to a vertical life line or anchored to an element having a breaking strength of at least 18 kilonewtons;
  - (c) attached to a horizontal life line and anchorage system designed by a professional engineer as attested to by a plan or certificate available on the construction site;
  - (d) attached to a horizontal life line in compliance with the following minimum standards:
    - i. the life line shall be a steel cable of a minimum diameter of 12 millimetres slackened to a minimum angle of 1 vertical to 12 horizontal, or 5° from horizontal,
    - ii. the span of the life line between the anchors shall not exceed 12 metres,
    - iii. the life line shall be fastened to anchors having a breaking strength of at

- least 90 kilonewtons,  
iv. the life line shall not be used by more than two workers at a time.

Notwithstanding the foregoing, for a worker using a flying scaffold held by 4 hoisting cables, the fastening point of the lanyard must be:

- (a) anchored to an element of the platform with a breaking strength of at least 18 kilonewtons; or
- (b) secured to a metallic cable at least 8 millimetres in diameter, fastened at each end and in the centre of the platform.

(4) Where there is a duckbilled snap hook on the end of the lanyard, that hook shall be fitted with a self-locking safety catch. Such safety catch is not compulsory in the case of workers assigned to the assembly of the latticework of reinforcing rods supporting a wall or pillar, if those workers use positioning equipment. In such a case, at least one of the measures provided for in subparagraphs 3 and 4 of the second paragraph of section 2.9.1 must be taken.

In this section, "positioning equipment" means a lanyard consisting of metal rings that is less than 400 millimetres long and equipped at one end with a duckbilled snap hook and fastened, at the other end, to a safety belt or to the safety harness worn by a worker.

(5) A vertical life line must comply with CSA Standard Z259.2-M1979 "Fall-Arresting Devices, Personnel Lowering Devices, and Life Lines" and must:

- (a) be used by only one person;
- (b) be shorter than 90 metres;
- (c) be fastened to an individual anchor having a breaking strength of at least 18 kilonewtons or attached to a horizontal life line in accordance with subparagraph c or d of paragraph 3;
- (d) never be brought into contact with a sharp edge.

(6) Where a worker assigned to the erection or checking of power line towers wears a safety harness, that harness must comply with CAN/CSA Standard Z259.10-M90 "Full Body Harnesses" and be used with one of the following systems:

- (a) an energy absorber to which are fastened two lanyards including one that must be attached at all times;
- (b) an energy absorber to which is fastened one lanyard attached by a rope grab to a vertical life line;
- (c) a self retracting lanyard equipped with an energy absorber or fastened thereto.

Energy absorbers, lanyards and self retracting lanyards must comply with the standard provided for in paragraph 1 that applies thereto.

Where he moves a life line or the sling of a self retracting lanyard by means of a pole

anchor hook, a worker shall be attached to the tower only by means of his work positioning strap that he shall fasten to a structural member above him.

[O.C. 1959-86, s. 12; 53-90, s. 2;  
995-91, s. 5; 807-92, s. 3; 329-94, s. 14;  
35-2001, s. 6]

### **LIFE JACKET AND RESCUE EQUIPMENT**

2.10.13 (1) Any worker working near or over water shall wear a life jacket if:

- (a) no other safety measure can provide adequate protection;
- (b) the water is sufficiently deep to ensure the effectiveness of the life jacket.

(2) The life jacket shall:

- (a) be capable of maintaining the head of the user above water; and
- (b) possess buoyancy which is not dependent upon any manual manipulation.

(3) In addition to the life jacket, the following rescue equipment shall be provided on the site:

- (a) a boat in good operating condition in water near the work site, to be fitted with a motor if there is a current, and equipped with;
  - i. a ring buoy attached to a manila hemp cable 10 millimetres in diameter and at least 15 metres in length,
  - ii. a boat hook,
  - iii. life jackets for everyone involved in rescue operations,
  - iv. oars,
- (b) where there is a current, a line stretched across the water to which floating objects are attached capable of providing support for a person in water; and
- (c) a warning to announce that rescue operations shall begin.

(4) A person to direct rescue operations shall be appointed.

### **SAFETY BELT**

2.10.14 Where a worker is equipped with a safety belt, it can be used only to limit the movements of a worker or to keep him in his work position.

Such a belt must comply with CAN/CSA Standard Z259.1-95 "Safety Belts and Lanyards".

A safety belt shall not be used as individual protective equipment to stop the fall of a worker.

[O.C. 53-90, s. 3; 35-2001, s. 7]

Also see:

## **ERECTION AND DISMANTLING**

3.9.4 (1) The erection and dismantling of scaffoldings shall be performed under the supervision and control of a qualified person.

(2) All parts of a scaffolding shall be inspected by a qualified person before its erection.

(3) During erecting and dismantling operations, all safety measures shall be taken to prevent objects from falling.

(4) Tools appropriate to the type of scaffolding shall be placed at the disposal of the workers.

(5) In order to protect workers against falls when they erect or dismantle scaffolding, one or several measures provided for in subparagraphs 1 to 4 of the second paragraph of section 2.9.1 shall be taken.

(6) During the erection or dismantling of scaffolding, any other work shall:

- (a) be performed on only those sections which conform to this Code; and
- (b) not be performed under the sections being used, unless an overhead protection for workers is provided to catch objects which fall from a higher level.

(7) During its erection or dismantling, no scaffolding shall be left in such a state that it may create a hazard.

[O.C. 35-2001, s. 14]

## **MATERIAL HOISTING APPARATUS**

3.10.9 (1) Any hoisting apparatus used to lift materials on construction site shall:

- (a) have solid moorings and fastening devices, designed, constructed and installed in such a way so as to support all loads and stresses which may be applied to them;
- (b) be constructed of adapted materials;
- (c) have an outrigger beam capable of supporting 4 times the maximum working load of the apparatus. This beam shall conform to section 3.9.15; and
- (d) be equipped with a brake or equivalent device capable of supporting the maximum working load of the apparatus and of automatically stopping it during an interruption of the hoisting movement.

(2) The hoisting cable shall always be in good condition and never used as a sling.

(3) In order to protect workers from falling when they work to pull loads onto a floor at platform level, one or several measures provided for in subparagraphs 1 to 4 of the second paragraph of section 2.9.1 must be taken.

(4) The projection on the ground level of the space used for hoisting operations, the loading area and the hoisting mechanism area shall be encircled by a barrier and forbidden to any worker other than the one doing the loading.

[O.C. 329-94, s. 54; 35-2001, s. 20]

### **Regulation respecting occupational health and safety in mines O.C. 213-93**

4 The wearing of a full body harness is required where a worker is exposed to a fall of more than 3 metres (9.8 ft.) from his working position, except where the worker is only using a means of access or exit or where he is protected by a safety net.

[O.C. 460-2000, s. 3]

4.1 The worker must wear a safety belt with a lanyard when he is near an opening that is more than 3 metres deep (9.8 ft.) in order to prevent any fall into that opening.

[O.C. 460-2000, s. 4]

5 The body harness shall:

- (1) comply with CAN/CSA Standard Z259.10-M90, Full Body Harnesses;
- (2) be equipped with a shock absorber that complies with CAN/CSA Standard Z259.11-M92, Shock Absorbers for Personal Fall Arrest Systems;
- (3) be equipped with a lanyard that does not allow a fall of more than 1.2 metres (3.9 ft.) and complies with CAN/CSA Standard Z259.1-95, Safety Belts and Lanyards.

[O.C. 460-2000, s. 5]

5.1 The safety belt shall:

- (1) comply with CAN/CSA Standard Z259.1-95, Safety Belts and Lanyards;
- (2) be equipped with a lanyard that does not allow a fall of more than 1.2 metres (3.9 ft.) and complies with the standard referred to in paragraph 1.

[O.C. 460-2000, s. 6]

6 The fastening point of the lanyard of a full body harness and a safety belt shall be installed in one of the following ways:

- (1) by being anchored to an element having a breaking strength of at least 18 kilonewtons (4 046.6 lbs.);
- (2) by fastening it to a fall-arresting device connected to a vertical lifeline in compliance with CSA Standard Z259.2.1-98, Fall-Arresting Devices and Vertical Lifelines;
- (3) by fastening it to a horizontal cable and anchoring system devised by an engineer as attested to by a plan or certification kept on the mine site and available at all times.

[O.C. 460-2000, s. 7]

7 The vertical lifeline shall:

- (1) comply with CSA Standard Z259.2.1-98, Fall-Arresting Devices and Vertical Lifelines;
- (2) be used by only one person;
- (3) be less than 90 metres long (295.3 ft.);
- (4) be fixed to an individual anchor having a breaking strength of at least 18 kilonewtons (4 046.6 lbs.);
- (5) be protected so as to prevent contact with a sharp edge.

[O.C. 460-2000, s. 8]

Also see:

401.1 Notwithstanding section 401, the rappelling technique for accessing a working face or wall may be used where the methods provided for in section 401 are not technically feasible or constitute a hazard.

Where that technique is used:

- (1) a worker at a working face or wall shall be protected against falls by a fall-arresting device, which shall:
  - (a) be independent of the rappelling system;
  - (b) be a Type 1, Class A self-retracting life line or fall arrester and comply with CSA Standard Z259.2-M1979 Fall- Arresting Devices, Personnel Lowering Devices and Life Lines;
  - (c) be connected to the fall arrest attachment ring which is identified for fall arrest on the safety harness;
- (2) the life line shall:
  - (a) comply with CSA Standard Z259.2-M1979 Fall-Arresting Devices, Personnel Lowering Devices and Life Lines;
  - (b) be of a diameter and construction in accordance with the recommendations of the manufacturer of the fall-arresting device;
  - (c) be less than 90 metres (300 feet) in length;
- (3) the rope of the rappelling system shall:
  - (a) be made of synthetic fibre;
  - (b) have a breaking strength of at least 40 kilonewtons (9000 pounds);
  - (c) be long enough to reach a safe landing;
  - (d) not be extended by attaching other ropes;
  - (e) be less than 90 metres (300 feet) in length;
- (4) the rope of the rappelling system or life line shall be fixed to 2 anchors each having a breaking strength of at least 18 kilonewtons (4000 pounds). The anchors for the rope of

the rappelling system shall be independent of the anchors of the life line;

(5) except where protected by a sheath, the rope of a rappelling system or life line shall never come into contact with any sharp edge;

(6) the carabiners, lowering devices and other rappelling hardware shall be made from drop-forged steel or a material of equivalent quality and shall have a breaking strength of at least 22 kilonewtons (5000 pounds);

(7) a worker shall use a Group AD or AP safety harness complying with the CAN/CSA Standard Z259.10-M90 Full Body Harnesses;

(8) no person shall descend a working face or wall where wind velocity is greater than 50 kilometres/hour (31 miles/hour);

(9) no person shall be at the working face or wall during a thunder storm or heavy rain;

(10) following a thunder storm or heavy rain, a worker shall wait at least 1 hour before descending a working face or wall;

(11) a means for emergency evacuation shall:

- (a) be available to workers at a working face or wall;
- (b) be independent of the rappelling system and the fall- arresting device;
- (c) allow for fast and safe evacuation of a worker in difficulty on a working face or wall;

(12) all damaged material connected with the use of the rappelling technique shall be discarded;

(13) as long as a worker is at a working face or wall, a person having been trained in the rappelling technique shall be present beyond the working face or wall and shall be located in such a way as to see the worker and be able to watch over him and communicate with him. Where he is unable to communicate by speaking directly to the worker, a radiotelephone communication system shall be used;

(14) no worker shall use the rappelling technique to access a working face or wall unless he has the skills, knowledge and training required for the working method developed by his employer, in accordance with paragraph 3 of section 78 of the Act respecting occupational health and safety.

[O.C. 1326-95, s. 76]

**Ontario**

## **Construction Projects, O. Reg. 213/91**

26 Sections 26.1 to 26.9 apply where a worker is exposed to any of the following hazards:

1. Falling more than 3 metres.
2. Falling more than 1.2 metres, if the work area is used as a path for a wheelbarrow or similar equipment.
3. Falling into operating machinery.
4. Falling into water or another liquid.
5. Falling into or onto a hazardous substance or object.
6. Falling through an opening on a work surface.

[O. Reg. 145/00, s. 12; 85/04, s. 4]

26.1 (1) A worker shall be adequately protected by a guardrail system that meets the requirements of subsections 26.3(2) to (8).

(2) Despite subsection (1), if it is not reasonably possible to install a guardrail system as that subsection requires, a worker shall be adequately protected by at least one of the following methods of fall protection:

1. A travel restraint system that meets the requirements of section 26.4.
2. A fall restricting system that meets the requirements of section 26.5.
3. A fall arrest system, other than a fall restricting system designed for use in wood pole climbing, that meets the requirements of section 26.6.
4. A safety net that meets the requirements of section 26.8.

(3) The components of any system listed in subsection (2) shall be designed by a professional engineer in accordance with good engineering practice, and shall meet the requirements of any of the following National Standards of Canada standards that are applicable:

1. CAN/CSA-Z259.1-05: Body Belts and Saddles for Work Positioning and Travel Restraint.
2. CAN/CSA-Z259.2.1-98 (R2008): Fall Arresters, Vertical Lifelines and Rails.
3. CAN/CSA-Z259.2.2-98 (R2004): Self-Retracting Devices for Personal Fall-Arrest Systems.
4. CAN/CSA-Z259.2.3-99 (R2004): Descent Control Devices.
5. CAN/CSA-Z259.10-06: Full Body Harnesses.
6. CAN/CSA-Z259.11-05: Energy Absorbers and Lanyards.
7. CAN/CSA-Z259.12-01 (R2006): Connecting Components for Personal Fall Arrest Systems (PFAS).
8. CAN/CSA-Z259.14-01 (R2007): Fall Restrict Equipment for Wood Pole Climbing.

(4) Before any use of a fall arrest system or a safety net by a worker at a project, the worker's employer shall develop written procedures for rescuing the worker after his or

her fall has been arrested.

[O. Reg. 145/00, s. 12; 85/04, s. 5; 443/09, s. 1]

26.2 (1) An employer shall ensure that a worker who may use a fall protection system is adequately trained in its use and given adequate oral and written instructions by a competent person.

(2) The employer shall ensure that the person who provides the training and instruction referred to in subsection (1) prepares a written training and instruction record for each worker and signs the record.

(3) The training and instruction record shall include the worker's name and the dates on which training and instruction took place.

(4) The employer shall make the training and instruction record for each worker available to an inspector on request.

[O. Reg. 145/00, s. 13]

26.3 (1) Despite paragraph 1 of section 26, a guardrail system that meets the requirements of this section shall be used if a worker has access to the perimeter or an open side of any of the following work surfaces and is exposed to a fall of 2.4 metres or more:

1. A floor, including the floor of a mezzanine or balcony.
2. The surface of a bridge.
3. A roof while formwork is in place.
4. A scaffold platform or other work platform, runway or ramp.

(2) One of the following precautions shall be used to prevent a worker from falling through an opening on a work surface:

1. A guardrail system that meets the requirements of this section.
2. A protective covering that:
  - i. completely covers the opening,
  - ii. is securely fastened,
  - iii. is adequately identified as covering an opening,
  - iv. is made from material adequate to support all loads to which the covering may be subjected, and
  - v. is capable of supporting a live load of at least 2.4 kilonewtons per square metre without exceeding the allowable unit stresses for the material used.

(3) The guardrail system or protective covering required under subsection (1) or (2) may be removed temporarily to perform work in or around the opening if a worker is adequately protected and signs are posted in accordance with subsections 44(1) and (2).

(4) The following are the specifications for a guardrail system:

1. It shall have a top rail, an intermediate rail and a toe board.
2. The intermediate rail may be replaced by material that can withstand a point load of 450 newtons applied in a lateral or vertical downward direction.
3. Subject to subsection 116 (8), the top of the guardrail system shall be located at least 0.9 metres but not more than 1.1 metres above the surface on which the system is installed.
4. The intermediate rail shall be located midway between the top rail and the toe board.
- 4.1 The toe board shall extend from the surface to which the guardrail system is attached to a height of at least 89 millimetres.
5. If the guardrail system is located at the perimeter of a work surface, the distance between the edge of the surface and the guardrail system shall not be greater than 300 millimetres.

(5) A guardrail system shall be capable of resisting anywhere along the length of the system the following loads when applied separately, without exceeding the allowable unit stress for each material used:

1. A point load of 675 newtons applied in a lateral direction to the top rail.
2. A point load of 450 newtons applied in a vertical downward direction to the top rail.
3. A point load of 450 newtons applied in a lateral or vertical downward direction to the intermediate rail, or midway between the top rail and the toe board.
4. A point load of 225 newtons applied in a lateral direction to the toe board.

(6) The distance between any two adjacent posts of the guardrail system may be greater than 2.4 metres only if the system is capable of resisting the loads specified in subsection (5) increased in proportion to the greater distance between the posts.

(7) The following additional requirements apply to a guardrail system that is made of wood:

1. The wood shall be spruce, pine or fir (S-P-F) timber of construction grade quality or better and shall not have any visible defect affecting its load-carrying capacity.
2. The wood shall be free of sharp objects such as splinters and protruding nails.
3. The system shall have posts that are at least 38 millimetres by 89 millimetres, are securely fastened to the surface and are spaced at intervals of not more than 2.4 metres.
4. The top rail and the intermediate rail shall each be at least 38 millimetres by 89 millimetres.

(7.1) If a guardrail system that is made of wood is constructed and installed so that it is capable of resisting all loads that it may be subjected to by a worker, the following do not apply:

1. The requirement in paragraph 2 of subsection (4) that the replacement material can withstand a point load of 450 newtons.
2. Subsections (5) and (6).

(8) The following additional requirements apply to a guardrail system that is made of wire rope:

1. The top rail and intermediate rail shall be made of wire rope that is at least 10 millimetres in diameter, and the rope shall be kept taut by a turnbuckle or other device.
2. The outward deflection of the top rail and intermediate rail resulting from the loads specified in subsection (5) shall not extend beyond the edge of a work surface.
3. The system shall have vertical separators at intervals of not more than 2.4 metres and horizontal supports at intervals of not more than 9 metres.
4. Repealed. [O. Reg. 443/09, s. 2]

[O. Reg. 145/00, s. 14; 443/09, s. 2 ]

26.4 (1) A travel restraint system shall consist of a full body harness with adequate attachment points or a safety belt.

(2) The full body harness or safety belt shall be attached by a lifeline or lanyard to a fixed support that meets the requirements of section 26.7.

(3) The travel restraint system shall be inspected by a competent worker before each use.

(4) If a component of the travel restraint system is found to be defective on inspection, the defective component shall immediately be taken out of service.

[O. Reg. 145/00, s. 14]

26.5 (1) A fall restricting system that is not designed for use in wood pole climbing shall consist of an assembly of components that is:

- (a) attached to an independent fixed support that meets the requirements of section 26.7; and
- (b) designed and arranged in accordance with the manufacturer's instructions and so that a worker's free fall distance does not exceed 0.6 metres.

(2) A fall restricting system that is designed for use in wood pole climbing:

- (a) shall consist of an assembly of components that is designed and arranged in accordance with the manufacturer's instructions; and
- (b) shall not allow pole slippage in excess of the distances set out in the applicable National Standards of Canada standard referred to in subsection 26.1 (3).

(3) A fall restricting system shall be inspected by a competent worker before each use.

(4) If a component of the fall restricting system is found to be defective on inspection, the component shall be taken out of service immediately.

(5) If a worker who is using the fall restricting system falls or slips more than the distance determined under clause (1)(b) or (2)(b), as the case may be, the system shall be taken out of service immediately and shall not be used again by a worker unless all components of the system have been certified by the manufacturer as being safe for reuse.

[O. Reg. 145/00, s. 14; 85/04, s. 6]

26.6 (1) A fall arrest system shall consist of a full body harness with adequate attachment points and a lanyard equipped with a shock absorber or similar device.

(2) The fall arrest system shall be attached by a lifeline or by the lanyard to an independent fixed support that meets the requirements of section 26.7.

(3) The fall arrest system shall be arranged so that a worker cannot hit the ground or an object or level below the work.

(4) Despite subsection (1), the fall arrest system shall not include a shock absorber if wearing or using one could cause a worker to hit the ground or an object or level below the work.

(5) The fall arrest system shall not subject a worker who falls to a peak fall arrest force greater than 8 kilonewtons.

(6) The fall arrest system shall be inspected by a competent worker before each use.

(7) If a component of the fall arrest system is found to be defective on inspection, the defective component shall immediately be taken out of service.

(8) If a worker who is using the fall arrest system falls, the system shall be immediately removed from service and shall not be used again by a worker unless all components of the system have been certified by the manufacturer as being safe for re-use.

(9) Subsections (1) to (8) do not apply to fall restricting systems designed for use in wood pole climbing.

[O. Reg. 145/00, s. 14; 85/04, s. 7]

26.7 (1) A permanent anchor system shall be used as the fixed support in a fall arrest system, fall restricting system or travel restraint system if the following conditions are met:

1. The anchor system has been installed according to the Building Code.
2. It is safe and practical to use the anchor system as the fixed support.

(2) If the conditions set out in subsection (1) are not met, a temporary fixed support shall be used that meets the following requirements:

1. Subject to paragraph 2, a support used in a fall arrest system shall be capable of supporting a static force of at least 8 kilonewtons without exceeding the allowable unit stress for each material used.
2. If a shock absorber is also used in the fall arrest system, the support shall be capable of supporting a static force of at least 6 kilonewtons without exceeding the allowable unit stress for each material used.
3. Subject to paragraph 4, a support used in a fall restricting system must be capable of supporting a static force of at least 6 kilonewtons without exceeding the allowable unit stress for each material used.
4. Paragraph 3 does not apply to a support that is used in accordance with the manufacturer's written instructions and is adequate to protect a worker.
5. A support used in a travel restraint system shall be capable of supporting a static force of at least 2 kilonewtons without exceeding the allowable unit stress for each material used.

(3) Despite the requirements listed in subsection (2), the support capacity of a temporary fixed support used in a fall protection system may be determined by dynamic testing in accordance with good engineering practice to ensure that the temporary fixed support has adequate capacity to arrest a worker's fall.

(4) A fixed support shall not have any sharp edges that could cut, chafe or abrade the connection between it and another component of the system.

(5) Subsections (1) to (4) do not apply to fall restricting systems designed for use in wood pole climbing.

[O. Reg. 145/00, s. 14; 85/04, s. 8]

26.8 (1) A safety net shall be designed, tested and installed in accordance with ANSI Standard 10.11-1989, Personnel and Debris Nets for Construction and Demolition Operations.

(2) The safety net shall be installed by a competent worker.

(3) A professional engineer or a competent person under the engineer's supervision shall inspect and test the installation of the safety net before it is put in service.

(4) The engineer shall document the inspection and testing of the safety net.

(5) A copy of the document shall be kept at the project while the safety net is in service.

26.9 (1) This section applies to a lanyard or lifeline that is part of a travel restraint system or a fall arrest system.

(2) The following requirements apply to a lanyard or a lifeline:

1. It shall not be used in such a way that it is likely to be cut, chafed or abraded.
2. It shall not be subjected to extreme temperature, flame, abrasive or corrosive materials or other hazards that may damage it.
3. The free end of the lanyard or lifeline shall be kept clear of equipment and machinery.

(3) Only one person at a time may use a lanyard.

(4) The connecting ends of a lanyard shall be wrapped around a protective thimble and securely fastened with a swaged fitting or eye splice supplied by the manufacturer of the lanyard.

(5) A horizontal or vertical lifeline shall be kept free from splices or knots, except knots used to connect it to a fixed support.

(6) Only one person at a time may use a vertical lifeline.

(7) A vertical lifeline shall:

- (a) extend to the ground; or
- (b) have a positive stop that prevents the rope grab or other similar device from running off the end of the lifeline.

(8) The following requirements apply to a horizontal lifeline system:

1. It shall be designed by a professional engineer in accordance with good engineering practice.
2. The design may be a standard design or a custom design.
3. The design shall:
  - i. show the arrangement of the system including the anchorage or fixed support system,
  - ii. indicate the components used,
  - iii. state the number of workers that can safely be attached to it,
  - iv. set out instructions for installation or erection, and
  - v. show the design loads for the system.

4 The system shall be installed or erected, and maintained, in accordance with the professional engineer's design.

5 Before each use, the system shall be inspected by a professional engineer or a competent worker designated by a supervisor.

6 The constructor shall keep the design at the project while the system is in use.

[O. Reg. 145/00, s. 14]

26.10 - 26.11 Repealed. [O. Reg. 85/04, s. 10]

Also see:

129 (1) A scaffold mounted on castors or wheels:

- (a) shall be equipped with a suitable braking device on each castor or wheel; and
- (b) shall have the brakes applied when a worker is on the scaffold.

(2) A scaffold mounted on castors or wheels shall be equipped with guy wires or outriggers to prevent its overturning if the height of the scaffold platform exceeds three times the least lateral dimension of the scaffold:

- (a) measured at the base of the scaffold; or
- (b) if outriggers are used, measured between the outriggers.

(3) No scaffold mounted on castors or wheels that has a scaffold platform more than 2.4 metres above the base shall be moved when a worker is on it unless:

- (a) the worker is wearing a full body harness as part of a fall arrest system attached to a fixed support; and
- (b) the scaffold is being moved on a firm level surface.

141 (1) A worker who is on or is getting on or off a suspended platform, suspended scaffold or boatswain's chair shall wear a full body harness connected to a fall arrest system.

(2) Every lifeline used with a suspended platform, suspended scaffold or boatswain's chair:

- (a) shall be suspended independently from the platform, scaffold or boatswain's chair; and
- (b) shall be securely attached to a fixed support so that the failure of the platform, scaffold or boatswain's chair or its supporting system will not cause the lifeline to fail.

(3) Despite clause (2)(a), the fall arrest system shall be securely fastened to the suspended platform or suspended scaffold if:

- (a) all or part of the platform or scaffold has more than one means of support or suspension; and
- (b) the platform or scaffold is so designed, constructed and maintained that the failure of one means of support or suspension will not cause the collapse of all or part of the platform or scaffold.

148 An elevating work platform:

- (a) shall not be loaded in excess of its rated working load;
- (b) shall be used only on a firm level surface;
- (c) shall be used only in accordance with the written instructions of the manufacturer;
- (d) shall not be loaded and used in such a manner as to affect its stability or endanger a worker; and
- (e) shall not be moved unless all workers on it are protected against falling by a safety belt attached to the platform.

247 (1) No worker shall enter a well or augured caisson where the excavation is deeper than 1.2 metres unless:

- (a) a steel liner of adequate capacity is installed in the well or caisson;
- (b) the requirements of Ontario Regulation 632/05 (Confined Spaces) made under the Act are complied with; and
- (c) the worker is inside the steel liner and is wearing a fall arrest system with a full body harness secured to a fixed support.

(2) A steel liner:

- (a) shall extend sixty centimetres above ground level and to within 1.2 metres of the point in the well or caisson where work is being done;
- (b) shall be supported on two sides by steel wire rope and steel beams; and
- (c) shall have a diameter which is not less than 100 millimetres less than the diameter of the excavation.

[O. Reg. 628/05 s. 4; 96/11, s. 2]

### **Diving Operations, O. Reg. 629/94**

#### **FALL ARREST SYSTEMS**

21 (1) Each employer associated with a diving operation and the diving supervisor for a diving operation shall ensure that an adequate system to arrest the fall of a stage is used whenever a diver is being lowered into the water by a stage and there is a possibility that the stage might fall:

- (a) a distance of more than 10 feet;
- (b) into or onto operating machinery; or
- (c) into or onto a hazardous substance or object.

(2) Each employer associated with a diving operation and the diving supervisor for a diving operation shall ensure that the fall arrest system:

- (a) is adequately secured to a fixed support at the dive site or to a line that is securely fastened to a fixed support at the dive site;
- (b) is so designed that if the stage falls, the stage will be suspended not more than five feet below the location it occupied before the fall; and
- (c) is attached to a secondary lifting eye or similar device that is of at least the same strength as the primary lifting eye for the stage.

(3) Each employer associated with a diving operation and the diving supervisor for a diving operation shall ensure that the fixed support referred to in clause (2)(a) is capable of resisting any arrest forces in the event of a fall and is free of sharp edges that might cut or chafe the connection between the fall arrest system and the fixed support.

### **Health Care and Residential Facilities O. Reg. 67/93**

13 (1) Except where work is performed from a ladder, if a worker is exposed to the hazard of falling to a surface more than three metres below the position where the worker is situated, the worker shall be provided with and shall wear a fall arrest system.

(2) The fall arrest system shall consist of a serviceable safety belt or harness and lifeline that is adequately secured to a fixed support and so arranged that the worker cannot fall freely for a vertical distance of more than 1.5 metres.

(3) The fall arrest system shall:

- (a) have sufficient capacity to absorb twice the energy and twice the load that under the circumstances of its use may be transmitted to it; and
- (b) be equipped with a shock absorber or other device to limit the maximum arresting force to 8.0 kilonewtons to the worker.

### **Industrial Establishments, R.R.O. 1990, Reg. 851**

85 Where a worker is exposed to the hazard of falling and the surface to which he or she might fall is more than three metres below the position where he is situated:

- (a) the worker shall wear a serviceable safety belt or harness and lifeline that is adequately secured to a fixed support and so arranged that the worker cannot fall freely for a vertical distance of more than 1.5 metres; and
- (b) the fall arrest system described in clause (a) shall:
  - (i) have sufficient capacity to absorb twice the energy and twice the load that under the circumstances of its use may be transmitted to it, and

(ii) be equipped with a shock absorber or other devices to limit the maximum arresting force to 8.0 kilonewtons to the worker.

[O. Reg. 420/10, s. 14]

**Mines and Mining Plants, R.R.O. 1990, Reg. 854**

14 (1) Subject to subsection (5), where a worker is exposed to the hazard of falling more than three metres, a fall arrest system shall be used to protect the worker.

(2) The fall arrest system required by subsection (1) shall consist of a suitable combination of a belt, a full body harness, a lanyard, an anchor and a rope-grabbing device or lifeline.

(3) The belt, full body harness, lanyard and lifeline shall:

- (a) be made of material with elastic properties capable of absorbing and minimizing the arrest force in case of a fall;
- (b) be designed to distribute a fall arrest force in such a manner that the possibility of injury to the worker is minimized;
- (c) be of sufficient strength to absorb twice the energy that may be transmitted to the fall arrest system; and
- (d) not be knotted or allowed to become knotted, when used or worn.

(4) When being used and worn against the hazard of falling, the lifeline of the fall arrest system shall be:

- (a) anchored so that a worker will fall free of arrest not more than one metre; and
- (b) connected to an object that is;
  - (i) capable of resisting the arrest force in case of a fall, and
  - (ii) free of sharp edges.

(5) Subsection (1) does not apply to a worker employed in shaft sinking where measures and procedures are adopted and put into effect that will provide equal or greater protection to the worker.

Also see:

60 (1) Before a worker enters any silo, bin, hopper or other container or structure containing bulk material, all further supply of material thereto shall be stopped and any removal of material therefrom shall be prevented.

(2) When working on top of bulk material in any silo, bin, hopper or other container or structure:

- (a) a worker shall use a fall arrest system; and

(b) at least one other worker, who is a competent person, equipped with a suitable alarm shall be in constant attendance outside the silo, bin, hopper or other container or structure.

84 (1) If a worker may be endangered by the withdrawal, collapse, shifting or movement of bulk material such as rock, ore or other material in a stope, pass or chute or in a storage area, the employer shall ensure that written procedures for the precautions to be taken before, during and after removal of the material are established and followed.

(2) The written procedures required by subsection (1) shall address the following matters:

1. The conditions under which workers are required to wear a fall arrest system.
2. The communication of hazards to all persons who may be at risk.
3. The identification of those locations that are not safe for workers to enter.
4. The need to post warning signs that indicate the nature of the danger or hazard and the need to erect barriers to prevent inadvertent access to the area.
5. Any additional protection to be provided to workers required to enter or work in the area.

(3) No worker shall be positioned so that when the worker is pulling a chute his or her access to an exit from the area may be blocked by an uncontrolled run of material, water or slime.

(4) A mechanical locking device shall be installed on overcut power operated chute gates, so that the gate may be locked in the open or closed position.

(5) A power-operated safety guard or gate shall be designed and installed to minimize hazards when the power fails.

[O. Reg. 571/92, s. 10; 291/02, s. 3]

94 A worker barring loose rock, or scaling or cleaning on a face of a surface mine shall use and wear a fall-arrest system.

190 A worker using a bosun's chair, suspended scaffold or mobile staging shall be protected by a fall arrest system as prescribed by section 14 if the worker may fall more than three metres from the chair, scaffold or staging.

### **Oil and Gas - Offshore, R.R.O. 1990, Reg 855**

27 Where a worker is exposed to the hazard of falling and the surface to which the worker might fall is more than three metres below the position where the worker is situated:

- (a) the employer shall provide and the worker shall wear a fall arrest system consisting of a serviceable safety belt or harness and lifeline that is adequately secured to a fixed support and so arranged that the worker cannot fall freely for a vertical distance of more than 1.5 metres; and
- (b) the fall arrest system described in clause (a) shall;
  - (i) have sufficient capacity to absorb twice the energy and twice the load that under the circumstances of its use may be transmitted to it, and
  - (ii) be equipped with a shock absorber or other devices to limit the maximum arresting force to 8.0 kilonewtons to the worker.

[O. Reg. 421/10, s. 5]

**Window Cleaning, R.R.O. 1990, Reg. 859**

10 (1) If a worker who is not working from a ladder is exposed to the hazard of falling more than three metres, the worker shall use a fall arrest system that is adequately secured to a fixed support and arranged so that the worker cannot fall freely for a vertical distance of more than 1.5 metres.

(2) The fixed support mentioned in subsection (1) shall be able to resist all arrest forces when a worker falls.

(3) The fall arrest system mentioned in subsection(1):

- (a) shall arrest any fall by the worker without applying a peak force to the worker greater than 8 kilonewtons; and
- (b) shall permit the worker to remain suspended safely in it for a period of at least thirty minutes.

(4) Where a suspended scaffold:

- (a) has at least two independent means of support or suspension; and
- (b) is designed, constructed and maintained so that the failure of one means of support or suspension will not upset the scaffold, the fall arrest body harness or lanyard may be attached to the scaffold.

(5) A lanyard used in a fall arrest system shall have a nominal diameter of at least sixteen millimetres and be made of nylon rope or another durable and adequate material.

(6) A lifeline used in a fall arrest system:

- (a) shall be used by only one worker at a time;
- (b) shall be free from the danger of being chaffed or cut;
- (c) shall be suspended separately and independently from any suspended scaffold, boatswain's chair or similar single-point suspension equipment;
- (d) shall have a nominal diameter of at least sixteen millimetres;

- (e) shall be made of polypropylene or another durable material with equivalent impact strength that provides equal protection to a worker;
- (f) when in a vertical position, shall extend to the ground or the level of egress;
- (g) shall be inspected for wear prior to each day's use by a competent person who shall report any defects or damage to a supervisor; and
- (h) shall not be used when defective or damaged.

(7) No lanyard, lifeline and fall arrest body harness that has arrested a fall by a worker shall be reused.

Ontario also has guidelines for:

Fall Protection for Boilermaker Work (December 1994)

Fall Protection for Structural Steel Erection (August 1995)

Working on Billboards- a Guideline for the Outdoor Advertising Industry (January 1997)

Safety Guidelines for the Film and Television Industry in Ontario (June 2009 )

Safety Guidelines for the Live Performance Industry in Ontario (January 1997)

## **Manitoba**

### **Workplace Safety and Health Regulation, Man. Reg. 217/2006**

#### **APPLICATION**

28.1 (1) This Part applies to every workplace where work takes place using a scaffold or elevated work platform.

(2) Except for work of short duration that can be done safely from a ladder, an employer must ensure that a worker engaged in work that cannot be done from the ground or other safe elevation is provided with a scaffold or an elevated work platform.

#### **SAFE WORK PROCEDURES**

28.2 (1) When a scaffold or an elevated work platform is required to be provided at a workplace, the employer must:

- (a) develop and implement safe work procedures for using the scaffold or elevated work platform provided;
- (b) train workers who work on scaffolds and elevated platforms in those safe work procedures; and
- (c) ensure that the workers comply with those safe work procedures.

(2) An employer must ensure that the safe work procedures developed in subsection (1) include emergency response and rescue procedures appropriate to the risks associated with the failure of a scaffold or other elevated work platform.

## **COMMERCIALLY MANUFACTURED SCAFFOLDS AND ELEVATED WORK PLATFORMS**

28.3 (1) An employer must ensure that a commercially manufactured scaffold or elevated work platform is installed, used, maintained and dismantled in accordance with the manufacturer's specifications. But the employer may alter those specifications if the alteration is certified by a professional engineer.

(2) When a commercially manufactured scaffold or elevated work platform is used at a workplace, the employer must ensure that a copy of the manufacturer's specifications, and any alterations certified by a professional engineer, are readily accessible at that workplace.

## **TYPES THAT MUST BE DESIGNED BY ENGINEER**

28.4 (1) Despite any other provision of this Part, an employer must ensure that the following scaffolds are designed by a professional engineer:

- (a) an open access scaffold more than 10 m in height;
- (b) an enclosed or hoarded access scaffold more than 7.5 m in height.

(2) For a scaffold described in subsection (1), an employer must ensure that:

- (a) the specifications for constructing, installing, using, maintaining and dismantling it are certified by a professional engineer;
- (b) it is constructed, installed, used, maintained and dismantled in accordance with those specifications; and
- (c) a copy of its design and all the specifications under clause (a) are readily accessible at the construction project site where it is used.

## **STANDARDS RE SCAFFOLDS**

28.5 Subject to sections 28.3 and 28.4, an employer must ensure that a scaffold complies with the requirements of CAN/CSA S269.2-M87 (R2003) Access Scaffolding for Construction Purposes or a more specific standard prescribed in this Part.

## **GENERAL DESIGN AND USE REQUIREMENTS**

28.6 (1) An employer must ensure that a scaffold:

- (a) can safely support, and its footing, sills and similar supports can support without undue settlement or deformation, at least four times the maximum load that will be or is likely to be imposed on it;
- (b) if partially or fully enclosed, has components and tie-ins that are adequate to support any added load that may be imposed on it by wind, wind gusts or other environmental conditions;

- (c) is installed plumb and is stabilized by:
  - (i) having its vertical and horizontal members braced to prevent lateral movement,
  - (ii) being anchored and securely guyed or tied back to the building or structure, or to a fixed support, at the intervals recommended,
    - (A) by a professional engineer, if the scaffold was designed by a professional engineer; or
    - (B) by the manufacturer, if the scaffold was commercially manufactured, but in no case at vertical and horizontal intervals of more than three times the minimum lateral dimension of the scaffold;
- (d) is equipped with;
  - (i) a ladder, stair, runway or ramp that provides a worker with a safe means of access to and egress from the scaffold platform, and
  - (ii) toe-boards on the open sides of the scaffold platform, where there is a risk of tools, materials, equipment and debris falling from the platform or a worker slipping off the platform, and
- (e) has all openings, including stairway openings, appropriately guarded.

(2) For the purposes of clause (1)(a), the maximum load of a scaffold is to be determined in reference to the actual weight of all the scaffold's components combined with the following loads that will be or are likely to be imposed on it:

- (a) the actual weight of the workers using it, including their tools, materials and equipment;
- (b) wind, wind gusts and other environmental conditions.

#### **ADDITIONAL CRITERIA: SCAFFOLDS OF PARTICULAR HEIGHT**

28.7 An employer must ensure that a scaffold is equipped with each of the following that applies:

- (a) if the scaffold platform is 3 m or more above the level a worker may fall, the scaffold platform is equipped with a guardrail on the open sides and ends of the platform that is in line with the outer edge of the platform;
- (b) if a scaffold is more than 6 m in height, it is equipped with a suitable hoisting device for hoisting materials;
- (c) if a scaffold is 9 or more metres in height, it is equipped with;
  - (i) an internal stairway or ladders, and
  - (ii) if any ladder under subclause (i) exceeds 3 m in height, the ladder is equipped with fall protection attachments.

#### **CHARACTERISTICS: ROPE, WIRE ROPE AND TIEBACKS**

28.8 (1) An employer must ensure that a rope or wire rope used in scaffolding is:

- (a) protected against abrasion or other physical damage; and

- (b) made of heat- or chemical-resistant material, if there is a possibility of exposure to heat or chemicals.

(2) Despite any other provision of this Part, an employer must ensure that wire is not used in a tieback system for securing a scaffold to a building or structure.

### **PLATFORMS: SECURED AND MINIMUM WIDTH**

28.9 (1) An employer must ensure that a scaffold platform is secured to prevent movement and is at least:

- (a) 500 mm wide nominally; or
- (b) 1.5 m wide nominally, if it is used by workers who are bricklayers, stonemasons, plasterers or a similar tradespeople, and the scaffold is used to hold their immediate supply of building materials.

(2) Despite clause (1)(a), where a scaffold platform forms part of a lean-to scaffold and consists of a commercially manufactured plank, the platform must be at least 400 mm wide.

### **MANUFACTURED OR WOOD PLANKS**

28.10 (1) Where a scaffold platform consists of commercially manufactured planks, an employer must ensure that the planks are used, stored, inspected and maintained in accordance with the manufacturer's specifications.

(2) When a scaffold platform consists of wood planks, an employer must ensure that:

- (a) each individual plank is secured to prevent movement;
- (b) the planks;
  - (i) are constructed of nominal 50 mm x 250 mm No. 1 construction grade lumber (S-P-F),
  - (ii) are 5 m or less in length and have the same thickness as the adjoining planks,
  - (iii) are laid tightly together side-by-side with adjoining planks to cover the full width of the scaffold platform, and
  - (iv) extend at least 150 mm, but not more than 300 mm, beyond the end supports of the scaffold, and
- (c) if the planks overlap;
  - (i) the overlap must be centred directly over a vertical support of the scaffold, and
  - (ii) despite subclause (b)(iv), the overlapping planks extend at least 300 mm beyond the end supports of a scaffold.

(3) Where the platform consists of wood planks, an employer must ensure that the scaffold has vertical supports for the planks at least every 2.5 m.

### **WORK LIMITATIONS**

28.11 An employer must ensure that a worker who installs, alters or dismantles a scaffold:

- (a) works from a section of the scaffold that conforms with the requirements of this Part; or
- (b) uses a fall protection system that meets the requirements of Part 14 (Fall Protection).

### **COMPETENT PERSONS TO SUPERVISE AND INSPECT**

28.12 An employer must appoint one or more competent persons who are responsible for:

- (a) supervising the installation, dismantling and removal of a scaffold;
- (b) inspecting the components of a scaffold for defects before the scaffold is first used, and after that, before it is used on any particular day; and
- (c) ensuring that any component found to be defective is repaired or replaced before the scaffold is used or is continued to be used.

### **WORKERS USING SCAFFOLDS**

28.13 (1) An employer must ensure that:

- (a) no scaffold is loaded in excess of its rated load; and
- (b) a worker who is permitted or required to work on a scaffold;
  - (i) is informed of its rated load, and
  - (ii) does not carry any materials or equipment while climbing a scaffold.

(2) An employer must ensure that adequate overhead protection is provided where any worker is required or permitted to work:

- (a) beneath the affected part of a scaffold that is being installed, altered or dismantled; or
- (b) where there is a risk of material falling on the worker who is working on the scaffold platform or in the area of the scaffold.

### **LEAN-TO SCAFFOLD**

28.14 (1) An employer must ensure that a lean-to scaffold is not more than 5 m above grade.

(2) An employer must ensure that, if there is a risk that a worker using a lean-to scaffold may fall three or more metres, the worker uses a fall protection system that meets the

requirements of Part 14 (Fall Protection).

### **LADDER-JACK SCAFFOLD**

28.15 (1) An employer must ensure that a ladder-jack scaffold is not more than 5 m above grade.

(2) For a ladder-jack scaffold, an employer must ensure that it is designed and constructed:

- (a) in compliance with the requirements of ANSI Standard A10.8-2001, Safety Requirements for Scaffolding - American National Standard for Construction and Demolition Operations; and
- (b) so that it has ladders that are spaced not more than 2.5 m apart and that it bears on;
  - (i) both the side rails and the ladder rungs, or
  - (ii) the ladder rungs only, but only if the bearing area of each rung is at least 254 mm.

(3) An employer must ensure that:

- (a) a ladder-jack scaffold is maintained in as level a position as possible;
- (b) no more than two workers are on a ladder-jack scaffold at any one time; and
- (c) if there is a risk that a worker using a ladder-jack scaffold may fall three or more metres, the worker uses a fall protection system that meets the requirements of Part 14 (Fall Protection).

### **TUBULAR FRAME SCAFFOLD**

28.16 For a tubular frame scaffold, an employer must ensure that:

- (a) any necessary base plates, shore heads, extension devices or screwjacks are securely installed and securely attached to the sills and the legs of the frame; and
- (b) if frames are stacked, there are no gaps between the lower end of one frame and the upper end of the frame below it.

### **BRACKET SCAFFOLD**

28.17 (1) For a bracket scaffold, an employer must ensure that the brackets are securely attached to prevent them from dislodging and are not more than 3 m apart.

(2) Subsection 28.10(3) does not apply to a bracket scaffold.

### **OUTRIGGER SCAFFOLD**

28.18 Where an outrigger scaffold is used, an employer must ensure that:

- (a) counterweights are not used to support it unless prior approval has been obtained from a professional engineer; and
- (b) unless it is designed for the following uses by a professional engineer, it is not used;
  - (i) to store construction materials,
  - (ii) as a crane loading platform.

### **SINGLE-POLE SCAFFOLD**

28.19 For a single-pole scaffold, an employer must ensure that:

- (a) it is adequately supported in two directions by a system of diagonal braces that are not more than 6 m long, and connected to the vertical supports as close to the ledgers as possible; and
- (b) each of its ledgers are supported by a bearer that is securely fastened to the structure.

### **MOBILE SCAFFOLDS**

28.20 (1) For a mobile scaffold, an employer must ensure that:

- (a) it is stable;
- (b) if its height is more than three times its least lateral dimension measured at the base, it is equipped with outriggers, guy wires or other necessary means to prevent it from overturning;
- (c) it has castors or wheels that are equipped with suitable braking devices or blocked to prevent it from moving; and
- (d) if it has pneumatic tires, its outriggers or stabilizers are used in a manner that ensures the weight of the scaffold does not rest on the tires during use.

(2) An employer must ensure that no worker remains on a mobile scaffold when it is being moved unless:

- (a) the surface over which it is to travel is firm, level and free of obstructions;
- (b) the worker on it is secured to the building or structure by an independent fall protection system; and
- (c) the worker remains within the confines of the mobile scaffold.

### **STANDARDS RE SUSPENDED WORK PLATFORMS**

28.21(1) An employer must ensure that a suspended work platform used at a workplace is designed, and constructed, installed, maintained, used and dismantled in accordance

with CAN/CSA Standard-Z271-1998 (R2004), Safety Code for Suspended Elevating Platforms, and CAN/CSA Standard-Z91-02, Health and Safety Code for Suspended Equipment Operations.

(2) An employer must ensure that:

- (a) a suspended work platform constructed at a workplace is designed and certified by a professional engineer; and
- (b) the professional engineer's specifications for the design, construction, installation, maintenance, use and removal of the suspended work platform are in accordance with the standards under subsection (1).

(3) Subject to section 28.3, an employer must ensure that the manufacturer's specifications for a commercially manufactured suspended work platform used at a workplace are in accordance with the standards under subsection (1).

### **PRIOR NOTIFICATION OF SUSPENDED WORK PLATFORM USE**

28.22 (1) An employer who proposes to use a suspended work platform at a height in excess of 3 m above ground must give notice of the following to the division at least eight hours before the platform is suspended:

- (a) the name and address of the employer;
- (b) the location of the workplace where the suspended work platform is to be used;
- (c) a description of the type of suspended work platform to be used, including particulars on lifelines, thrust-outs, counterweights and tiebacks;
- (d) the date when use of the suspended work platform will begin; and
- (e) the name of the worker who will supervise the use of the suspended work platform.

(2) Upon receiving a notice that complies with subsection (1), the division must assign a serial number to the worksite where the suspended work platform is to be used and provide the serial number to the employer.

(3) An employer must not require or permit a worker to work on a suspended work platform until the employer receives the serial number for the worksite described in subsection (2).

### **REQUIREMENTS FOR SUSPENDED WORK PLATFORMS**

28.23 (1) For a suspended work platform, an employer must ensure that:

- (a) it is equipped with a secondary safety device that will activate if the suspension rope connection or primary hoisting system fails;
- (b) hooks used to support it are equipped with positive and secure safety latches;

- (c) cables, hooks, eyebolts, shackles and similar hoisting components used to support it are;
  - (i) rated by the manufacturer for specific load conditions, and
  - (ii) capable of supporting 10 times the rated load,
- (d) every mechanical hoisting device used for raising or lowering it is equipped with an automatically operating locking mechanism to prevent free running of the suspension ropes; and
- (e) if cornice hooks are used to support it;
  - (i) the hooks are securely supported on parts of the building or structure that have adequate strength to carry the load that will be or is likely to be imposed, and
  - (ii) the hooks are secured by an independent tieback from the load ring to a solid anchor on the building or structure.

(2) Where a manually operated suspended work platform is to be used, an employer must ensure that:

- (a) the platform is equipped with spring-actuated locking pawls;
- (b) the hoisting mechanism is locked in a positive drive position by means of a spring-steel locking pin; and
- (c) the locking pin is permanently attached to the hoisting mechanism by a light chain.

### **TIE-IN GUIDES AND BUILDING REQUIREMENTS**

28.24 (1) Where a building or structure more than five storeys or 15 m in height will be serviced by a suspended work platform, the owner must ensure that the building or structure is designed and constructed with:

- (a) fixed anchor points that meet the requirements of CSA Standard CSA Z271-98 (R2004), Safety Code for Suspended Elevating Platforms; and
- (b) tie-in guides that provide a positive means of engagement between the platform and the building or structure during the full vertical or inclined travel of the platform on the face of the building or structure.

(2) Subsection (1) also applies to the owner of a building or structure that was constructed on or after July 2, 1985, if:

- (a) the building or structure is more than five storeys or 15 m in height; and
- (b) its windows are cleaned or maintained from its exterior.

### **PROFESSIONAL ENGINEER'S CERTIFICATION**

28.25 When a suspended work platform is permanently installed on a building or structure, the owner of the building or structure must ensure that:

- (a) a professional engineer certifies, before its first use, that the anchor points, platform, the platform's suspension system and all components of the suspension system are safe; and
- (b) the anchor points are inspected at least annually to ensure the anchor points are safe.

### **PORTABLE OUTRIGGER BEAMS AND SIMILAR SUPPORTS**

28.26 (1) An employer must ensure that a portable outrigger beam or other similar support structure of a suspended work platform:

- (a) is designed and constructed to support at least four times the weight of the platform and its rated load;
- (b) is located;
  - (i) plumb to the stirrups of the platform,
  - (ii) at right angles, or as near as practicable to right angles, to the face of the building or structure, and
  - (iii) so that the outboard portion of the beam does not extend more than 1 m beyond its fulcrum point, and
- (c) is securely tied-back to a secure anchor on the building or structure which is capable of supporting the weight of the suspended work platform.

(2) When counterweights are used in conjunction with a portable outrigger beam or similar support structure, an employer must ensure that the length of the inboard portion of the beam or support structure is not less than three times the outboard portion, and the counterweights are:

- (a) secured to the beam or support structure when in use; and
- (b) not made up of bagged or loose material.

### **WIRE OR FIBRE ROPE USED TO SUSPEND PLATFORMS**

28.27 (1) An employer must ensure that only wire rope is used to suspend a suspended work platform. The wire rope used must be:

- (a) 8 mm or greater in diameter;
- (b) capable of supporting 10 times the weight of the platform and its rated load;
- (c) continuous and unspliced, except for terminal eye splices; and
- (d) long enough to permit the platform to be lowered to a safe landing.

(2) Despite subsection (1), fibre rope may be used to suspend a boatswain's chair if:

- (a) the fibre rope is;
  - (i) at least 20 mm in diameter, and
  - (ii) capable of supporting 10 times the weight of the chair and its rated load,
- (b) the boatswain's chair is not suspended 30 m or more above the ground; and

- (c) the rope is not exposed to the effects of corrosive chemicals, heat, cold, abrasion or other adverse conditions.

(3) An employer must ensure fibre rope is not used as a lifeline if it is exposed to the effects of corrosive chemicals, heat, cold, abrasion or other adverse conditions.

### **RATED LOAD TO BE MARKED**

28.28 An employer must ensure that:

- (a) the rated load of a suspended work platform is permanently and legibly marked on the platform;
- (b) a worker who is required to work on a suspended work platform is informed of its rated load; and
- (c) the suspended work platform is not loaded in excess of its rated load.

### **COMPETENT PERSON TO INSTALL, OPERATE AND INSPECT**

28.29 When a suspended work platform is to be used at a workplace, an employer must:

- (a) appoint one or more competent persons to install it, and once it is installed, to operate it; and
- (b) ensure that when it is in use, the platform and all of its components, and any machine or equipment that is used to hoist the platform, are inspected daily by a competent person.

### **WORKERS USING SUSPENDED WORK PLATFORM**

28.30 When a worker is required to use a suspended work platform, an employer must ensure that:

- (a) there is one worker to operate each suspension when raising or lowering the platform;
- (b) the platform is maintained in as level a position as possible, and in no case is it out of level by more than 10% of the platform's length;
- (c) every worker on the platform is secured at all times to an independent vertical lifeline that meets the requirements of Part 14 (Fall Protection), so that the failure of the suspended work platform will not cause a failure of the lifeline support system;
- (d) except in an emergency, a lifeline or a suspension rope of the platform is not used by a worker as a means of access to or egress from the platform; and
- (e) where a boatswain's chair is used, the worker is attached to a separately secured lifeline that is independent of the chair support system.

### **WORK AREA BELOW A SUSPENDED WORK PLATFORM**

28.31 When a suspended work platform is in use, an employer must ensure that:

- (a) the work area below the platform is roped off or barricaded in a suitable manner; and
- (b) warning signs are posted in a conspicuous location to advise persons of the overhead hazard.

### **BRIDGING NOT TO BE USED**

28.32 An employer must ensure that two or more suspended work platforms are not bridged together by the use of planks or any other connection.

### **GENERAL RESTRICTION RE USE OF CRANE**

28.33 (1) An employer may only permit a crane to be used to hoist a personnel basket or cage where it is not reasonably practicable to carry out the required work by use of a scaffold or other type of elevated work platform that does not include the use of a crane.

(2) The prior notification requirements of section 28.22 apply whenever a crane is used to hoist a personnel basket or cage, regardless of the height of the hoisting operation.

### **BASKET OR CAGE REQUIREMENTS WHEN CRANE USED**

28.34 (1) Despite section 28.21, when a crane is used to hoist a personnel basket or cage, an employer must ensure that the personnel basket or cage:

- (a) is designed by a professional engineer in accordance with CAN/CSA Z150-98 (R2004), Safety Code on Mobile Cranes, and is constructed in accordance with the design specifications certified by the engineer;
- (b) is equipped with;
  - (i) anchor points located above the load hook of the personnel basket or cage for the attachment of a worker's fall arrest system,
  - (ii) a guardrail that meets the requirements of Part 14 (Fall Protection), and
  - (iii) a skid resistant deck,
- (c) has more than one means of suspension or support, and is designed, constructed and maintained so that the failure of one of the means will not cause the collapse of all or part of it;
- (d) is designed and constructed so that it remains horizontal at all times;
- (e) is suspended from, or supported by, a direct attachment to the boom of the crane; and
- (f) has the following legibly and permanently marked in a conspicuous place on it;
  - (i) the maximum number of workers who may occupy the personnel basket or cage,
  - (ii) its weight,
  - (iii) the crane type for which it has been designed,

(iv) any other information necessary for safe operation of the personnel basket or cage.

(2) An employer must ensure that the professional engineer who designed the personnel basket or cage:

- (a) inspects it before its first use; and
- (b) certifies that it has been manufactured in accordance with his or her design specifications.

### **CRANE REQUIREMENTS AND DOCUMENTATION**

28.35 (1) An employer must ensure that a crane used to hoist a personnel basket or cage:

- (a) is equipped with;
  - (i) fail-safe mechanisms that prevent the boom and the personnel basket or cage from free falling in the event of a power or system failure or the inadvertent release of any operating controls, and
  - (ii) an automatic limit switch that prevents the personnel basket or cage and load from reaching beyond the highest permissible position specified by the crane manufacturer,
- (b) has, on its hoist line, hooks that are equipped with self-closing safety latches at the point where the personnel basket or cage is suspended;
- (c) is not used to hoist material when the personnel basket or cage is being used to support a worker;
- (d) is not loaded in excess of 25% of its rated load; and
- (e) has a clearly visible and legible load chart, revised in accordance with clause (d) by a professional engineer, that is affixed in a conspicuous place on the crane.

(2) An employer must keep all design drawings, test reports, written statements and certification documents required under this section and section 23.34 with the crane at all times during a hoisting operation.

### **OPERATING REQUIREMENTS**

28.36 When a crane is used to hoist a personnel basket or cage, an employer must ensure that:

- (a) emergency rescue procedures are developed and implemented for the hoisting operation;
- (b) the workers involved in the hoisting operation are informed of those emergency rescue procedures;
- (c) there is an adequate means of communication between the worker or workers in the personnel basket or cage and the crane operator; and
- (d) every worker in the personnel basket or cage;

- (i) wears a full body harness that is connected independently to a fixed anchor point located above the crane's load hook, and
- (ii) uses the harness in accordance with Part 14 (Fall Protection).

### **STANDARDS RE SELF-ELEVATING WORK PLATFORMS AND AERIAL DEVICES**

28.37 (1) An employer must ensure that a self-elevating work platform or aerial device used at a workplace is designed, and constructed, installed, maintained, used and dismantled, in accordance with:

- (a) CAN/CSA Standard-B354.1-04, Portable Elevating Work Platforms;
- (b) CAN/CSA Standard-B354.2-01 (R2006), Self-propelled Elevating Work Platforms;
- (c) CAN/CSA Standard-B354.4-02, Self-propelled Boom-Supported Elevating Work Platforms; or
- (d) CSA Standard C225-00 (R2005), Vehicle-Mounted Aerial Devices.

(2) An employer must ensure that:

- (a) a self-elevating work platform or aerial device constructed at a workplace is designed and certified by a professional engineer; and
- (b) the professional engineer's specifications for its construction, installation, maintenance, use and removal are in accordance with the standards under subsection (1).

(3) Subject to section 28.3, an employer must ensure that the manufacturer's specifications for a commercially manufactured self-elevating work platform or aerial device used at a workplace are in accordance with the standards under subsection (1).

(4) An employer must ensure that structural repairs and modifications to the components of a self-elevating work platform or aerial device are:

- (a) made only under the direction and control of a professional engineer; and
- (b) certified by the professional engineer that the workmanship and quality of the materials used has restored the components to not less than their original capacity.

### **GUARDING**

28.38 An employer must ensure that each self-elevating work platform and aerial device used at a workplace is equipped with:

- (a) suitable guards to prevent a worker from contacting the moving parts and machinery, including protection from shearing hazards created by the movement

- of the platform; and
- (b) guardrails and toe-boards on all open sides or an enclosure that is at least 900 mm in height.

### **FALL PROTECTION**

28.39 (1) An employer must ensure that a worker using a self-elevating work platform or aerial device:

- (a) uses a fall arrest system that meets the requirements of Part 14 (Fall Protection) when;
  - (i) the platform or aerial device is being elevated, lowered or moved, or
  - (ii) the worker steps beyond the guardrail, and
- (b) has the lanyard of the fall arrest system attached in accordance with the specifications of;
  - (i) the manufacturer of the work platform or aerial device, or
  - (ii) a professional engineer.

(2) An employer must ensure that a lifeline is of an appropriate length to prevent a worker from being ejected from the self-elevating work platform or aerial device if it collapses.

(3) Despite subsection (1), a fall arrest system is not required for a worker who remains within the confines of the guardrail of a scissor lift while the lift is being raised or lowered.

### **MAINTENANCE, RECORDS AND MANUALS**

28.40 (1) An employer and a supplier must, while a self-elevating work platform or aerial device is in their possession:

- (a) maintain it so that it is safe for use;
- (b) keep a permanent record of all inspections, tests, repairs, modifications and maintenance performed on it; and
- (c) ensure that its operator's manual is kept with it.

(2) A record under subsection (1)(b) must include the name and signature of the person who maintains it and the person who performs an inspection, test, repair or modification on it.

### **SIGNS**

28.41 An employer and a supplier of a self-elevating work platform or aerial device must ensure that the platform or device has signs that are clearly visible and legible to an operator at its controls indicating the following:

- (a) the identity of the supplier;

- (b) the name and number of the standard to which the platform or aerial device was designed;
- (c) its rated load;
- (d) all limiting operating conditions, including the use of outriggers, stabilizers and extendable axles;
- (e) the specific firm level surface conditions required for use of the platform or aerial device in the elevated position;
- (f) any warnings specified by the manufacturer;
- (g) except for a boom-type elevating work platform, the direction of machine movement for each operating control.

### **CLIMBING PROHIBITED**

28.42 An employer must ensure that no worker climbs on the extension mechanism or the boom of a self-elevating work platform or aerial device.

### **USE OF THE SELF-ELEVATING WORK PLATFORM OR AERIAL DEVICE**

28.43 An employer must ensure that a self-elevating work platform or aerial device:

- (a) is used only in accordance with the specifications of its manufacturer or those of the professional engineer who designed it;
- (b) is not loaded in excess of its rated load, or loaded or used in a manner that affects its stability or endangers a worker;
- (c) is used only on a firm level surface that complies with the conditions required for its use;
- (d) is not moved unless all workers on it are protected from falling; and
- (e) when elevated, is accessed by a worker only if procedures for doing so have been established in accordance with the manufacturer's specifications or those of the professional engineer who designed it, and then only in accordance with those procedures.

### **INSPECTION**

28.44 An employer must ensure that a competent person inspects a self-elevating work platform or aerial device before it is first used and daily when it is in use.

### **DESIGN AND CONSTRUCTION**

28.45 An employer must ensure that an elevated work platform mounted on a forklift:

- (a) is commercially manufactured or constructed in accordance with the specifications certified by a professional engineer;
- (b) is designed by the manufacturer of the forklift or a professional engineer to

- support safely the load that it is expected to support;
- (c) is equipped with guardrails and toe-boards that meet the requirements of Part 14 (Fall Protection);
  - (d) is equipped with a screen or similar barrier along the edge of the platform adjacent to the mast of the forklift to prevent a worker from coming into contact with the mast drive mechanism;
  - (e) has a skid-resistant deck;
  - (f) has the following legibly and permanently marked in a conspicuous place on it;
    - (i) the maximum number of workers who may occupy the platform,
    - (ii) the weight of the platform and its rated load,
    - (iii) the forklift type for which it has been designed,
    - (iv) any other information necessary for its safe operation, and
  - (g) is securely attached to the forks and carriage of the forklift.

### **USE OF FORKLIFT-MOUNTED WORK PLATFORM**

28.46 When a worker is on a work platform mounted on a forklift, an employer must ensure that:

- (a) the forklift is on a stable, level surface, unless it is a rough terrain forklift; and
- (b) the operator of the forklift remains at its controls when the platform and the forklift are in the elevated position.

### **FALL ARREST SYSTEM**

28.47 An employer must ensure that:

- (a) a worker on a work platform mounted on a forklift uses a fall arrest system that meets the requirements of Part 14 (Fall Protection); and
- (b) the fall arrest system is attached at an anchor point specified by the professional engineer who designed the work platform.

### **Operation of Mines Regulation, Man. Reg. 228/94**

This document has been repealed and replaced by Operation of Mines Regulation Man. Reg. 212/2011.

### **INFORMATION RE PERSONAL PROTECTIVE EQUIPMENT**

4.4 An employer must inform the committee and the workers of the measures taken under section 2.1 of the Workplace Safety and Health Regulation, Manitoba Regulation 217/2006, to eliminate or reduce risk at the workplace if, under subsection (3) of that provision, the employer is required to ensure that a worker uses personal protective equipment.

### **WORKPLACE ENVIRONMENT**

4.16 (3) If a worker is permitted to work in a workplace under subsection (2) the employer must:

- (a) advise the worker of the conditions in the workplace and of precautions the worker must take;
- (b) ensure that the worker entering or remaining in the workplace wears suitable personal protective equipment;
- (c) post and maintain signs warning of the hazardous conditions at the entrances to the workplace;
- (d) promptly inform the committee and a mines inspector in writing of the circumstances and the protective measures implemented; and
- (e) ensure that the worker does not work in isolation.

### **ELECTRICAL EQUIPMENT MUST BE DE-ENERGIZED**

11.8 (2) If it is not reasonably practicable to de-energize electrical equipment before electrical work is done, the employer must ensure that no electrical worker begins work on energized electrical equipment until:

- (a) the employer, in consultation with the worker, has;
  - (i) assessed the conditions or circumstances under which the electrical worker is required to work, and
  - (ii) developed safe work procedures that include the use of safety equipment appropriate for the task in a manner that meets the requirements of CSA Standard Z462 - Workplace Electrical Safety,
- (b) the employer and the electrical worker have agreed to the safe work procedures developed under subclause (a)(ii);
- (c) the electrical worker has been trained in the safe work procedures;
- (d) the employer has designated a worker who is trained in emergency response procedures as a standby worker at the location where the electrical work is to be done; and
- (e) the electrical worker and the designated worker wear all personal protective equipment appropriate for the work to be done.

### **UNVENTILATED OR UNSAFE MINE AREA**

13.2 (2) Before any other person enters or is permitted to enter a section of a mine that is not ventilated or maintained in a safe condition the employer must ensure that the atmosphere is tested and conditions examined, as the case may be, by competent personnel who are using appropriate personal protective equipment.

### **APPLICATION OF THIS PART**

12.1 This Part applies to open pits and quarries.

### **PROTECTING OPEN PIT AND QUARRY WORKINGS**

12.2 (1) The employer must ensure that a surface mine working or open face is securely fenced or otherwise protected against inadvertent entry by persons when:

- (a) the working constitutes a hazard by reason of its depth;
- (b) the approaches to and openings of the working are not readily visible; or
- (c) the hazard caused by the working is greater than the hazard caused by natural topographical features within 600 m of the working.

(2) The employer must maintain a protective curb or ridge of material at an open pit or quarry along the outer edge of the following:

- (a) a ramp;
- (b) a roadway that is within 20 m of a hazardous slope in the open pit or quarry;
- (c) a bench, when mobile equipment other than drilling machines is operated within 8 m of the edge of the bench.

(3) The height of a curb referred to in subsection (2) must be:

- (a) the greater of;
  - (i) 1 m, or
  - (ii) one-half the diameter of the largest wheel of the equipment in use, and
- (b) in the case of a curve, of sufficient height to stop runaway mobile equipment.

### **OPEN PIT AND QUARRY WORKINGS**

12.3 In an open pit or quarry, the employer must ensure that:

- (a) all earth, clay, sand or gravel, loose rock, trees and other vegetation is removed and the bedrock exposed within 2 m of the rim of the working;
- (b) the material beyond 2 m from the rim of the working is sloped to an angle that precludes subsidence into the working; and
- (c) all benches are less than 20 m in height.

### **DESIGN OF OPEN PIT AND QUARRY WORKINGS**

12.4 When three or more benches are to be mined in an open pit or quarry, the employer must:

- (a) provide to a mines inspector a report on the design that has been certified by a professional engineer that includes;
  - (i) the general layout,
  - (ii) bench heights and berm widths,
  - (iii) ramp design,
  - (iv) overall slopes,
  - (v) stability studies,

- (vi) blasting procedures to be used,
  - (vii) provision for water removal,
  - (viii) scaling techniques,
  - (ix) additional wall support, and
  - (x) a wall monitoring program,
- (b) review the open pit or quarry design with the committee before development begins; and
- (c) operate the open pit or quarry in accordance with the design.

### **EXAMINING THE FACE**

12.5 (1) Before permitting a person to work near the face of an open pit or quarry, the employer must ensure that a supervisor examines the face for hazardous conditions:

- (a) following a blast; and
- (b) at least daily.

(2) The supervisor must ensure that corrective action is taken if hazardous conditions are encountered during an examination.

### **FALL PROTECTION**

12.6 A worker must not work and the employer must not permit or require a worker to work on the wall of an open pit or quarry or within 3.5 m of the crest when there is danger of the worker falling more than 1.5 m, unless the worker:

- (a) has adequate fall protection that meets the requirements prescribed in sections 14.2 to 14.23 of the Workplace Safety and Health Regulation; and
- (b) is not working alone.

### **UNDERCUTTING FACE**

12.7 The employer and a worker must not require or permit a working face to be advanced by undercutting.

### **WORKING UNCONSOLIDATED MATERIAL**

12.8 (1) In workings of clay, sand, gravel or other type of unconsolidated material the employer must ensure that:

- (a) a working face with a vertical height of more than 2 m is worked by mechanical means;
- (b) when mobile equipment is used in loading unconsolidated material, the working face has a vertical height no greater than can be reached by the equipment being used; and
- (c) when ripping is required to loosen frozen material, the equipment;

- (i) is operated perpendicularly to the working face, and
- (ii) does not approach closer to the working face than a distance equal to the height of the face.

(2) In subsection (1), "working face" means a place where unconsolidated material is loaded and the material is at an angle steeper than 45° from the horizontal.

### **DUMPING FROM MOBILE EQUIPMENT**

12.9 (1) When material is dumped from mobile equipment into a raise or over a bank or bench, the employer must:

- (a) provide and maintain a bumper block or ridge of material that prevents the mobile equipment from sliding into the raise or over the bank or bench;
- (b) not require or permit material to be dumped at a location where the ground at the dumping place could fail to support the weight of loaded mobile equipment;
- (c) ensure that mobile equipment approaches the dump in a way that gives the operator an unobstructed view of the raise, bank or bench; and
- (d) ensure that every dump point has suitable and adequate illumination and signage.

(2) The employer must:

- (a) develop and implement safe work procedures that include the items referred to in subsection (1);
- (b) train workers in the safe work procedures; and
- (c) ensure that workers comply with the safe work procedures.

### **HAUL ROADS**

12.10 (1) The employer or owner must ensure that all haul roads are designed, constructed and maintained to provide:

- (a) at least 2.5 times the width of the widest mobile equipment on the road where dual lane traffic exists; and
- (b) at least two times the width of the widest mobile equipment on the road where single lane traffic exists.

(2) The employer must:

- (a) develop and implement safe work procedures for towing equipment on a haul road ramp;
- (b) train workers in the safe work procedures; and
- (c) ensure that workers comply with the safe work procedures.

(3) In respect of a haul road, if reasonably practicable, an employer must provide clearly

marked emergency runaway lanes or retardation barriers in suitable locations that are capable of bringing runaway mobile equipment to a stop, where:

- (a) a sharp bend in the haul road exists that creates a risk to the operator of mobile equipment and the grade of the haul road exceeds;
  - (i) 6%, for articulated bottom-dump trucks, or
  - (ii) 8%, for non-articulated end-dump trucks, or
- (b) a mines inspector directs the employer or owner to do so.

(4) The employer must:

- (a) develop and implement safe work procedures for traffic control on a haul road;
- (b) train workers in the safe work procedures; and
- (c) ensure that workers comply with the safe work procedures.

### **ROTARY DRILLING**

12.11 (1) The operator of a rotary drill must not remain on the deck while the drill is running if by so doing the operator is exposed to a hazard or possible hazard.

(2) In the event of a power failure, the operator must ensure that all controls on a rotary drill are placed in the off or neutral position to avoid possible hazards caused by an inadvertent start-up.

### **PARKING POWERED MOBILE EQUIPMENT**

12.12 An operator must not park powered mobile equipment and the employer must not permit the parking of powered mobile equipment where the operator is or could be endangered by an operating shovel, loader, production truck, bulldozer or other mobile equipment.

### **LOADING TRUCKS**

12.13 (1) The employer must:

- (a) develop and implement safe work procedures for trucks being loaded by mobile equipment;
- (b) train workers in the safe work procedures; and
- (c) ensure that workers comply with the safe work procedures.

(2) The safe work procedures under subsection (1) must ensure that:

- (a) the load does not pass over unprotected workers; and
- (b) no worker remains in the cab of a truck being loaded unless;
  - (i) suitable protection is provided above and behind the truck cab, or
  - (ii) adequate spacing is provided between the truck cab and the truck box.

### **ELECTRICAL CABLE**

12.14 When a worker must handle energized electrical cable that is energized in excess of 300 volts line to line or 150 volts to ground, the employer must establish safe work procedures for handling electrical cable that conform to section 11.9.

### **UNPROTECTED ELECTRICAL CABLE**

12.15 A worker must not drive mobile equipment and the employer must not require or permit a worker to drive mobile equipment over an electrical cable or conductor without protection that meets the requirements of the CSA Standard C22.1 - Canadian Electrical Code, and CSA Standard M421 - Use of Electricity in Mines.

### **LIGHTING**

12.16 Where a hazard would be caused by a lack of lighting, the employer must provide suitable lighting for all areas where:

- (a) trucks are loaded or dumped; or
- (b) explosives are loaded in a blast hole between dusk and dawn.

### **ABANDONING THE HEADING**

12.17 The employer must ensure that before a heading is abandoned or work in it is discontinued:

- (a) the ore or rock broken is cleared from the face, floor and bench;
- (b) the face, floor and bench are examined for misholes or cut-off holes; and
- (c) bootlegs are marked.

## **Saskatchewan**

### **Occupational Health and Safety Regulations, 1996, R.R.S., C. O-1.1, R. 1**

#### **PERSONAL FALL ARREST SYSTEMS**

102 (1) An employer or contractor shall ensure that a personal fall arrest system and connecting linkage required by these regulations are approved and maintained.

(2) An employer or contractor shall ensure that a personal fall arrest system required by these regulations:

- (a) prevents a worker from falling more than 1.2 metres without a shock absorber;
- (b) where a shock absorber is used, prevents a worker from falling more than two metres or the limit specified in the manufacturer's specifications, whichever is less;
- (c) applies a peak fall-arrest force not greater than eight kilonewtons to a worker; and
- (d) is fastened to a lifeline or to a secure anchor point that has a breaking strength of at least 22.2 kilonewtons.

[Sask. Reg. 67/2007, s. 8]

#### **FULL-BODY HARNESS**

103 Where a full-body harness is used, an employer or contractor shall ensure that:

- (a) the full-body harness and connecting linkage are approved and maintained;
- (b) the full-body harness is properly fitted to the worker;
- (c) the worker is trained in the safe use of the full-body harness;
- (d) all metal parts of the full-body harness and connecting linkage are of drop-forged steel 22.2 kilonewtons proof tested;
- (e) a protective thimble is used to protect ropes or straps from chafing whenever a rope or strap is connected to an eye or a D-ring used in the fullbody harness or connecting linkage; and
- (f) the connecting linkage is attached to a personal fall arrest system, lifeline or secure anchor point to prevent the worker from falling more than 1.2 metres.

[Sask. Reg. 67/2007, s. 8]

#### **SNAP HOOKS ON PERSONAL FALL ARREST SYSTEM**

104 Where a snap hook is used as an integral component of a personal fall arrest system, connecting linkage, full-body harness or lifeline, an employer or contractor shall ensure that the snap hook is self-locking and is approved and maintained.

[Sask. Reg. 67/2007, s. 8]

#### **LANYARDS**

105 An employer or contractor shall ensure that a lanyard:

- (a) is as short as work conditions permit;
- (b) is constructed of;
  - (i) nylon, polyester or polypropylene rope or webbing, or
  - (ii) wire rope that is equipped with an approved shock absorbing device,
- (c) is equipped with suitable snap hooks; and
- (d) is approved and maintained.

### **WORKERS' RESPONSIBILITIES RE LIFELINES, ETC.**

106 (1) Before using a lifeline or lanyard, a worker shall ensure that the lifeline or lanyard:

- (a) is free of imperfections, knots and splices, other than end terminations;
- (b) is protected by padding where the lifeline or lanyard passes over sharp edges;  
and
- (c) is protected from heat, flame or abrasive or corrosive materials during use.

(2) Before using a vertical lifeline, a worker shall ensure that:

- (a) the lower end extends to the ground or to a safe landing; and
- (b) the lifeline is protected at the lower end to ensure that the line cannot be fouled by any equipment.

(3) Before using a full-body harness, a worker shall ensure that the full-body harness:

- (a) is properly adjusted to fit the worker securely; and
- (b) subject to subsection 274(5), is attached by means of a connecting linkage to a fixed anchor or a lifeline.

(4) A worker who uses a full-body harness and connecting linkage shall ensure that the connecting linkage is attached to a personal fall arrest system, lifeline or a fixed anchor.

[Sask. Reg. 67/2007, s. 9]

### **INSPECTION OF FULL BODY HARNESS, ETC.**

107 (1) Where the use of a connecting linkage, personal fall arrest system, full-body harness or lifeline is required by these regulations, an employer or contractor shall ensure that a competent person:

- (a) inspects the connecting linkage, personal fall arrest system, full-body harness or lifeline;
  - (i) as recommended by the manufacturer; and
  - (ii) after the connecting linkage, personal fall arrest system, full-body harness or lifeline has sustained a fall-arresting incident, and
- (b) determines whether the connecting linkage, personal fall arrest system, full-body harness or lifeline is safe for continued use.

(2) An employer or contractor shall ensure that a worker inspects the connecting linkage, personal fall arrest system, full-body harness or lifeline before each use and that where a defect or unsafe condition that may create a hazard to a worker is identified in a connecting linkage, personal fall arrest system, full-body harness or lifeline:

- (a) steps are taken immediately to protect the health and safety of any worker who may be at risk until the defect is repaired or the unsafe condition is corrected; and
- (b) as soon as is reasonably practicable, the defect is repaired or the unsafe condition is corrected.

[Sask. Reg. 67/2007, s. 10]

### **PROTECTION AGAINST DROWNING**

108 (1) In this section:

- (a) "buoyant apparatus" means a device that is capable of supporting the weight in water of a worker and that is constructed to:
  - (i) remain stable when floating on either side,
  - (ii) have no projections that would prevent the buoyant apparatus from sliding easily over the side of a boat or ship, and
  - (iii) require no adjustment before use,
- (b) "life jacket" means an approved device that is capable of keeping a worker's head above water in a face-up position without effort by the worker;
- (c) "personal flotation device" means an approved device that is capable of keeping a worker's head above water without effort by the worker, and includes a device that is designed to protect a worker against hypothermia.

(2) Where a worker is required to work at a place from which the worker could fall and drown, and the worker is not protected by a guardrail, an employer or contractor shall:

- (a) provide the worker with a life jacket and ensure that the worker uses it, and ensure that the rescue equipment and personnel described in subsection (3) are readily available;
- (b) provide the worker with a full-body harness and lifeline and ensure that the worker uses them; or
- (c) ensure that a net is installed that is capable of safely catching the worker if the worker falls.

(3) The rescue equipment and personnel required by clause (2)(a) must consist of:

- (a) a suitable boat equipped with a boat hook;
- (b) a buoyant apparatus attached to a nylon rope that is not less than nine millimetres in diameter and not less than 15 metres long; and
- (c) a sufficient number of properly equipped and trained workers to implement rescue procedures.

(4) An employer or contractor shall ensure that a life jacket or personal flotation device is provided for each worker who is transported by boat or works from a boat, and that each worker uses the life jacket or personal flotation device at all times when the worker is in the boat.

Also see:

### **PROTECTION AGAINST FALLING**

116 (1) In this section and sections 116.1 to 116.3:

- (a) "anchor point" or "anchor plate" means a secure connecting point capable of safely withstanding the impact forces applied by a fall protection system;
- (b) "control zone" means the area within two metres of an unguarded edge of a level, elevated work surface of three metres or more in height;
- (c) "fall protection system" means;
  - (i) a control zone as required pursuant to section 116.2,
  - (ii) a personal fall arrest system,
  - (iii) a safety net, or
  - (iv) a travel restraint system,
- (d) "permanent" means intended and designed to last indefinitely;
- (e) "similar barrier" means any barrier that the employer or contractor can demonstrate provides a level of protection that is at least equivalent to a guardrail;
- (f) "temporary" means;
  - (i) designed to be removed by the last workers using it before commissioning or turnover to the contractor or owner, and
  - (ii) intended and designed to last not more than one year,
- (g) "travel restraint system" means a system that prevents a worker from travelling to the edge of a structure or to a work position from which the worker could fall.

(2) An employer or contractor shall ensure that workers use a fall protection system at a temporary or permanent work area where:

- (a) a worker may fall three metres or more; or
- (b) there is a possibility of injury if a worker falls less than three metres.

(3) An employer or contractor shall ensure that a worker at a permanent work area is protected from falling by a guardrail or similar barrier if the worker may fall a vertical distance of more than 1.2 metres and less than three metres.

(4) Notwithstanding subsection (3), where the use of a guardrail or similar barrier is not reasonably practicable, an employer or contractor shall ensure that a worker uses a travel restraint system.

(5) Notwithstanding subsection (4), where the use of a travel restraint system is not

reasonably practicable, an employer or contractor shall ensure that a safety net or control zone or other equally effective means that protects the worker from falling is used.

(6) Subsection (2) does not apply to competent workers who are engaged in:

- (a) connecting the structural members of a skeletal steel structure or a pre-cast structure;
- (b) connecting the support structure of a scaffold;
- (c) stabilizing or securing the load on a truck or trailer;
- (d) installing or attaching a fall protection system to the anchor point;
- (e) removing or disassembling the associated parts of a fall protection system when it is no longer required; or
- (f) activities within the normal course of business on a permanent loading dock that is not greater than 1.2 metres in height.

[Sask. Reg. 67/2007, s. 11]

### **FALL PROTECTION PLAN**

116.1 (1) An employer or contractor shall develop a written fall protection plan where:

- (a) a worker may fall three metres or more; and
- (b) workers are not protected by a guardrail or similar barrier.

(2) The fall protection plan required by subsection (1) must describe:

- (a) the fall hazards at the worksite;
- (b) the fall protection system to be used at the worksite;
- (c) the procedures used to assemble, maintain, inspect, use and disassemble the fall protection system; and
- (d) the rescue procedures to be used if a worker falls, is suspended by a personal fall arrest system or safety net and needs to be rescued.

(3) The employer or contractor shall ensure that a copy of the fall protection plan is readily available before work begins at a worksite where a risk of falling exists.

(4) The employer or contractor shall ensure that a worker is trained in the fall protection plan and the safe use of the fall protection system before allowing the worker to work in an area where a fall protection system must be used.

[Sask. Reg. 67/2007, s. 11]

### **CONTROL ZONE**

116.2 (1) An employer or contractor shall ensure that a control zone:

- (a) is only used if a worker can fall from a level surface in a work area; and
- (b) is not less than two metres wide when measured from the unguarded edge.

(2) When crossing a control zone mentioned in subsection (1), a worker:

- (a) subject to subsection (4) is not required to use a fall protection system, other than the control zone, to enter or leave the work area; and
- (b) shall follow the most direct route to get to or from the unguarded edge.

(3) An employer or contractor shall ensure that a control zone is clearly marked with an effective raised warning line or other equally effective method if a worker is working more than two metres from an unguarded edge.

(4) An employer or contractor shall ensure that a worker who has to work within a control zone uses:

- (a) a travel restraint system; or
- (b) a means that is as equally effective as a travel restraint system and that prevents the worker from getting to the unguarded edge.

[Sask. Reg. 67/2007, s. 11]

#### **ANCHOR POINTS AND ANCHOR PLATES**

116.3 (1) Where a worker uses a personal fall arrest system or a travel restraint system, an employer, contractor or owner shall ensure that an anchor point or anchor plate that meets the requirements of this section is used as part of that system.

(2) An employer, contractor or owner shall ensure that a temporary anchor point used in a travel restraint system:

- (a) has an ultimate load capacity of at least 3.5 kilonewtons (800 pounds-force) per worker attached in any direction in which the load may be applied;
- (b) is installed and used according to the manufacturer's specifications;
- (c) is permanently marked as being for travel restraint only; and
- (d) is removed by the last worker from use on the earlier of:
  - (i) the date the work project for which it is intended is completed, and
  - (ii) the time specified by the manufacturer.

(3) An employer, contractor or owner shall ensure that a permanent anchor point used in a travel restraint system associated with any new construction project on or after the date this section comes into force:

- (a) has an ultimate load capacity of at least 8.75 kilonewtons (2 000 pounds-force) per worker attached in any direction in which the load may be applied;
- (b) is installed and used according to the manufacturer's specifications; and
- (c) is permanently marked as being for travel restraint only.

(4) In the case of a personal fall arrest system installed on or after one year after the date this section comes into force, an employer, contractor, owner or supplier shall ensure that anchor points to which the personal fall arrest system is attached have an

ultimate load capacity of at least 22.2 kilonewtons (5000 pounds-force) per worker attached in any direction in which the load may be applied.

(5) An employer, contractor, owner or supplier shall ensure that the following types of equipment that are components of fall protection systems, and their installation, conform to the manufacturer's specifications or are certified by a professional engineer:

- (a) permanent anchor points;
- (b) anchors with multiple attachment points;
- (c) permanent horizontal lifeline systems;
- (d) support structures for safety nets.

[Sask. Reg. 67/2007, s. 11]

### **USE OF SUSPENDED POWERED SCAFFOLDS**

186 (1) An employer or contractor shall:

- (a) develop work practices and procedures for the safe use of any suspended powered scaffold;
- (b) train the workers in the procedures required pursuant to clause (a); and
- (c) ensure that every worker complies with the procedures required pursuant to clause (a).

(2) An employer or contractor shall ensure that a suspended powered scaffold is operated by a competent worker.

(3) An employer or contractor shall ensure that all parts of a suspended powered scaffold are inspected prior to use and daily when in use.

(4) An employer or contractor shall ensure that a worker who works on a suspended powered scaffold is provided with and uses a full-body harness, connecting linkage, personal fall arrest system and lifeline that meet the requirements of Part VII.

[Sask. Reg. 67/2007, s. 18]

### **WORKERS' RESPONSIBILITIES**

187 (1) Before starting to work on a suspended powered scaffold, a worker shall inspect the scaffold to ensure that:

- (a) the thrustouts or parapet hooks are secured; and
- (b) the suspension ropes and lifelines are free from abrasion or other damage.

(2) While working on a suspended powered scaffold, a worker shall:

- (a) remain on the platform between the suspension ropes at all times;
- (b) secure from fouling all ropes from the scaffold that extend to the ground or a landing;
- (c) use a full-body harness, connecting linkage, personal fall arrest system and

- lifeline that meet the requirements of Part VII;
- (d) ensure that, when the scaffold is being moved up or down on a suspension rope, the scaffold is kept level.

(3) A worker shall not:

- (a) bridge the distance between a suspended powered scaffold and any other scaffold with planks or by any other means; or
- (b) use the lifeline or the suspension ropes as a means of access to or exit from the scaffold except in cases of emergency.

(4) A worker shall comply with the work practices and procedures developed pursuant to clause 186(1)(a).

[Sask. Reg. 67/2007, s. 19]

### **AERIAL DEVICES AND ELEVATING WORK PLATFORMS**

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

- (a) an aerial device, elevating work platform or personnel lifting unit is designed, constructed, erected, operated and maintained in accordance with an approved standard; or
- (b) a professional engineer has certified that;
- (i) an aerial device, elevating work platform or personnel lifting unit and its elevating system and mountings are safe for the purpose of raising workers and loads, and
- (ii) the components of an aerial device, elevating work platform or personnel lifting unit and its elevating system and mountings are designed in accordance with an approved standard.

(2) An employer or contractor shall not require or permit a worker to be raised or lowered by any aerial device or elevating work platform or to work from a device or platform held in an elevated position unless:

- (a) there is an adequate and suitable means of communication between the worker operating the controls and the worker raised on the platform, if they are not the same person;
- (b) the elevating mechanism is designed so that, if any failure of the mechanism occurs, the platform will descend in a controlled manner so that no worker on the platform will be endangered;
- (c) the controls are designed so that the platform will be moved only when direct pressure is applied to the controls;
- (d) the drive mechanism of any operation for moving the platform is positive and does not rely on gravity;
- (e) road traffic conditions, environmental conditions, overhead wires, cables and other obstructions do not create a danger to the worker;
- (f) the brakes of the aerial device or elevating work platform are engaged, except

- when operated in accordance with manufacturer's recommendations;
- (g) if the aerial device or elevating work platform is equipped with outriggers, the outriggers are set;
  - (h) pursuant to clause (i), the worker is provided with and is required to use a personal fall arrest system that meets the requirements of Part VII; and
  - (i) the aerial device or elevating work platform is equipped with a lanyard attachment point that is;
    - (i) designed and constructed to an approved standard, or
    - (ii) certified as safe by a professional engineer and installed and used in accordance with that design.

(3) Notwithstanding any other provision in this section but subject to section 465, an employer or contractor shall not require or permit a worker working on an exposed energized high voltage electrical conductor to work from an aerial device or elevating work platform unless the controls are operated by the worker on the device or platform.

(4) Where a worker leaves an aerial device or elevating work platform parked or unattended, an employer or contractor shall ensure that the device or platform:

- (a) is locked or rendered inoperative; or
- (b) is fully lowered and retracted with all hydraulic systems in the neutral position or incapable of operating by moving the controls.

(5) An employer or contractor shall ensure that:

- (a) a worker who operates an aerial device or elevating work platform is trained to operate the device or platform safely; and
- (b) the training includes the manufacturer's instructions and recommendations, the load limitations, the proper use of all controls and any limitations on the surfaces on which the device or platform is designed to be used.

(5.1) An employer or contractor shall ensure that, while a worker is on a work platform mounted on a forklift and the forklift is in the raised position, the operator:

- (a) remains at the controls; and
- (b) does not drive the forklift.

(6) An employer or contractor shall ensure that the manufacturer's operating manual for the aerial device or elevating work platform is kept with the device or platform at all times.

[Sask. Reg. 67/2007, s. 20]

### **RAISING AND LOWERING WORKERS**

207 (1) Where a crane or hoist will be used to raise or lower workers, the employer or contractor shall:

- (a) develop and implement work practices and procedures that will provide for the safe raising and lowering of the workers;
- (b) train the workers in those work practices and procedures;
- (c) ensure that the hoisting equipment and personnel lifting unit are inspected by a competent person before use and daily when in use; and
- (d) ensure that the competent person records the details of the inspection in the log book.

(2) An employer or contractor shall not require or permit the operator of a crane or hoist to use the crane or hoist to raise or lower workers unless:

- (a) the personnel lifting unit meets the requirements of subsection 192(1);
- (b) the suspension members of the personnel lifting unit are securely attached to the crane, hoist line or hook by a shackle, weldless link, ring or other secure rigging attachment;
- (c) there is a secondary safety device that attaches the suspension members of the personnel lifting unit to the crane or hoist rigging above the point of attachment mentioned in clause (b);
- (d) the load line hoist drum has a system or device on the power train, other than the load hoist brake, that regulates the lowering rate of speed of the hoist drum mechanism; and
- (e) workers in the personnel lifting unit use a full-body harness attached to the personnel lifting unit.

(3) An operator of a crane or hoist shall not use the crane or hoist to raise or lower workers unless:

- (a) the personnel lifting unit meets the requirements of section 192;
- (b) the suspension members of the personnel lifting unit are securely attached to the crane, hoist line or hook by a shackle, weldless link, ring or other secure rigging attachment;
- (c) there is a secondary safety device that attaches the suspension members of the personnel lifting unit to the crane or hoist rigging above the point of attachment mentioned in clause (b);
- (d) the load line hoist drum has a system or device on the power train, other than the load hoist brake, that regulates the lowering rate of speed of the hoist drum mechanism; and
- (e) workers in the personnel lifting unit use fall-arrest protection attached to the personnel lifting unit.

[Sask. Reg. 67/2007, s. 22]

### **FIXED LADDERS**

255 (1) In this section, "fixed ladder" means a ladder that is fixed to a structure in a vertical position or at an angle that is between vertical and 25 to the vertical, but does not include a ladder used in underground mining operations to which The Mines Regulations apply.

(2) A ladder that is fixed to a structure at an angle of more than 25 to the vertical, or more than one horizontal to two vertical, is deemed to be a stairway and is subject to the requirements of sections 121 and 251.

(3) An employer, contractor or owner shall ensure that:

- (a) the rungs on a fixed ladder are uniformly spaced with centres that are not less than 250 and not more than 300 millimetres apart;
- (b) a clearance of at least 150 millimetres is maintained between the rungs on a fixed ladder and the structure to which the ladder is affixed;
- (c) a fixed ladder is securely held in place at the top and bottom and at any intermediate points that are necessary to prevent sway;
- (d) the side rails of a fixed ladder extend not less than one metre above any platform, roof or other landing on the structure to which the ladder is fixed;
- (e) a ladder opening in a platform, roof or other landing does not exceed 750 millimetres by 750 millimetres;
- (f) a fixed ladder that is more than six metres high;
  - (i) is equipped with,
    - (A) platforms at intervals of not more than six metres or ladder cages, in the case of ladders installed on or before March 11, 1986; or
    - (B) platforms at intervals of not more than six metres and ladder cages, in the case of ladders installed on or after March 12, 1986; or
  - (ii) is equipped with a personal fall arrest system that meets the requirements of Part VII,
- (g) a fixed ladder in an excavated shaft is installed in a compartment that is separated from the hoist compartment by a substantial partition.

(4) Where a ladder cage is required by these regulations, an employer, contractor or owner shall ensure that:

- (a) the ladder cage is constructed of hoops that are not more than 1.8 metres apart, joined by vertical members not more than 300 millimetres apart around the circumference of the hoop;
- (b) no point on a hoop of the ladder cage is more than 750 millimetres from the ladder; and
- (c) the ladder cage is of sufficient strength and is designed to contain any worker who may lean or fall against a hoop.

(5) In the case of a ladder cage constructed before July 1, 1997, an employer, contractor or owner shall ensure that:

- (a) the lowest hoop of the ladder cage is not more than three metres from a platform, landing or the ground; and
- (b) the uppermost hoop of the ladder cage is at the level of a platform, landing or roof.

(6) In the case of a ladder cage constructed on or after July 1, 1997, an employer, contractor or owner shall ensure that:

- (a) the lowest hoop of the ladder cage is not more than 2.2 metres from a platform, landing or the ground; and
- (b) the uppermost hoop of the ladder cage extends at least one metre above the level of a platform, landing or roof.

[Sask. Reg. 67/2007, s. 23]

## **Alberta**

### **Occupational Health and Safety Code, 2009**

#### **SAFE ENTRY AND EXIT**

119 (1) An employer must ensure that every worker can enter a work area safely and leave a work area safely at all times.

(2) An employer must ensure that a work area's entrances and exits are in good working order.

(3) An employer must ensure that a work area's entrances and exits are free from materials, equipment, accumulations of waste or other obstructions that might endanger workers or restrict their movement.

(4) An employer must ensure that, if a worker could be isolated from a primary escape route:

- (a) there is a ready, convenient and safe secondary means of escape from the work area; and
- (b) the secondary escape route is readily useable at all times.

(5) An employer must ensure that all workers are familiar with escape routes from the work area.

#### **DOORS**

120 (1) An employer must ensure that doors to and from a work area can be opened without substantial effort and are not obstructed.

(2) An employer must ensure that a door used to enter or leave an enclosed area that poses a hazard to workers entering the area:

- (a) is kept in good working order; and

(b) has a means of opening it from the inside at all times.

121 (1) An employer must ensure that a walkway, runway or ramp:

- (a) is strong enough to support the equipment and workers who may use it;
- (b) is at least 600 millimetres wide;
- (c) is wide enough to ensure the safe movement of equipment and workers; and
- (d) has the appropriate toe boards and guardrails required by Part 22.

(2) An employer must ensure that the surface of a walkway, runway or ramp has sufficient traction to allow workers to move on it safely.

### **STAIRWAYS**

122 (1) An employer must ensure that:

- (a) the width of the treads and the height of the rise of a stairway are uniform throughout its length; and
- (b) the treads of a stairway are level.

(2) An employer must ensure that:

- (a) a stairway with 5 or more risers has the appropriate handrail required by this Code; and
- (b) a stairway with open sides has a handrail and an intermediate rail or equivalent safeguard on each open side.

(3) An employer must ensure that temporary stairs are at least 600 millimetres wide.

### **HANDRAILS ON STAIRWAYS**

123 (1) This section applies to stairways with 5 or more risers.

(2) An employer must ensure that a stairway is equipped with a handrail that:

- (a) extends the entire length of the stairway;
- (b) is secured and cannot be dislodged;
- (c) is between 800 millimetres and 920 millimetres above the front edge of the treads; and
- (d) is substantial and constructed of lumber that is not less than 38 millimetres by 89 millimetres or material with properties the same as or better than those of lumber.

(3) An employer must ensure that posts supporting a handrail:

- (a) are spaced not more than 3 metres apart at their vertical centres; and
- (b) are constructed of lumber that is not less than 38 millimetres by 89 millimetres or

materials with properties the same as or better than those of lumber.

### **RESTRICTION ON USE**

124 An employer must ensure that workers do not use a ladder to enter or leave an elevated or sub level work area if the area has another safe and recognizable way to enter or leave it.

### **PROHIBITION ON SINGLE RAIL**

125 A person must not make a ladder by fastening cleats across a single rail or post.

### **PROHIBITION ON PAINTING**

126 (1) Subject to subsection (2), a person must not paint a wooden ladder.

(2) A wooden ladder may be preserved with a transparent protective coating.

### **USE NEAR ENERGIZED ELECTRICAL EQUIPMENT**

127 An employer must ensure that a ladder used during the servicing of energized or potentially energized electrical equipment is made of nonconductive material.

### **LADDERS ON EXTENDING BOOMS**

128 (1) An employer must ensure that:

- (a) if a ladder is a permanent part of an extending boom on powered mobile equipment, no worker is on the ladder during the articulation, extension or retraction of the boom; and
- (b) if outriggers are incorporated in the equipment to provide stability, no worker climbs the ladder until the outriggers are deployed.

(2) Subsection (1)(a) does not apply to professional fire fighters working on fire fighting equipment.

### **SAFE USE**

129 An employer must ensure that a crawl board or roof ladder used for roof work:

- (a) is securely fastened by hooking the board or ladder over the ridge of the roof or by another equally effective means; and
- (b) is not supported by an eaves trough.

### **DESIGN CRITERIA**

130 (1) An employer must ensure that a fixed ladder installed on or after April 30, 2004 meets the requirements of PIP Standard STF05501 (February 2002), Fixed Ladders and Cages, published by the Construction Industry Institute.

(2) Despite the standards referenced in PIP Standard STF05501, an employer may

(a) use applicable Canadian material and process standards if the employer ensures that the fixed ladder is designed and installed in accordance with established engineering principles, and

(b) allow the inside diameter of a cage hoop to be as great as 760 millimetres.

(3) If a fixed ladder is made of a material other than steel, the employer must ensure that the design is certified by a professional engineer as being as strong as or stronger than that required by PIP Standard STF05501.

(4) The employer must ensure that a self-closing double bar safety gate, or equally effective barrier, is provided at ladderway floor openings and platforms of fixed ladders installed on or after April 30, 2004.

(5) Subsection (4) does not apply at landings.

(6) Section 327 applies to an access ladder attached to a scaffold.

### **FIXED LADDERS IN MANHOLES**

131 Despite section 130, fixed ladders used in pre cast reinforced concrete manhole sections installed on or after July 1, 2009 must meet the requirements of ASTM Standard C478-07, Standard Specification for Reinforced Concrete Manhole Sections.

### **REST PLATFORM EXEMPTION**

132 If each worker working on a drilling rig or service rig on a fixed ladder is equipped with and wears a climb assist device that complies with the manufacturer's specifications or specifications certified by a professional engineer, an employer is not required to:

(a) provide the ladder with rest platforms; or

(b) have the side rails extend not less than 1050 millimetres above the point at which the workers get on or off.

### **PROHIBITION**

133 (1) A worker must not perform work from either of the top two rungs, steps or cleats

of a portable ladder unless the manufacturer's specifications allow the worker to do so.

(2) Despite subsection (1), a worker may work from either of the top two rungs, steps or treads of a stepladder:

- (a) if the stepladder has a railed platform at the top; or
- (b) if the manufacturer's specifications for the stepladder permit it.

### **CONSTRUCTED PORTABLE LADDER**

134 (1) An employer must ensure that a constructed portable ladder:

- (a) is constructed of lumber that is free of loose knots or knot holes;
- (b) with a length of 5 metres or less has side rails constructed of lumber measuring not less than 38 millimetres by 89 millimetres;
- (c) more than 5 metres long has side rails constructed of lumber measuring not less than 38 millimetres by 140 millimetres;
- (d) has side rails that are not notched, dapped, tapered or spliced;
- (e) has side rails at least 500 millimetres apart at the bottom; and
- (f) has rungs that are;
  - (i) constructed of lumber measuring not less than 21 millimetres by 89 millimetres,
  - (ii) held by filler blocks or secured by a single continuous wire, and
  - (iii) uniformly spaced at a centre to centre distance of 250 millimetres to 300 millimetres.

(2) An employer must ensure that a two way constructed portable ladder that is wide enough to permit traffic in both directions at the same time:

- (a) has a centre structural rail along the length of the ladder;
- (b) is at least one metre wide; and
- (c) is constructed of materials that are substantial enough in size to accommodate the maximum intended load.

### **MANUFACTURED PORTABLE LADDER**

135 An employer must ensure that a portable ladder manufactured on or after July1, 2009 meets the requirements of:

- (a) CSA Standard CAN3-Z11-M81 (R2005), Portable Ladders;
- (b) ANSI Standard A14.1 2007, American National Standard for Ladders - Wood - Safety Requirements;
- (c) ANSI Standard A14.2 2007, American National Standard for Ladders - Portable Metal - Safety Requirements; or
- (d) ANSI Standard A14.5 2007, American National Standard for Ladders - Portable Reinforced Plastic - Safety Requirements.

### **SECURING AND POSITIONING**

136 A worker must ensure that:

- (a) a portable ladder is secured against movement and placed on a base that is stable;
- (b) the base of an inclined portable ladder is no further from the base of the wall or structure than one quarter of the distance between the base of the ladder and the place where the ladder contacts the wall; and
- (c) the side rails of a portable ladder extend at least 1 metre above a platform, landing or parapet if the ladder is used as a means of access to the platform, landing or parapet.

### **FALL PROTECTION**

137 (1) An employer must ensure that a worker working from a portable ladder from which the worker may fall 3 metres or more uses a personal fall arrest system.

(2) Subsection (1) does not apply while the worker is moving up or down the portable ladder.

(3) Despite subsection (1), if it is not reasonably practical to use a personal fall arrest system, a worker may work from a portable ladder without fall protection if:

- (a) the work is a light duty task of short duration at each location;
- (b) the worker's centre of balance is at the centre of the ladder at all times even with an arm extended beyond the side rails of the ladder; and
- (c) the worker maintains three point contact whenever the worker extends an arm beyond a side rail.

### **RESCUE PERSONNEL EXEMPTION**

138 Rescue personnel involved in training or in providing emergency rescue services may use equipment and practices other than those specified in this Part.

### **GENERAL PROTECTION**

139 (1) Subject to subsections (3) through (8), an employer must ensure that a worker is protected from falling at a temporary or permanent work area if a worker may fall:

- (a) a vertical distance of 3 metres or more;
- (b) a vertical distance of less than 3 metres if there is an unusual possibility of injury;  
or
- (c) into or onto a hazardous substance or object, or through an opening in a work surface.

(2) For the purposes of this section, there is an unusual possibility of injury if the injury may be worse than an injury from landing on a solid, flat surface.

(3) To meet the requirement under subsection (1), an employer must install an engineering control such as a guardrail.

(4) Despite subsection (3), an employer must ensure that a worker at a permanent work area is protected from falling by a guardrail if the worker may fall a vertical distance of more than 1.2 metres and less than 3 metres.

(5) Despite subsections (3) and (4), if the use of a guardrail is not reasonably practicable, an employer must ensure that a worker uses a travel restraint system that meets the requirements of this Part.

(6) Despite subsection (5), if the use of a travel restraint system is not reasonably practicable, an employer must ensure that a worker uses a personal fall arrest system that meets the requirements of this Part.

(7) Despite subsection (6), if the use of a personal fall arrest system is not reasonably practicable, an employer must ensure that a worker uses an equally effective fall protection system that meets the requirements of this Part.

(8) A worker must use or wear the fall protection system the employer requires the worker to use or wear in compliance with this Code.

### **FALL PROTECTION PLAN**

140 (1) An employer must develop procedures that comply with this Part in a fall protection plan for a work site if a worker at the work site may fall 3 metres or more and the worker is not protected by guardrails.

(2) A fall protection plan must specify:

- (a) the fall hazards at the work site;
- (b) the fall protection system to be used at the work site;
- (c) the anchors to be used during the work;
- (d) that clearance distances below the work area, if applicable, have been confirmed as sufficient to prevent a worker from striking the ground or an object or level below the work area;
- (e) the procedures used to assemble, maintain, inspect, use and disassemble the fall protection system, where applicable; and
- (f) the rescue procedures to be used if a worker falls and is suspended by a personal fall arrest system or safety net and needs to be rescued.

(3) The employer must ensure that the fall protection plan is available at the work site and is reviewed with workers before work with a risk of falling begins.

(4) The employer must ensure that the plan is updated when conditions affecting fall protection change.

### **INSTRUCTION OF WORKERS**

141 (1) An employer must ensure that a worker is trained in the safe use of the fall protection system before allowing the worker to work in an area where a fall protection system must be used.

(2) The training referred to in subsection (1) must include the following:

- (a) a review of current Alberta legislation pertaining to fall protection;
- (b) an understanding of what a fall protection plan is;
- (c) fall protection methods a worker is required to use at a work site;
- (d) identification of fall hazards;
- (e) assessment and selection of specific anchors that the worker may use;
- (f) instructions for the correct use of connecting hardware;
- (g) information about the effect of a fall on the human body, including:
  - (i) maximum arresting force,
  - (ii) the purpose of shock and energy absorbers,
  - (iii) swing fall,
  - (iv) free fall,
- (h) pre use inspection;
- (i) emergency response procedures to be used at the work site, if necessary; and
- (j) practice in:
  - (i) inspecting, fitting, adjusting and connecting fall protection systems and components, and
  - (ii) emergency response procedures.

(3) In addition to the training described in subsection (2), an employer must ensure that a worker is made aware of the fall hazards particular to that work site and the steps being taken to eliminate or control those hazards.

### **FULL BODY HARNESS**

142 (1) An employer must ensure that:

- (a) a full body harness manufactured on or after July 1, 2009 is approved to:
  - (i) CSA Standard CAN/CSA Z259.10-06, Full Body Harnesses,
  - (ii) ANSI/ASSE Standard Z359.1-2007, Safety requirements for personal fall arrest systems, subsystems and components, or
  - (iii) CEN Standard EN 361: 2007, Personal protective equipment against falls from a height - Full body harnesses, and
- (b) a worker using a personal fall arrest system wears and uses a full body harness.

(2) A worker using a personal fall arrest system must wear and use a full body harness.

### **BODY BELT**

142.1 An employer must ensure that:

- (a) a body belt manufactured on or after July1, 2009 is approved to;
  - (i) CSA Standard Z259.1-05, Body belts and saddles for work positioning and travel restraint,
  - (ii) ANSI/ASSE Standard A10.32-2004, Fall Protection Systems - American National Standard for Construction and Demolition Operations, or
  - (iii) CEN Standard EN 358: 2000, Personal protective equipment for work positioning and prevention of falls from a height - Belts for work positioning and restraint and work positioning lanyards, and
- (b) a worker uses a body belt only as part of a travel restraint system or as part of a fall restrict system.

### **LANYARD**

142.2. (1) An employer must ensure that a lanyard manufactured on or after July1, 2009 is approved to:

- (a) CSA Standard Z259.11-05, Energy absorbers and lanyards;
- (b) ANSI/ASSE Standard Z359.1-2007, Safety requirements for personal fall arrest systems, subsystems and components; or
- (c) CEN Standard EN 354: 2002, Personal protective equipment against falls from a height - Lanyards.

(2) An employer must ensure that a lanyard used by a worker is made of wire rope or other material appropriate to the hazard if a tool or corrosive agent that could sever, abrade or burn a lanyard is used in the work area.

(3) Despite subsection (2), if a worker works near an energized conductor or in a work area where a lanyard made of conductive material cannot be used safely, the employer must ensure that the worker uses another effective means of fall protection.

### **SHOCK ABSORBER**

142.3 (1) An employer must ensure that if a shock absorber or shock absorbing lanyard is used as part of a personal fall arrest system, it is approved to one of the following standards if manufactured on or after July1, 2009:

- (a) CSA Standard Z259.11-05, Energy absorbers and lanyards;
- (b) ANSI/ASSE Standard Z359.1-2007, Safety requirements for personal fall arrest systems, subsystems and components; or
- (c) CEN Standard EN 355: 2002, Personal protective equipment against falls from a

height - Energy absorbers.

(2) An employer must ensure that a personal fall arrest system consists of a full body harness and a lanyard equipped with a shock absorber or similar device.

(3) Despite subsection (2), a shock absorber or similar device is not required if the personal fall arrest system is used in accordance with section 151.

(4) Despite subsection (2), a shock absorber is required with a fixed ladder fall arrest system only if it is required by the manufacturer of the system.

### **CONNECTORS, CARABINERS AND SNAP HOOKS**

143 (1) An employer must ensure that connecting components of a fall arrest system consisting of carabiners, D rings, O rings, oval rings, self locking connectors and snap hooks manufactured on or after July1, 2009 are approved, as applicable, to:

- (a) CSA Standard Z259.12-01 (R2006), Connecting Components for Personal Fall Arrest Systems (PFAS);
- (b) ANSI/ASSE Standard Z359.1-2007, Safety requirements for personal fall arrest systems, subsystems and components;
- (c) CEN Standard EN 362: 2004, Personal protective equipment against falls from a height – Connectors; or
- (d) CEN Standard 12275: 1998, Mountaineering equipment - Connectors - Safety requirements and test methods.

(2) An employer must ensure that a carabiner or snap hook:

- (a) is self closing and self locking;
- (b) may only be opened by at least two consecutive deliberate manual actions; and
- (c) is marked with;
  - (i) its breaking strength in the major axis, and
  - (ii) the name or trademark of the manufacturer.

### **FALL ARRESTERS**

144. An employer must ensure that a fall arrestor manufactured on or after July1, 2009 is approved to:

- (a) CSA Standard Z259.2.1-98 (R2004), Fall Arresters, Vertical Lifelines, and Rails;
- (b) ANSI/ASSE Standard Z359.1-2007, Safety requirements for personal fall arrest systems, subsystems and components; or
- (c) CEN Standard EN 353 2: 2002, Personal protective equipment against falls from a height - Part 2: Guided type fall arrestors including a flexible anchor line.

### **SELF RETRACTING DEVICE**

145 An employer must ensure that a self retracting device manufactured on or after July1, 2009 and used with a personal fall arrest system is:

- (a) approved to CSA Standard Z259.2.2-98 (R2004), Self Retracting Devices for Personal Fall Arrest Systems;
- (b) anchored above the worker's head unless the manufacturer's specifications allow the use of a different anchor location; and
- (c) used in a manner that minimizes the hazards of swinging and limits the swing drop distance to 1.2 metres if a worker falls.

### **DESCENT CONTROL DEVICE**

146 An employer must ensure that an automatic or manual descent control device manufactured on or after July1, 2009 and used with a personal fall arrest system is approved to:

- (a) CSA Standard Z259.2.3-99 (R2004), Descent Control Devices;
- (b) CEN Standard EN 341: 1997, Personal protective equipment against falls from a height - Descender devices; or
- (c) NFPA Standard 1983, Standard on Life Safety Rope and Equipment for Emergency Services, 2006 edition, classified as general or light duty.

### **LIFE SAFETY ROPE**

147 (1) An employer must ensure that a life safety rope manufactured on or after July1, 2009 and used in a fall protection system:

- (a) is approved to;
  - (i) NFPA Standard 1983, Standard on Life Safety Rope and Equipment for Emergency Services, 2006 Edition, as light-use or general use life safety rope,
  - (ii) CEN Standard EN 1891: 1998, Personal protective equipment for the prevention of falls from a height - Low stretch kernmantle ropes, as Type A rope, or
- (b) meets the requirements of;
  - (i) CSA Standard CAN/CSA Z259.2.1-98 (R2004), Fall Arresters, Vertical Lifelines, and Rails, or
  - (ii) ANSI/ASSE Standard Z359.1-2007, Safety requirements for personal fall arrest systems, subsystems and components.

(2) An employer must ensure that a life safety rope used in a fall protection system:

- (a) extends downward to within 1.2 metres of ground level or another safe lower surface;
- (b) is free of knots or splices throughout the travel portion except for a stopper knot

- at its lower end;
- (c) is effectively protected to prevent abrasion by sharp or rough edges;
- (d) is made of material appropriate to the hazard and able to withstand adverse effects; and
- (e) is installed and used in a manner that minimizes the hazards of swinging and limits the swing drop distance to 1.2 metres if a worker falls.

(3) A worker must use a vertical life safety rope in a manner that minimizes the hazards of swinging and limits the swing drop distance to 1.2 metres if a worker falls.

(4) An employer must ensure that only one worker is attached to a life safety rope at any one time unless the manufacturer's specifications or specifications certified by a professional engineer allow for the attachment of more than one worker.

### **ADJUSTABLE LANYARD FOR WORK POSITIONING**

148 An employer must ensure that an adjustable lanyard manufactured on or after July 1, 2009 and used by a worker as part of a work positioning system is approved to:

- (a) CSA Standard Z259.11-05, Energy absorbers and lanyards, as a Class F adjustable positioning lanyard; or
- (b) CEN Standard EN 358: 2000, Personal protective equipment for work positioning and prevention of falls from a height - Belts for work positioning and restraint and work positioning lanyards.

### **ROPE ADJUSTMENT DEVICE FOR WORK POSITIONING**

148.1 An employer must ensure that a rope adjustment device manufactured on or after July 1, 2009 and used by a worker as part of a work positioning system is approved to:

- (a) CSA Standard Z259.2.3-99 (R2004), Descent Control Devices;
- (b) CEN Standard EN 341: 1997, Personal protective equipment against falls from a height - Descender devices; or
- (c) NFPA Standard 1983, Standard on Life Safety Rope and Equipment for Emergency Services, 2006 Edition, classified as general or light duty.

### **WOOD POLE CLIMBING**

149 (1) An employer must ensure that a worker working on or from a wood pole uses fall restrict equipment that is approved to CSA Standard Z259.14-01, Fall Restrict Equipment for Wood Pole Climbing, in combination with:

- (a) a lineman's body belt that;
  - (i) is approved to CSA Standard Z259.3 M-1978 (R2003), Lineman's Body Belt and Lineman's Safety Strap, or
  - (ii) complies with section 142.1, or

(b) a full body harness that complies with subsection 142(1).

(2) Subsection (1) does not apply to fall restrict equipment or a lineman's body belt in use before April 30, 2004.

### **EQUIPMENT COMPATIBILITY**

150 An employer must ensure that all components of a fall protection system are compatible with one another and with the environment in which they are used.

### **INSPECTION AND MAINTENANCE**

150.1 An employer must ensure that the equipment used as part of a fall protection system is:

- (a) inspected by the worker as required by the manufacturer before it is used on each work shift;
- (b) kept free from substances and conditions that could contribute to deterioration of the equipment; and
- (c) re-certified as specified by the manufacturer.

### **REMOVAL FROM SERVICE**

150.2 (1) An employer must ensure that equipment used as part of a fall protection system is removed from service and either returned to the manufacturer or destroyed if:

- (a) it is defective; or
- (b) it has come into contact with excessive heat, a chemical, or any other substance that may corrode or otherwise damage the fall protection system.

(2) An employer must ensure that after a personal fall arrest system has stopped a fall, the system is removed from service.

(3) An employer must ensure that a personal fall arrest system that is removed from service is not returned to service unless a professional engineer or the manufacturer certifies that the system is safe to use.

### **PRUSIK AND SIMILAR KNOTS**

150.3 An employer must ensure that a Prusik or similar sliding hitch knot is used in place of a fall arrester only during emergency situations or during training for emergency situations and only by a competent worker.

### **CLEARANCE, MAXIMUM ARRESTING FORCE AND SWING**

151 (1) An employer must ensure that a personal fall arrest system is arranged so that a

worker cannot hit the ground, an object which poses an unusual possibility of injury, or a level below the work area.

151 (2) An employer must ensure that a personal fall arrest system without a shock absorber limits a worker's free fall distance to 1.2 metres.

151 (3) An employer must ensure that a personal fall arrest system limits the maximum arresting force on a worker to 6 kilonewtons, unless the worker is using an E6 type shock absorber in accordance with the manufacturer's specifications, in which case the maximum arresting force must not exceed 8 kilonewtons.

151 (4) A worker must limit the vertical distance of a fall by:

- (a) selecting the shortest length lanyard that will still permit unimpeded performance of the worker's duties; and
- (b) securing the lanyard to an anchor no lower than the worker's shoulder height.

151 (5) If the shoulder height anchor required by subsection 4(b) is not available, a worker must secure the lanyard to an anchor that is located as high as is reasonably practicable.

151 (6) If it is not reasonably practicable to attach to an anchor above the level of a worker's feet, the worker must ensure that the clearance and maximum arresting force requirements of subsections (1) and (3) are met.

#### **ANCHOR STRENGTH - PERMANENT**

152 (1) An employer must ensure that a permanent anchor is capable of safely withstanding the impact forces applied to it and has a minimum breaking strength per attached worker of 16 kilonewtons or two times the maximum arresting force in any direction in which the load may be applied.

152 (2) Subsection (1) does not apply to anchors installed before July1, 2009.

152 (3) Subsection (1) does not apply to the anchors of flexible horizontal lifeline systems that must meet the requirements of subsection 153(1).

152 (4) The employer must ensure that an anchor rated at two times the maximum arresting force is designed, installed and used in accordance with:

- (a) the manufacturer's specifications; or
- (b) specifications certified by a professional engineer.

#### **ANCHOR STRENGTH - TEMPORARY**

152.1 (1) An employer must ensure that a temporary anchor used in a travel restraint

system:

- (a) has a minimum breaking strength in any direction in which the load may be applied of at least 3.5 kilonewtons per worker attached;
- (b) is installed, used and removed according to the manufacturer's specifications or specifications certified by a professional engineer;
- (c) is permanently marked as being for travel restraint only; and
- (d) is removed from use on the earliest of;
  - (i) the date on which the work project for which it is intended is completed, or
  - (ii) the time specified by the manufacturer or professional engineer.

152.1 (2) An employer must ensure that a temporary anchor used in a personal fall arrest system:

- (a) has a minimum breaking strength in any direction in which the load may be applied of at least 16 kilonewtons or two times the maximum arresting force per worker attached;
- (b) is installed, used and removed according to the manufacturer's specifications or specifications certified by a professional engineer; and
- (c) is removed from use on the earliest of;
  - (i) the date on which the work project for which it is intended is completed, or
  - (ii) the time specified by the manufacturer or professional engineer.

### **DUTY TO USE ANCHORS**

152.2 (1) If a worker uses a personal fall arrest system or a travel restraint system, the worker must ensure that it is safely secured to an anchor that meets the requirements of this Part.

152.2 (2) An employer must ensure that a worker visually inspects the anchor prior to attaching a fall protection system.

152.2 (3) An employer must ensure that a worker does not use a damaged anchor until the anchor is repaired, replaced or re certified by the manufacturer or a professional engineer.

152.2 (4) An employer must ensure that a worker uses an anchor connector appropriate to the work.

152.2 (5) A worker must use an anchor connector appropriate to the work,

### **INDEPENDENCE OF ANCHORS**

152.3 An employer must ensure that an anchor to which a personal fall arrest system is attached is not part of an anchor used to support or suspend a platform.

### **WIRE ROPE SLING AS ANCHOR**

152.4 An employer must ensure that a wire rope sling used as an anchor is terminated at both ends with a Flemish eye splice rated to at least 90 percent of the wire rope's minimum breaking strength.

### **FLEXIBLE AND RIGID HORIZONTAL LIFELINE SYSTEMS**

153 (1) An employer must ensure that a flexible horizontal lifeline system manufactured on or after July1, 2009 meets the requirements of:

- (a) CSA Standard Z259.13-04, Flexible Horizontal Lifeline Systems; or
- (b) the applicable requirements of CSA Standard Z259.16-04, Design of Active Fall Protection Systems.

153 (2) An employer must ensure that a rigid horizontal fall protection system is designed, installed and used in accordance with:

- (a) the manufacturer's specifications; or
- (b) specifications certified by a professional engineer.

### **INSTALLATION OF HORIZONTAL LIFELINE SYSTEMS**

153.1 An employer must ensure that before a horizontal lifeline system is used, a professional engineer, a competent person authorized by the professional engineer, the manufacturer, or a competent person authorized by the manufacturer certifies that the system has been properly installed according to the manufacturer's specifications or to specifications certified by a professional engineer.

### **FIXED LADDERS AND CLIMBABLE STRUCTURES**

154 (1) An employer must ensure that if a worker is working from or on a fixed ladder or climbable structure at a height of 3 metres or more and is not protected by a guardrail, continuous protection from falling is provided by:

- (a) equipping the fixed ladder or climbable structure with an integral fall protection system that meets the requirements of;
  - (i) CSA Standard Z259.2.1-98 (R2004), Fall Arresters, Vertical Lifelines, and Rails, or
  - (ii) ANSI/ASSE Standard Z359.1-2007, Safety requirements for personal fall arrest systems, subsystems and components, or
- (b) an alternate fall protection system.

154 (2) Subsection (1) applies to fixed ladders and climbable structures constructed and installed after July1, 2009.

### **FALL PROTECTION ON VEHICLES AND LOADS**

155 (1) If a worker may have to climb onto a vehicle or its load at any location where it is not reasonably practicable to provide a fall protection system for the worker, an employer must:

- (a) take steps to eliminate or reduce the need for the worker to climb onto the vehicle or its load; and
- (b) ensure that the requirements of subsection 159(2) are met.

155 (2) In addition to the requirements of subsection (1), an employer must ensure that if a load is not secured against movement, a worker does not climb onto the load.

155 (3) A worker must not climb onto a load if the load is not secured against movement.

### **BOOM-SUPPORTED WORK PLATFORMS AND AERIAL DEVICES**

156 (1) An employer must ensure that a worker on a boom supported elevating work platform, boom-supported aerial device, or forklift truck work platform uses a personal fall arrest system:

- (a) connected to;
  - (i) an anchor specified by the manufacturer of the work platform, aerial device or forklift truck, or
  - (ii) if no anchor is specified by the manufacturer, an anchor point certified by a professional engineer that meets the requirements of CSA Standard Z259.16-04, Design of Active Fall Protection Systems, and
- (b) when connected to the anchor, the lanyard, if reasonably practicable, is short enough to prevent the worker from being ejected from the work platform or aerial device but is long enough to allow the worker to perform his or her work.

156 (2) An employer must ensure that a worker on a scissor lift or on an elevating work platform with similar characteristics uses a travel restraint system consisting of a full body harness and lanyard:

- (a) connected to an anchor specified by the manufacturer of the scissor lift or elevating work platform; and
- (b) when connected to the anchor, the lanyard, if reasonably practicable, is short enough to prevent the worker from falling out of the scissor lift or elevating work platform but is long enough to allow the worker to perform his or her work.

156 (3) Subsection (2) does not apply if:

- (a) the manufacturer's specifications allow a worker to work from the scissor lift or elevating work platform with similar characteristics using only its guardrails for fall

- protection; and
- (b) the scissor lift or elevating work platform is operating on a firm, substantially level surface.

156 (4) Despite subsection (2), if a worker's movement cannot be adequately restricted in all directions by the travel restraint system, the employer must ensure that the worker uses a personal fall arrest system.

### **WATER DANGER**

157 An employer must ensure that a worker uses an appropriate fall protection system in combination with a life jacket or personal flotation device if the worker:

- (a) may fall into water that exposes the worker to the hazard of drowning; or
- (b) could drown from falling into the water, from other than a boat.

### **LEADING EDGE FALL PROTECTION SYSTEM**

158 An employer using a leading edge fall protection system consisting of fabric or netting panels must ensure that:

- (a) the system is used only to provide leading edge fall protection;
- (b) the system is used and installed according to the manufacturer's specifications;
- (c) a copy of the manufacturer's specifications for the system is available to workers at the work site at which the system is being used;
- (d) the fabric or netting is;
  - (i) drop tested at the work site in accordance with the requirements of 29 CFR Section 1926.502(C)4(i) published by the U.S. Occupational Safety and Health Administration, or
  - (ii) certified as safe for use by a professional engineer, and
- (e) all workers using the system are trained in its use and limitations.

### **PROCEDURES IN PLACE OF FALL PROTECTION EQUIPMENT**

159 (1) An employer may develop and use procedures in place of fall protection equipment in accordance with subsection (2), if:

- (a) it is not reasonably practicable to use one of the fall protection systems described in this Part; and
- (b) use of procedures in place of fall protection equipment is restricted to the following situations;
  - (i) the installation or removal of fall protection equipment,
  - (ii) roof inspection,
  - (iii) emergency repairs,
  - (iv) at height transfers between equipment and structures if allowed by the manufacturer's specifications, and

(v) situations in which a worker must work on top of a vehicle or load and the requirements of section 155 have been met.

159 (2) An employer using procedures in place of fall protection equipment must ensure that:

- (a) a hazard assessment in accordance with the requirements of Part 2 is completed before work at height begins;
- (b) the procedures to be followed while performing the work must be in writing and available to workers before the work begins;
- (c) the work is carried out in such a way that minimizes the number of workers exposed to a fall hazard while work is performed;
- (d) the work is limited to light duty tasks of limited duration;
- (e) the worker performing the work is competent to do it;
- (f) when used for inspection, investigation or assessment activities, these activities take place prior to the actual start of work or after work has been completed; and
- (g) the procedures do not expose a worker to additional hazards.

### **WORK POSITIONING**

160 (1) An employer must ensure that if a worker uses a work positioning system, the worker's vertical free fall distance in the event of a fall is restricted by the work positioning system to 600 millimetres or less.

160 (2) If the centre of gravity of a worker using a work positioning system extends beyond an edge from which the worker could fall or if the work surface presents a slipping or tripping hazard because of its state or condition, an employer must ensure that the worker uses a back up personal fall arrest system in combination with the work positioning system.

160 (3) A worker must use a back up personal fall arrest system in combination with the work positioning system if the worker's centre of gravity extends beyond an edge from which the worker could fall or if the work surface presents a slipping or tripping hazard because of its state or condition.

### **CONTROL ZONES**

161 (1) If a control zone is used, an employer must ensure that it:

- (a) is only used if a worker can fall from a surface that has a slope of no more than 4 degrees toward an unguarded edge or that slopes inwardly away from an unguarded edge; and
- (b) is not less than 2 metres wide when measured from the unguarded edge.

(2) An employer must not use a control zone to protect workers from falling from a skeletal structure that is a work area.

(3) If a worker will at all times remain further from the unguarded edge than the width of the control zone, no other fall protection system need be used.

(4) Despite section 139, a worker is not required to use a fall protection system when crossing the control zone to enter or leave the work area.

(5) When crossing a control zone referred to in subsections (3) and (4), to get to or from the unguarded edge, a worker must follow the most direct route.

(6) An employer must ensure that a control zone is clearly marked with an effective raised warning line or another equally effective method if a worker is working within 2 metres of the control zone.

(7) An employer must ensure that a worker who must work within a control zone uses:

- (a) a travel restraint system; or
- (b) an equally effective means of preventing the worker from getting to the unguarded edge.

(8) A person who is not directly required for the work at hand must not be inside a control zone.

### **CSA STANDARD APPLIES**

323 Subject to sections 324 and 325, an employer must ensure that scaffolds erected to provide working platforms during the construction, alteration, repair or demolition of buildings and other structures comply with CSA Standard CAN/CSA-S269.2-M87 (R2003), Access Scaffolding for Construction Purposes.

### **DESIGN**

324 (1) An employer must ensure that a single pole or double pole scaffold is:

- (a) supported against lateral movement by adequate bracing;
- (b) anchored by one tie-in for each 4.6 metre vertical interval and one tie-in for each 6.4 metre horizontal interval;
- (c) anchored by one tie-in for each 3 metre vertical interval and one tie-in for each 3 metre horizontal interval if the scaffold is hoarded; and
- (d) set plumb on a base plate, jackscrew or other load dispersing device on a stable service.

(2) An employer must ensure that ropes or wire ropes used in scaffolding are:

- (a) protected against fraying or other damage; and
- (b) made of heat or chemical resistant material if there is a possibility of exposure to

heat or chemicals.

(3) An employer must ensure that wooden scaffolds are constructed of unpainted dressed lumber.

(4) Despite subsection (1)(c), an employer must ensure that hoarded masonry walk through scaffold frames are:

- (a) anchored by not less than one tie-in for each 9 square metres of hoarding surface area; and
- (b) have vertical tie ins spaced at least 2 metres apart but not more than 3 metres apart.

(5) If scaffolding or a temporary work platform can be damaged by powered mobile equipment or a vehicle contacting it, an employer must take reasonable measures to protect the scaffolding or temporary work platform from being contacted.

### **LOAD**

325 (1) An employer must ensure that a scaffold is designed and constructed to support at least 4 times the load that may be imposed on it.

(2) An employer must ensure that the load to which a scaffold is subjected never exceeds the equivalent of one-quarter of the load for which it is designed.

(3) An employer must ensure that a scaffold used to carry the equivalent of an evenly distributed load of more than 367 kilograms per square metre is:

- (a) designed and certified by a professional engineer; and
- (b) constructed, maintained and used in accordance with the certified specifications.

(4) Subsection (3) applies to a type of scaffold that is not otherwise specifically referred to in this Code.

(5) An employer must ensure that all workers on a scaffold are informed of the maximum load that the scaffold is permitted to carry.

### **TAGGING REQUIREMENTS**

326 (1) An employer must ensure that a scaffold is colour coded using tags at each point of entry indicating its status and condition as follows:

- (a) a green tag with "Safe for Use", or similar wording, to indicate it is safe for use;
- (b) a yellow tag with "Caution: Potential or Unusual Hazard", or similar wording, to indicate the presence of a potential or unusual hazard;
- (c) a red tag with "Unsafe for Use", or similar wording, to indicate it is not safe to

use.

(2) An employer must ensure that a bracket scaffold, double pole scaffold, needle-beam scaffold, outrigger scaffold, single-pole scaffold, suspended scaffold or swingstage scaffold erected but not immediately put into service, or not used for more than 21 consecutive calendar days, has a red tag at each point of entry until it is inspected and tagged by a competent worker for use.

(3) An employer must ensure that a bracket scaffold, double pole scaffold, needle-beam scaffold, outrigger scaffold, single-pole scaffold, suspended scaffold or swingstage scaffold is inspected and tagged by a competent worker before it is used for the first time and at intervals of not more than 21 calendar days while workers work from the scaffold or materials are stored on it.

(4) A tag attached to a scaffold under this section expires 21 calendar days after the date of the inspection it records.

(5) A tag required by this section must include:

- (a) the duty rating of the scaffold;
- (b) the date on which the scaffold was last inspected;
- (c) the name of the competent worker who last inspected the scaffold;
- (d) any precautions to be taken while working on the scaffold; and
- (e) the expiry date of the tag.

(6) A worker must not use a scaffold if it has:

- (a) a red tag;
- (b) a green or yellow tag that has expired; or
- (c) no tag at all.

(7) Subsection (6) does not apply to a competent worker who is involved in the erection, inspection or dismantling of a scaffold.

### **VERTICAL LADDER ON SCAFFOLD**

327 (1) An employer must ensure that a vertical ladder that gives access to a working level of a scaffold is used by a worker only to move up or down between levels of the scaffold.

(2) Workers moving between levels of a scaffold on a vertical ladder:

- (a) must not extend a part of their body, other than an arm, beyond the side rails of the ladder; and
- (b) must maintain a three-point stance on the ladder at all times.

(3) The employer must ensure that a ladder attached to a scaffold and providing access to a working level of a scaffold:

- (a) is securely fastened to the scaffold;
- (b) does not lean away from the scaffold;
- (c) extends at least 1 metre above the uppermost working level of the scaffold;
- (d) has rungs that are uniformly spaced at a centre to centre distance of 250 millimetres to 305 millimetres;
- (e) has a maximum unbroken length of 9.1 metres measured from the ground or between working levels; and
- (f) is equipped with a ladder cage that begins within 2.4 metres of the ground or working level if the ladder is more than 6.1 metres in height.

(4) The employer must ensure that the ladder cage required by subsection (3)(f) is:

- (a) circular with an inside diameter that measures no more than 760 millimetres; or
- (b) square with inside dimensions that measure no more than 760 millimetres by 760 millimetres.

(5) Despite subsections (3)(e) and (3)(f), the ladder may have a maximum unbroken length of more than 9.1 metres and does not require a ladder cage if a fall protection system complying with Part 9 is used.

### **WORKING FROM A LADDER**

328 (1) An employer must ensure that no worker performs work from a ladder that is used to give access to the working levels of a scaffold.

(2) A worker must not perform work from a ladder that is used to give access to the working levels of a scaffold.

### **SCAFFOLD PLANKS**

329 (1) An employer must ensure that a commercially manufactured scaffold plank is used, stored, inspected and maintained according to the manufacturer's specifications.

(2) An employer must ensure that a solid sawn lumber scaffold plank is:

- (a) graded as scaffold grade or better; and
- (b) sized 51 millimetres by 254 millimetres.

(3) An employer must ensure that a solid sawn lumber scaffold plank:

- (a) is used, stored, inspected and maintained according to the manufacturer's specifications; or
- (b) if there are no manufacturer's specifications, is made of at least number one

grade lumber that is 51 millimetres by 254 millimetres with a wane limited to 20 percent of the width of the wide face of the plank and the warp limited to ensure a flat surface.

(4) An employer must ensure that a scaffold plank:

- (a) is visually inspected by a competent worker before it is installed in a scaffold;
- (b) is subjected to and passes a load test before it is installed in a scaffold if a visual inspection reveals damage that could affect its strength or function;
- (c) extends not less than 150 millimetres and not more than 300 millimetres beyond a ledger; and
- (d) is secured to prevent movement in any direction that may create a danger to a worker.

(5) Despite subsection (4)(c), an employer must ensure that an overlapping scaffold plank extends not less than 300 millimetres beyond a ledger.

### **SCAFFOLD PLATFORM**

330 (1) An employer must ensure that the platform of a scaffold:

- (a) is a minimum width of 500 millimetres, except that a nominal 300 millimetre wide platform may be used with ladderjacks, pump jacks or similar systems;
- (b) does not have an open space between the platform and a structure that is greater than 250 millimetres in width;
- (c) if not level, is designed to ensure adequate footing for workers using the platform; and
- (d) is continuous around obstructions that would create openings into or through which a worker might step or fall through.

(2) Repealed

### **METAL SCAFFOLDING**

331 An employer must ensure that:

- (a) metal scaffolding is erected, used, inspected, maintained and dismantled in accordance with the manufacturer's specifications or specifications certified by a professional engineer, and
- (b) the structural parts of metal scaffolding are securely fastened together as required by the manufacturer.

### **BRACKET SCAFFOLDS**

332 (1) An employer must ensure that a bracket scaffold:

- (a) is constructed, installed and used in accordance with the manufacturer's

- specifications or specifications certified by a professional engineer;
- (b) is securely attached to the support wall in a manner that prevents the bracket from dislodging; and
- (c) is used only as a light duty scaffold.

(2) An employer must ensure that the brackets on a bracket scaffold are spaced at intervals of not more than 3 metres.

### **DOUBLE-POLE SCAFFOLDS**

333 (1) An employer must ensure that uprights and ledgers:

- (a) of light duty double-pole scaffolds are spaced not more than 3 metres apart; and
- (b) of heavy duty double-pole scaffolds are spaced not more than 2.3 metres apart.

(2) An employer must ensure that the dimensions of parts of wooden double-pole scaffolds are not less than those specified in Schedule 6, Tables 1, 2, 3 and 4.

### **FREE-STANDING OR ROLLING SCAFFOLDS**

334 (1) An employer must ensure that:

- (a) the height of a free-standing or rolling scaffold is not more than 3 times its smallest base dimension;
- (b) if outriggers are used to attain the 3 to 1 ratio, the outriggers are firmly attached and ensure the stability of the scaffold;
- (c) if a vehicle is used instead of scaffold wheels to form a rolling scaffold, all parts of the scaffold are securely fastened together and the scaffold is securely attached to the vehicle;
- (d) if outriggers are required to maintain the stability of a vehicle-mounted scaffold, the outriggers are securely attached to the frame of the vehicle; and
- (e) a rolling scaffold is equipped with locking wheels or there are blocks for the wheels.

(2) A worker must not remain on a rolling scaffold while it is being moved unless:

- (a) the height of its work platform is not more than twice its smallest base dimension; and
- (b) the surface over which it travels is firm, level and free of hazards that may cause the scaffold to topple.

(3) A worker using a rolling scaffold must engage the wheel locking devices or block the scaffold against movement while the scaffold is stationary and a worker is working from the scaffold.

### **HALF-HORSE SCAFFOLDS**

335 (1) An employer must ensure that:

- (a) a half-horse scaffold is used only as a light duty scaffold;
- (b) half-horse scaffold ledgers are not more than 3 metres apart; and
- (c) half-horse scaffold legs are not spliced or more than 5 metres high.

(2) An employer must ensure that the parts of a half horse scaffold are not less than the lumber sizes specified in Schedule 6, Tables 5 or 6.

(3) If a part of a half-horse scaffold is not made of lumber, an employer must ensure that the part is made of a material that has properties equal to or greater than those of lumber.

### **LADDERJACK SCAFFOLDS**

336 (1) An employer must ensure that ladders used for ladderjack scaffolds are:

- (a) erected in accordance with the manufacturer's specifications; or
- (b) if there are no manufacturer's specifications, are not more than 3 metres apart.

(2) An employer must ensure that brackets in a ladderjack scaffold are designed to:

- (a) be supported by the side rails of the ladder; or
- (b) have at least 90 millimetres of width resting on the ladder rung.

(3) An employer must ensure that a ladderjack scaffold is not more than 5 metres high.

(4) An employer must ensure that there are not more than two workers at a time on a ladderjack scaffold.

(5) Despite sections 329 and 330, an employer may use a single commercially manufactured extendable painter's plank or a commercially manufactured aluminum or laminated plank on a ladderjack scaffold.

### **NEEDLE-BEAM SCAFFOLDS**

337 (1) An employer must ensure that beams supporting a needle-beam scaffold:

- (a) are constructed of lumber, or a material that has properties equal to or greater than those of lumber;
- (b) are not less than 89 millimetres by 140 millimetres; and
- (c) are placed on their edge.

(2) An employer must ensure that planks forming the working platform of a needle-beam scaffold are pinned to prevent shifting.

(3) An employer must ensure that ropes supporting a needle-beam scaffold have:

- (a) a breaking strength of at least 39 kilonewtons; and
- (b) a diameter of not less than 16 millimetres.

(4) An employer must ensure that beam ends of a needle-beam scaffold are provided with stops to prevent the ropes from slipping off the beam.

### **OUTRIGGER SCAFFOLDS**

338 (1) This section applies to outrigger scaffolds, including suspended outrigger scaffolds.

(2) If a reference in this section is made to lumber, a material that has properties equal to or greater than those of lumber may be used in its place.

(3) An employer must ensure that:

- (a) thrustouts are constructed of lumber that is 89 millimetres by 140 millimetres and placed on their edge;
- (b) thrustouts do not extend more than 2 metres beyond the edge of the bearing surface;
- (c) thrustouts are securely braced at the fulcrum point against movement or upset;
- (d) the inboard ends of thrustouts are securely anchored against horizontal or vertical movement or upset;
- (e) the inboard portion from the fulcrum point to the point of anchorage is not less than 1.5 times the length of the outboard portion;
- (f) the maximum distance between thrustouts is 2.3 metres;
- (g) if a working platform is suspended or thrust out, the platform is:
  - (i) supported by vertical lumber hangers that are 38 millimetres by 140 millimetres or larger and not more than 3 metres long secured to the side of each thrustout and extending at least 300 millimetres above the top of each thrustout, and
  - (ii) secured to a block that rests on the top edge of each thrustout as an additional support,
- (h) a suspended platform is supported by lumber beams that are 38 millimetres by 140 millimetres and that are:
  - (i) secured to the vertical hangers at least 300 millimetres above the bottom of the hangers, and
  - (ii) resting on blocks that are secured to the side of the hangers below each beam as an additional support,
- (i) working platforms are completely planked between the hangers; and
- (j) a suspended platform is braced to prevent swaying.

(4) An employer must ensure that:

- (a) counterweights are not used;
- (b) stops to prevent lateral movement of the hangers are fixed to;
  - (i) the thrustout and block referred to in subsection 3(g)(ii),
  - (ii) the ledgers and the blocks referred to in subsection (3)(h), and
- (c) materials are not stored on outrigger scaffolds.

### **ROOFING BRACKETS**

339 An employer must ensure that a roofing bracket is:

- (a) constructed to support the loads that may be put on it;
- (b) provided with effective non slip devices; and
- (c) secured to the roof with nails.

### **SINGLE-POLE SCAFFOLDS**

340 An employer must ensure that:

- (a) a wooden single-pole scaffold is used only as a light duty scaffold and is not more than 9 metres in height;
- (b) the uprights on a wooden single-pole scaffold are spaced not more than 3 metres apart; and
- (c) the dimensions and/or strength of members of single-pole scaffolds are not less than those specified in Schedule 6, Tables 7 and 8.

### **SUSPENDED SCAFFOLDS**

341 (1) This section applies to suspended scaffolds other than suspended outrigger scaffolds or suspended swingstage scaffolds.

(2) An employer must ensure that:

- (a) a commercially manufactured suspended scaffold is erected, used, operated and maintained in accordance with the manufacturer's specifications or specifications certified by a professional engineer; and
- (b) a suspended scaffold that is not commercially manufactured is designed and certified by a professional engineer.

(3) An employer must ensure that:

- (a) the upper end of the suspension rope terminates in a spliced loop in which a steel thimble or eye is securely inserted;
- (b) the suspension rope is secured to a thrustout by a bolt passing through the shackle, the steel thimble or the eye and the bolt is drawn up tightly to the end plate of the shackle by a securing nut;

- (c) the planks of the platform are laid tightly together and overlap the supporting ledgers at each end of the scaffold by at least 300 millimetres; and
- (d) working platforms are not less than 1 metre wide.

(4) An employer must ensure that all parts of a suspended scaffold are inspected daily.

(5) An employer must ensure that:

- (a) thrustouts are securely anchored to the building;
- (b) counterweights are not used for anchoring a thrustout; and
- (c) a stop bolt is placed at the outer end of each thrustout.

(6) An employer must ensure that the working parts of a hoisting mechanism are left exposed so that:

- (a) defective parts of the mechanism can be easily detected; and
- (b) an irregularity in the operation of the mechanism can be easily detected.

(7) An employer must ensure that a suspended scaffold platform has an enclosure that:

- (a) is on the three sides of the platform that are not adjacent to the building;
- (b) is made of wire mesh that complies with section 322 or another material that is at least as effective at containing materials or equipment; and
- (c) extends not less than 1 metre above the platform.

### **SWINGSTAGE SCAFFOLDS**

342 (1) An employer must ensure that:

- (a) a commercially manufactured swingstage scaffold is erected, used, operated and maintained in accordance with the manufacturer's specifications or specifications certified by a professional engineer;
- (b) a swingstage scaffold that is not commercially manufactured is designed and certified by a professional engineer; and
- (c) operating procedures are developed for a swingstage scaffold referred to in clause (b).

(2) If it is necessary for the safe operation of a swingstage scaffold with a platform, an employer must ensure that the platform is designed to prevent the swingstage scaffold from swinging or swaying away from the building or structure.

### **REQUIREMENTS FOR SWINGSTAGE SCAFFOLD**

343 (1) An employer must ensure that a swingstage scaffold is used only as a light duty scaffold.

- (2) An employer must ensure that a swingstage scaffold is suspended by at least two upper attachment points placed so that the suspension ropes are parallel.
- (3) An employer must ensure that a platform is at least 500 millimetres wide and fastened to the stirrups.
- (4) An employer must ensure that a platform is equipped with rollers or fenders that bear against the side of the building or structure to hold the platform at a distance from the wall sufficient to avoid an obstacle, but not so far as to allow a worker to fall through the space between the wall and the platform.
- (5) An employer must ensure that a thrustout, clamp or parapet hook is tied back or otherwise secured to a solid part of the structure and cannot move or be dislodged.
- (6) An employer must ensure that counterweights:
- (a) are firmly attached to the thrustouts;
  - (b) are heavy enough to counterbalance four times the maximum weight likely to be on the scaffold; and
  - (c) do not consist of bagged or loose material.
- (7) An employer must ensure that power units on a swingstage scaffold are equipped with:
- (a) manually operated constant pressure controls; and
  - (b) positive drives for raising and lowering the scaffold.
- (8) An employer must ensure that a swingstage scaffold platform has an enclosure that:
- (a) is on the three sides of the platform that are not adjacent to the building;
  - (b) is made of wire mesh that complies with section 322 or another material that is at least as effective at containing materials or equipment; and
  - (c) extends not less than 1 metre above the platform.

### **SAFETY ON SWINGSTAGE SCAFFOLDS**

344 (1) An employer must ensure that if workers are required to be on a swingstage scaffold, the hoisting equipment is equipped with automatically operating locking mechanisms so that the suspension ropes cannot slip or run free.

(2) An employer must ensure that if workers are required to be on a manually operated swingstage scaffold, (a) the hoisting mechanism is securely locked in a positive drive position, and (b) the scaffold has a secondary anti fall device that connects the scaffold to the suspension rope at a point above the hoisting mechanism.

(3) An employer must ensure that a powered swingstage scaffold has a manually

operated secondary mechanism or an escape device, other than the vertical lifeline used for fall protection, if workers cannot reach a safe exit when there is a mechanical failure or power failure.

(4) An employer must ensure that a worker on the stage of a swingstage scaffold can use the manually operated secondary mechanism or escape device referred to in subsection (3) to move the scaffold to a point at which the worker can exit safely.

(5) An employer must ensure that a suspension rope is long enough to reach the next working surface below the scaffold.

(6) An employer must ensure that the end of a suspension rope is doubled back and held securely by a cable clamp so that the hoisting machine cannot run off the end of the rope.

(7) An employer must ensure that two or more swingstage scaffolds are not linked together by bridging the distance between them.

### **WORKERS ON SWINGSTAGE SCAFFOLDS**

345 (1) Before starting to work on a swingstage scaffold, a worker must inspect the scaffold to ensure that:

- (a) the thrustouts or parapet hooks are secured in accordance with section 343; and
- (b) counterweights meet the requirements of section 343.

(2) A worker on a swingstage scaffold must ensure that:

- (a) all ropes from the scaffold that extend to the ground or a landing are prevented from tangling; and
- (b) when the scaffold is being moved up or down on its suspension ropes, the stage is not out of level by more than 10 percent of its length.

(3) A person on a swingstage scaffold must:

- (a) remain between the stirrups at all times;
- (b) not bridge the distance between the scaffold and any other scaffold;
- (c) not use a vertical lifeline used for fall protection as a means of entering or leaving a swingstage; and
- (d) not use bagged or loose materials as counterweights on the scaffold.

(4) An employer must ensure that if a worker may fall 3 metres or more while working from a suspended swingstage scaffold, the worker's personal fall arrest system is connected to a vertical lifeline.

(5) Despite subsection (4), an employer may allow a worker using a swingstage scaffold

to connect a personal fall arrest system to a horizontal lifeline or anchorage on the swingstage scaffold if the failure of one suspension line will not substantially alter the position of the swingstage scaffold.

### **WORKER SAFETY**

346 (1) An employer must ensure that a worker is not travelling in a basket, bucket, platform or other elevated or aerial device that is moving on a road or work site if road conditions, traffic, overhead wires, cables or other obstructions create a danger to the worker.

(2) A person must not travel in a basket, bucket, platform or other elevated or aerial device that is moving on a road or work site if road conditions, traffic, overhead wires, cables or other obstructions create a danger to the person.

### **STANDARDS**

347 (1) An employer must ensure that a self-propelled work platform manufactured on or after July1, 2009 with a boom-supported elevating platform that telescopes, articulates, rotates or extends beyond the base dimensions of the platform meets the requirements of:

- (a) CSA Standard CAN/CSA-B354.4-02, Self-Propelled Boom-Supported Elevating Work Platforms; or
- (b) ANSI Standard ANSI/SIA A92.5-2006, Boom-Supported Elevating Work Platforms.

(2) Subsection (1) does not apply to a work platform mounted on a motor vehicle.

(3) An employer must ensure that a self-propelled integral chassis elevating work platform manufactured on or after July1, 2009 with a platform that cannot be positioned laterally completely beyond the base and with its primary functions controlled from the platform meets the requirements of:

- (a) CSA Standard CAN/CSA-B354.2-01 (R2006), Self-Propelled Elevating Work Platforms; or
- (b) ANSI Standard ANSI/SIA A92.6-2006, Self-Propelled Elevating Work Platforms.

(4) An employer must ensure that a manually propelled, integral chassis elevating work platform manufactured on or after July1, 2009 with a platform that cannot be positioned laterally completely beyond the base, that may be adjusted manually or using power and that must not be occupied when moved horizontally meets the requirements of:

- (a) CSA Standard CAN3-B354.1-04, Portable elevating work platforms; or
- (b) ANSI Standard ANSI/SIA A92.3-2006, Manually Propelled Elevating Aerial Platforms.

(5) An employer must ensure that a telescopic aerial device, aerial ladder, articulating aerial device, vertical tower, material lifting aerial device or a combination of any of them, when mounted on a motor vehicle, whether operated manually or using power, meets the requirements of CSA Standard CAN/CSA-C225-00(R2005), Vehicle Mounted Aerial Devices.

(6) An employer must ensure that a mast climbing elevating work platform that may be adjusted manually or using power meets the requirements of ANSI Standard ANSI/SIA A92.9-1993, Mast Climbing Work Platforms.

(7) An employer must ensure that a vehicle mounted bridge inspection and maintenance elevating work platform meets the requirements of ANSI Standard ANSI/SIA A92.8-1993 (R1998), Vehicle-Mounted Bridge Inspection and Maintenance Devices.

(8) An employer must ensure that an order picker meets the requirements of ASME Standard B56.1-2000, Safety Standard for Low Lift and High Lift Trucks.

(9) An elevating work platform of a type not referred to in subsections (1) to (8) must meet a standard the use of which is approved by a Director of Inspection.

#### **PERMANENT SUSPENSION POWERED WORK PLATFORMS**

348 (1) An employer must ensure that the platform of a permanent suspension powered work platform:

- (a) is constructed, installed, operated, tested, inspected, maintained, altered and repaired in accordance with CSA Standard CAN/CSA-Z271-98 (R2004), Safety Code for Suspended Elevating Platforms; or
- (b) if it was installed before April 30, 2004, is certified by a professional engineer.

(2) For the purposes of subsection (1), the "rated capacity" in CSA Standard CAN/CSA-Z271-98 (R2004) is to be taken to mean the total weight of:

- (a) workers and hand tools, with a minimum aggregate weight of 115 kilograms per worker; and
- (b) water and other equipment that the work platform is designed to lift at the rated speed.

#### **FORK-MOUNTED WORK PLATFORMS**

349 (1) An employer must ensure that a cage or work platform mounted on the forks of powered mobile equipment and intended to only support material is so designed and constructed that it is securely attached to the lifting carriage or forks of the powered mobile equipment, so that the cage or platform cannot accidentally move laterally or

vertically and so that the powered mobile equipment cannot tip.

(2) An employer must ensure that a work platform mounted on the forks of powered mobile equipment and intended to support a worker:

- (a) is commercially manufactured or, if not commercially manufactured, is designed and certified by a professional engineer;
- (b) has guardrails and toe boards; and
- (c) has a screen or similar barrier that prevents a worker from touching any drive mechanism.

(3) An employer must ensure that the operator of the powered mobile equipment remains at the controls while a worker is on the elevated forkmounted work platform.

(4) A person must not be on a fork mounted work platform while the powered mobile equipment to which the platform is attached is moving horizontally.

### **SUSPENDED MAN BASKETS**

350 Moved to section 75.1

### **BOATSWAIN'S CHAIRS**

351 (1) An employer must ensure that:

- (a) a commercially manufactured boatswain's chair is assembled, used and maintained in accordance with the manufacturer's specifications or specifications certified by a professional engineer; or
- (b) a boatswain's chair that is not commercially manufactured is designed and certified by a professional engineer.

(2) An employer must ensure that a boatswain's chair provides stable support for the user.

(3) An employer must ensure that a rope used to suspend a boatswain's chair is:

- (a) made of synthetic fibre with a breaking strength of at least 27 kilonewtons; and
- (b) is compatible for use with the rigging hardware in the suspension system.

(4) An employer must ensure that a wire rope used to suspend a boatswain's chair is:

- (a) of a type recommended for suspending boatswain's chairs by the rope manufacturer; and
- (b) is suitable for the hoist being used.

### **TEMPORARY SUPPORTING STRUCTURES**

352 (1) An employer must ensure that a temporary supporting structure and every part of it, including metal scaffold components, are designed, constructed and braced in accordance with CSA Standard S269.1-1975 (R2003), Falsework for Construction Purposes.

(2) Subsection (3) applies to a temporary supporting structure unless the requirements of CSA Standard S269.1-1975 (R2003), Falsework for Construction Purposes are more stringent.

(3) An employer must ensure that a temporary supporting structure is certified by a professional engineer if the temporary supporting structure:

- (a) consists of shoring that is more than 3.7 metres in height;
- (b) may transmit loads to another part of the structure that may not provide adequate support; or
- (c) is designed to act as a unit composed of parts so connected to one another that a load applied to any part of it may alter the stresses induced in other parts.

(4) A professional engineer certification for the purposes of subsection (3) must show:

- (a) the size and specifications of the temporary supporting structure, including the type and grade of all materials for its construction;
- (b) the loads for which the temporary supporting structure is designed;
- (c) the sequence of loading or unloading the temporary supporting structure, if the loading or unloading sequence is critical to its stability; and
- (d) the shoring sequence, as necessary, after the temporary supporting structure is stripped.

### **FLY FORM DECK PANELS**

353 (1) An employer must ensure that a fly form deck panel:

- (a) is capable of resisting a minimum horizontal load of 3.6 kilonewtons applied in any direction at the upper edge;
- (b) has a safety factor against overturning of at least 2 to 1; and
- (c) has a safety factor against sliding of at least 1.5 to 1.

(2) An employer must ensure that attachments to the panel are completed and secured before the fly form deck panel is detached from the hoist used to position the panel.

(3) An employer must ensure that erection drawings and procedures respecting a fly form deck panel are readily available to the workers who will assemble, fly, use, dismantle or reuse the panel.

(4) The erection drawings and procedures referred to in subsection (3) must include:

- (a) a plan view, longitudinal section and cross section of the panel;
- (b) the calculated position of the panel's centre of gravity;
- (c) step-by-step procedures for all phases of assembly, flying, use, dismantling, repair and reuse of the panel;
- (d) procedures for installing the panel on non typical floors; and
- (e) any supplementary specifications for using the panels that are prepared by the manufacturer, a professional engineer or the employer.

(5) An employer must ensure that no person is on a fly form deck panel while it is being flown.

(6) A person must not be on a fly form deck panel while it is being flown.

See also:

### **SAFE WORK PRACTICES**

793 (1) An employer must develop and implement safe work practices and procedures that include:

- (a) the assessment of hazards at the work site;
- (b) worker training, including hazard recognition;
- (c) the selection, limitation, operation and maintenance of tools and equipment;
- (d) work positioning and fall protection; and
- (e) emergency rescue.

(2) If reasonably practicable, an employer must involve affected workers in the development and implementation of the safe work practices and procedures.

### **FALL PROTECTION AND WORK POSITIONING**

794 (1) If it is not reasonably practicable to comply with the fall protection requirements of section 139, an employer must ensure that a worker uses a work positioning system.

(2) A worker must use or wear the work positioning or fall protection system the employer requires the worker to use or wear.

### **HARNESS STANDARDS**

795 (1) An employer must ensure that a harness manufactured on or after July 1, 2009 and used as part of a work positioning system is approved to:

- (a) NFPA Standard 1983, Standard on Fire Service Life Safety Rope and System Components, 2006 Edition, as a Class II or Class III life safety harness;
- (b) CEN Standard EN 813: 1997, Personal protective equipment for prevention of

- falls from a height - Sit harnesses;
- (c) CSA Standard CAN/CSA-Z259.10-06, Full Body Harnesses;
  - (d) ANSI/ASSE Standard Z359.1-2007, Safety requirements for personal fall arrest systems, subsystems and components; or
  - (e) CEN Standard EN 361: 2007, Personal protective equipment against falls from a height - Full body harnesses.

(2) Subsection (1) does not apply to harnesses in use before April 30, 2004.

Occupational Health and Safety (OHS) Code - Comparison of Requirements between the OHS Code 2006 and OHS Code 2009

## **British Columbia**

### **Occupational Health and Safety Regulations, B.C. Reg. 296/97**

#### **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;

"carabiner" Repealed; [B.C. Reg. 420/2004, s. 2]

"control zone" Repealed; [B.C. Reg. 420/2004, s. 2]

"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;

"free fall distance" Repealed; [B.C. Reg. 420/2004, s. 2]

"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;

"safety monitor system" Repealed; [B.C. Reg. 420/2004, s. 2]

"safety strap" Repealed; [B.C. Reg. 420/2004, s. 2]

"shock absorber" Repealed; [B.C. Reg. 420/2004, s. 2]

"swing-fall hazard" Repealed; [B.C. Reg. 420/2004, s. 2]

"total fall distance" Repealed; [B.C. Reg. 420/2004, s. 2]

"unusual risk of injury" Repealed. [B.C. Reg. 420/2004, s. 2]

[B.C. Reg. 420/2004, s. 2; 404/2012, 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 a fall arrest system is used.

(5) If the use of a fall arrest system is not practicable, or will result in a hazard greater than if the 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.

[B.C. Reg. 420/2004, s. 4]

### **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]

(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.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.

Also see: various applicable sections including:

## **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.

[B.C. Reg. 422/2004, s. 1; 19/2006, s. 6;  
243/2006, s. 7; 320/2007, App. D, s. 3]

## **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**

(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.C. Reg. 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.

[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.

[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.

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

### **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.

## **SPECIFICATIONS AND PLANS**

20.17 (1) The employer must ensure that a set of plans and specifications meeting the requirements of CSA Standard S269.1-1975, Falsework for Construction Purposes and CSA Standard CAN/CSA-S269.3-M92, Concrete Formwork is prepared for the formwork for each job and for all items of concrete work, the failure of which could cause injury.

(2) Erection drawings and supplementary instructions for concrete formwork, falsework and reshoring must be certified by a professional engineer and available at the site during erection, use and removal of the concrete formwork, falsework and reshoring.

(3) The following types of concrete formwork require erection drawings and supplementary information certified by a professional engineer:

- (a) flyforms;
- (b) gang forms;
- (c) jump forms;
- (d) vertical slip forms;
- (e) formwork more than 4 m (13 ft) in height;
- (f) suspended forms for slabs, stairs and landings;
- (g) beam forms;
- (h) single sided forms over 2 m (6.5 ft) in height;
- (i) cantilever forms;
- (j) bridge deck forms;
- (k) shaft lining forms;
- (l) tunnel lining forms;
- (m) forms so designated by the designer of the structure.

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

## **SUPERVISION**

20.18 (1) A qualified supervisor experienced in the construction of temporary support structures must supervise the erection and use of formwork and falsework.

(2) Workers must be properly instructed on the hazards that they may be exposed to and on the precautions to be taken while around or on formwork and falsework.

## **ERECTION DRAWING INFORMATION**

20.19 (1) Erection drawings and supplementary instructions must clearly show all

information necessary to accurately and safely assemble the concrete formwork, falsework and reshoring to the design requirements.

(2) The documents required by subsection (1) must include at least:

- (a) erection drawings showing sufficient plan and section views and connection details, enlarged where necessary, to clearly describe the formwork and permit accurate assembly;
- (b) the quality and grade of materials to be used for the components and their connection;
- (c) an accurate description of proprietary items, including fittings, to permit field identification;
- (d) the load bearing capacity required of the material upon which the sills are to be placed and, where necessary, details of procedures to be used to develop and maintain the required capacity;
- (e) the minimum dimensions of sills or other foundation members;
- (f) construction, erection and dismantling procedures which require special attention including, where applicable, handling multi-use formwork panels;
- (g) 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;
- (h) where structural components connect together, the connections detailed to prevent accidental displacement or rotation of the components;
- (i) the reshore plan where applicable;
- (j) details of the form or mould into which concrete will be placed;
- (k) sufficient load and deflection information to permit a professional engineer to understand the design of the concrete formwork and falsework;
- (l) the requirement for outstanding field design and detailing where applicable; and
- (m) the sequence, method and rate of load placement to prevent overloading of any part of the formwork.

### **RESPONSIBILITY FOR DESIGN**

20.20 (1) A professional engineer must be responsible for all field designs, details and changes including the effect they may have on the original design.

(2) Field designs and changes must be documented as required by section 20.19 and must be available at the site before and during placement of concrete or other significant loading of the formwork or falsework.

### **CONTINUITY OF ENGINEERING**

20.21 The employer, or if the formwork affects workers of more than one employer, the owner or principal contractor, must ensure continuity of design, construction and inspection in the event of a change of professional engineers, or if the separate work of 2 or more professional engineers is involved.

### **EQUIPMENT REQUIREMENTS**

20.22 (1) Equipment, materials and hardware which cannot be identified as meeting the standards specified in the professional engineer's drawings and specifications must not be used.

(2) Repealed. [B.C. Reg. 312/2003, App. B, s. 36]

[B.C. Reg. 312/2003, App. B, s. 36]

### **CONCRETE PLACING HAZARDS**

20.23 (1) Protruding ends of reinforcing steel which are hazardous to workers must be removed or effectively guarded.

(2) If a worker is required to be underneath the formwork during a concrete pour or placement of another significant load, the worker must be restricted from the areas where the loads are placed.

(3) If loads such as bundles of reinforcing steel are being placed on the formwork, or if concrete has just been placed on the formwork, workers must be restricted from the area under those portions of the formwork until it can be assured that the formwork will withstand the load.

(4) Placement of concrete or other loads must stop if any weakness, undue settlement or excess distortion of formwork of a type listed in section 20.17(3) occurs, and may only restart after the formwork 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 erection drawings and supplementary instructions.

### **FLYFORM DRAWINGS**

20.24 (1) Erection drawings 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, the 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 erection drawings and supplementary instructions for a flyform panel must provide that as soon as a flyform panel is landed on a supporting surface, before anyone climbs or walks on the panel, and before reinforcing steel or concrete is placed 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 along 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 obtained for a panel, the panel must, before being unhooked from the crane or hoist, be secured to the permanent structure or an adjacent panel in a manner specified by the formwork designer.

(4) When all flyform panels have been assembled to form a continuous piece of concrete formwork, the concrete formwork and falsework must meet the requirements of section 20.17(1).

### **FLYFORM HANDLING**

20.25 (1) The erection drawings and 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 design documents must draw attention to the procedure for obtaining stability.

(3) The erection drawings and supplementary instructions required by subsections (1) and (2), including special procedures required for non-typical floors, must be made available to workers involved in any part of the assembly, flying, use, dismantling and reuse of each flyform panel.

### **INSPECTIONS**

20.26 (1) Immediately before placement of concrete or other intended loading, the employer must ensure that the concrete formwork and falsework is inspected and an engineering certificate is issued by a professional engineer, which:

- (a) indicates the specific areas inspected;
- (b) certifies that the concrete formwork and falsework has been erected in accordance with the latest approved erection drawings and supplementary instructions; and
- (c) certifies that specified reshoring is in place.

(2) The certificate required by subsection (1) must be available at the site for inspection by an officer.

(3) If a gangform is being reused on the same jobsite without modification, an inspection by a qualified person must be performed before each pour, in which case a new professional engineer's inspection certificate under subsection (1) is not required.

### **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.

[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.

[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.

[B.C. Reg. 188/2011, App. I, s. 1]

### **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]
- (e) the allowable load.

(2) Repealed. [B.C. Reg. 188/2011, App. I, s. 2]

[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.

[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 .

[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.

[B.C. Reg. 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.

[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.

### **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.

[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]

[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.

[B.C. Reg. 188/2011, App. I, s. 10]

### **USE OF A PLACING BOOM**

20.41 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 37]

(2) Repealed. [B.C. Reg. 312/2003, App. B, s. 37]

(3) Repealed. [B.C. Reg. 188/2011, App. I, s. 11]

[B.C. Reg. 312/2003, App. B, s. 37;  
188/2011, App. I, s. 11]

### **PIPE DIAMETER AND THICKNESS**

20.42 (1) Repealed. [B.C. Reg. 312/2003, App. B, s. 38]

(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.

### **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) Despite section 20.26 of this regulation:

- (a) a reference to a "qualified person" in clauses 5.2.2.2.1 to 5.2.2.2.3 of CSA Standard Z151-09, Concrete pumps and placing booms, must be read as a reference to a person who is a professional engineer; and
- (b) a reference to a "person qualified to the requirements of CSA W178.2" or to a "representative authorized by the manufacturer" in clause 5.2.2.2.2 of CSA Standard Z151-09, Concrete pumps and placing booms, must be read as a reference to a person who is a professional engineer.

[B.C. Reg. 188/2011, App. I, s. 12]

## **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.

[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.

[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 - 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.

### **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 subsection 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.

[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.

### **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.

[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.

### **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).

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.

[B.C. Reg. 312/2003, App. B, s. 41]

### **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.

[B.C. Reg. 253/2001, s. 15; 258/2008, App. F, s. 3]

### **UNDERGROUND UTILITIES**

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.

[B.C. Reg. 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.

[B.C. Reg. 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.

[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:

Table

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:

Table

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.

[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.

- (3) 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 <sup>1</sup> (metric figures)								
UPRIGHTS			WALERS		CROSS BRACES			
Trench depth (metres)	Minimum dimensions (millimetres) <sup>2</sup>	Maximum spacing (metres)	Minimum dimensions (millimetres) <sup>2</sup>	Maximum vertical spacing (metres)	Width of trench (metres)		Maximum spacing (metres)	
					Up to 1.8	1.8-3.7	Vertical	Horizontal
					Minimum dimensions (millimetres) <sup>2</sup>			
<i>Type A: Hard and solid soil</i>								
1.2-3 <sup>3</sup>	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	140 x 191	1.2	1.8
<i>Type B: Soil likely to crack or crumble</i>								
1.2-3 <sup>3</sup>	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	140 x 191	1.2	1.8
<i>Type C: Soft, sandy, filled or loose soil</i>								
1.2-3 <sup>3</sup>	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	64 x 235	Close tight	191 x 241	1.2	140 x 191	191 x 241	1.2	1.8
Size and spacing of members <sup>1</sup> (imperial figures)								
UPRIGHTS			WALERS		CROSS BRACES			
Trench depth (feet)	Minimum dimensions (inches) <sup>2</sup>	Maximum spacing (feet)	Minimum dimensions (inches) <sup>2</sup>	Maximum vertical spacing (feet)	Width of trench (feet)		Maximum spacing (feet)	
					Up to 6	6-12	Vertical	Horizontal
					Minimum dimensions (inches) <sup>2</sup>			
<i>Type A: Hard and solid soil</i>								
4-10 <sup>3</sup>	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
<i>Type B: Soil likely to crack or crumble</i>								
4-10 <sup>3</sup>	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
<i>Type C: Soft, sandy, filled or loose soil</i>								
4-10 <sup>3</sup>	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	3 x 10	Close tight	8 x 10	4	6 x 8	8 x 10	4	6

<sup>1</sup> The dimensions shown are minimum and must be increased if necessary to meet job conditions.

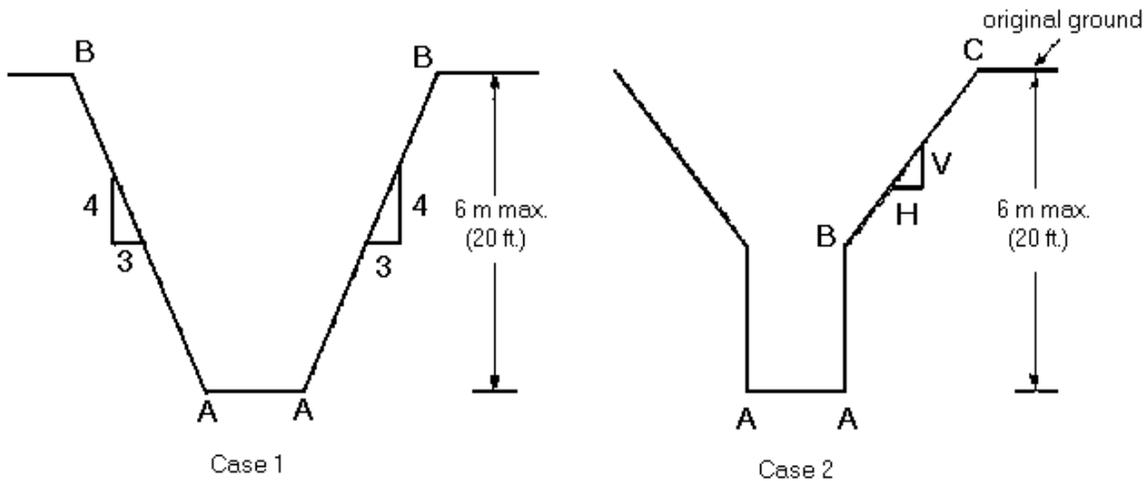
<sup>2</sup> The dimensions of members in millimetres are actual dimensions for surfaced dry materials. The dimensions in inches are the nominal values for surfaced dry materials.

<sup>3</sup> 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.

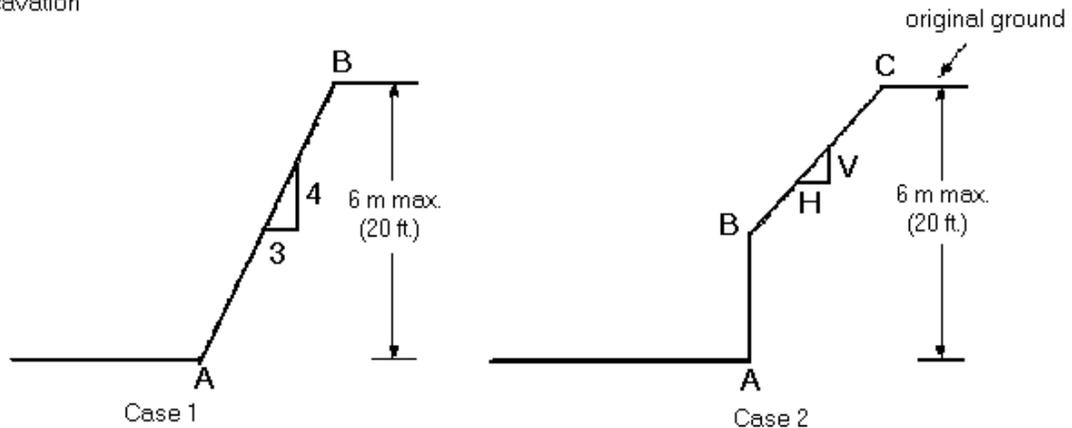
<sup>4</sup> Walers may be omitted in trenches not exceeding 2.4 m (8 ft) in depth provided that it has been confirmed that the soil is sufficiently hard and solid to safely permit water deletion, and provided that the trench is not in proximity to previously excavated ground.

Figure 20-1 Sloping in lieu of shoring

Trench excavation



Bulk excavation



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.

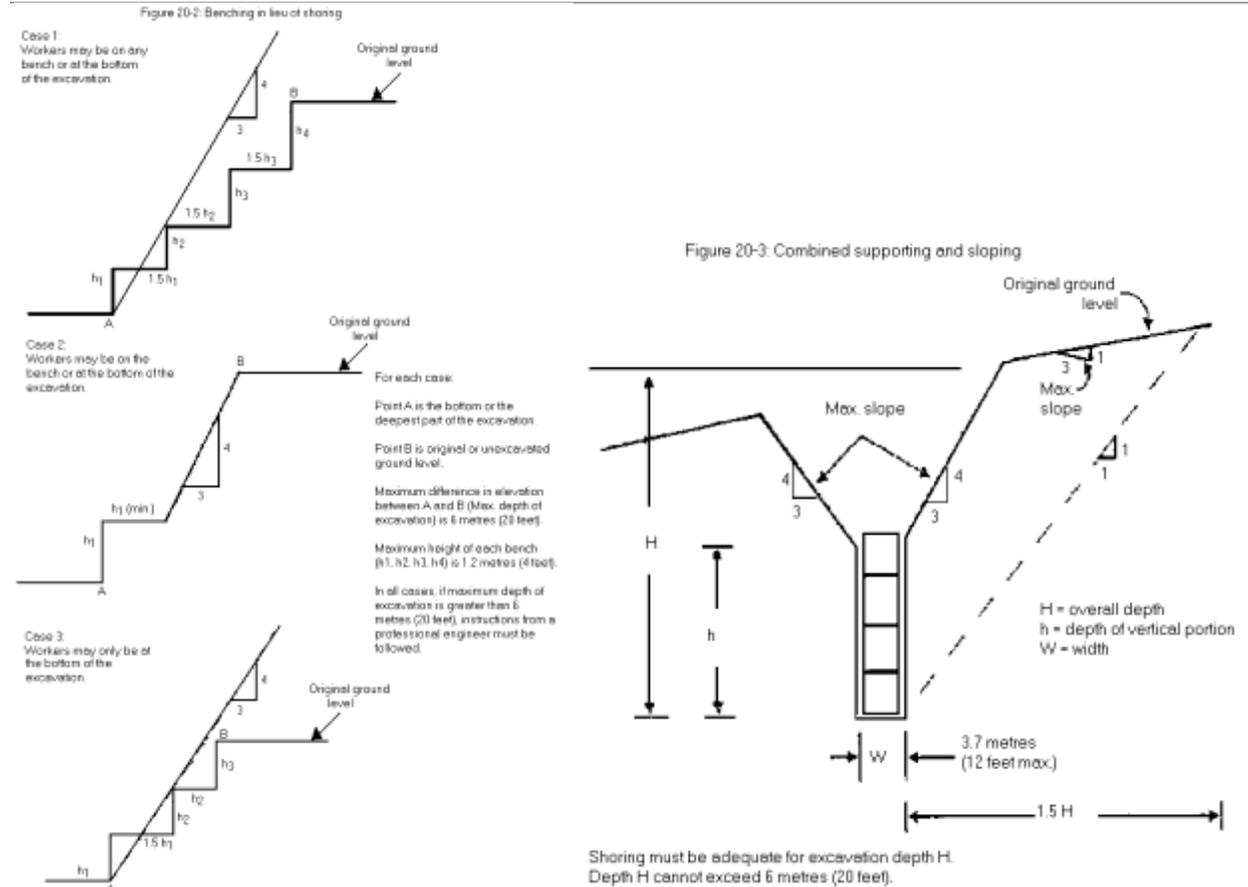
Case 2 (trench or bulk excavation), maximum height of vertical portion, shown as line AB is 1.2 metres (4 feet).

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:

Table

Height of line AB		Maximum slope of line BC
centimetres	feet	(in hard and solid soil)
up to 30	up to 1	1 horizontal (H) to 1 vertical (V)
30 to 60	1 to 2	3 H to 2 V
60 to 90	2 to 3	2 H to 1 V
90 to 120	3 to 4	3 H to 1 V



**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 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.

### **SUSPENDED WORK PLATFORMS**

20.102 (1) Suspended work platforms such as gilly 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.

[B.C. Reg. 19/2006, ss. 9, 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.

### **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 Before work begins on the demolition or salvage of machinery, equipment, buildings or structures, the employer or owner must:

- (a) ensure that a qualified person inspects the site to identify any asbestos-containing materials, lead or other heavy metal or toxic, flammable or explosive materials that may be handled, disturbed or removed;
- (b) have the inspection results available at the worksite, including any drawings, plans or specifications, as appropriate, to show the locations of any hazardous substances;
- (c) ensure that any hazardous materials found are safely contained or removed; and
- (d) if hazardous materials are discovered during demolition work that were not identified in the inspection required by paragraph (a), ensure that all work ceases until such materials are contained or removed.

[B.C. Reg. 188/2011, App. B, s. 15]

### **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.

[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.

### **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*.

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

### **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.

### **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, before going off shift, must make a written report to the supervisor of any unusual condition found which has not been corrected.

(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.

### **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.

### **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.

### **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.

### **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.

[B.C. Reg. 312/2003, App. B, s. 47]

### **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.

### **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.

### **EMERGENCY ESCAPE SYSTEMS 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.

[B.C. Reg.258/2008, App. G, s. 7]

### **DRAW WORKS CONTROLS**

23.40 (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.

### **LADDER PLATFORMS**

23.45 (1) Repealed. [B.C. Reg. 312/2003, App. J, s. 8]

(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.

[B.C. Reg. 312/2003, App. J, s. 8;  
422/2004, s. 2]

### **DRILL PIPES, COLLARS AND TUBING**

23.58 (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.

## **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;

"binder" means a wire, synthetic rope, chain or other device that is secured by a cinch, and placed around logs on a logging truck or trailer to prevent the logs from spilling;

"bucker" means a worker who cuts up trees on the ground;

"bunk" means the bottom section of the cradle assembly on a logging truck or trailer onto which logs are placed;

"butt rigging" means a system of swivels, shackles, links and hooks which connect the haulback and mainlines and to which chokers are fastened;

"cable clip" Repealed; [B.C. Reg. 20/2008, App. A, s. 2]

"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;

"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;

"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 transporter" means any of the following used to transport logs on roads:

- (a) a truck;
- (b) a trailer;
- (c) a truck and trailer assembly;

"mainline" means the cable used to yard logs;

"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 118 of the \*Workers Compensation Act\*](#);

"prime contractor" has the same meaning as in section 118 of the *Workers Compensation Act*;

"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;

"turn" means one or more logs that are skidded or yarded to the landing at one time;

"yarding" means moving logs by the use of mobile or other equipment that does not travel while the logs are being moved.

[B.C. Reg. 20/2008, App. A, s. 2]

### **APPLICATION**

26.20.1 Sections 26.21 to 26.29 apply only to manual falling and bucking activities.

[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.

[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).

[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).

[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 the 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 at least every half hour and at the end of the work shift.

[B.C. Reg. 20/2008, App. A, s. 17]

### **RESPONSIBILITIES 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.

[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.

[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.

[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.

[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.

[B.C. Reg. 20/2008, App. A, s. 22]

### **APPLICATION**

26.29.1 Sections 26.29.2 to 26.29.5 apply only to mechanical falling activities.

[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.

[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.

[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.

[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.

[B.C. Reg. 20/2008, App. A, s. 23]

### **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.

[B.C. Reg. 20/2008, App. A, s. 24]

### **GUYLINES**

26.41 (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.

### **LOAD SPECIFICATIONS**

26.67 (1.1) Logs must not be loaded on a log transporter unless all workers in the vicinity are in a safe location and clear of any moving logs or logs that might move or fall during that operation.

### **BINDERS**

26.68 (2) A loaded log transporter may be moved within the loading area without the binders required under subsection (1) if no worker is exposed to the risk of a falling log or other falling debris.

(5.1) Subsection (5) does not apply in a loading area if no worker is exposed to the risk of a falling log or other falling debris.

### **BINDER REMOVAL**

26.69 (1) In this section, "binder removal station" means a structure that is designed to protect a worker, when releasing binders or stakes, from the maximum anticipated load of falling or sliding logs or log chunks.

(4) Binders must not be removed when a worker is preparing to unload logs from a log transporter unless:

- (a) a binder removal station is being used; or
- (b) the logs are otherwise restrained to prevent them from falling on the worker who is releasing the binders or stakes.

(5) Once binders have been removed from a load of logs, the unrestrained load must not be moved if any worker is exposed to the risk of a falling log or other falling debris.

### **HAUL ROAD STANDARDS**

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.

### **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.

[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.

[B.C. Reg. 312/2004, s. 1; 422/2004, s. 7]

### **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.

[B.C. Reg. 312/2003, App. A, ss. 4, 5]

## **Northwest Territories**

### **General Safety Regulations, R.R.N.W.T. 1990, C. S-1**

#### **SAFETY-BELTS, BODY HARNESSSES, LANYARDS AND LIFELINES**

57 (1) A worker shall wear a lanyard, lifeline and safety-belt or body harness where that worker is working:

- (a) at an elevation of 3 m (10 ft.) or more above grade or floor level;
- (b) over a pit, a shaft, or operating machinery; or
- (c) where a fall could result in his or her drowning, and where it is impracticable to provide adequate work platforms or guarding.

(2) An employer shall provide a separate lanyard, lifeline and safety-belt or body harness to each worker to whom the conditions specified in subsection (1) apply.

(3) Subsection (1) does not apply:

- (a) to structural steel erectors or similar tradespersons who are experienced at working at heights and where the use of a safety-belt, body harness, lanyard or lifeline may produce an additional hazard; or
- (b) where a protection approved by the Chief Safety Officer or a safety net has been provided.

58 An employer shall ensure that:

- (a) safety-belts, body harnesses and lanyards used by a worker comply with the following standards, as amended from time to time, of the Canadian Standards Association;
  - (i) CAN/CSA-Z259.1-95, Safety Belts and Lanyards,
  - (ii) Z259.2-M1979, Fall-Arresting Devices, Personnel Lowering Devices, and Life Lines,
  - (iii) CAN/CSA-Z259.10-M90, Full Body Harness,
  - (iv) CAN/CSA-Z259.11-M92, Shock Absorbers for Personal Fall Arrest Systems,
- (b) a lifeline or lanyard is protected by padding where it passes over sharp edges;
- (c) a lifeline is;
  - (i) free of knots or splices except at its terminals,
  - (ii) not attached to the same anchor points as the suspension lines of a work platform, and
  - (iii) attached to a fixed anchor capable of supporting twice the shock load that may be applied,
- (d) a safety-belt, body harness, lanyard or lifeline is assembled and used in a manner that will limit the free fall of a worker to 1.25 m (4.1 ft.);
- (e) metal parts of, or hardware attached to, a safety-belt, body harness, lanyard or lifeline are of drawn, rolled or forged metal with a load arresting capacity of not less than 17.8 kN (4,000 lbf);
- (f) a protective thimble is used to connect ropes or straps to eyes or rings used in a safety-belt, body harness, lanyard or lifeline; and
- (g) safety-belts, body harnesses, lanyards and lifelines must be;
  - (i) protected from heat, flame, abrasion and corrosive materials during storage, and
  - (ii) carefully inspected before use and any defective part removed from service.

[R-135-98, s. 7]

## **Mine Health and Safety Regulations, R-125-95**

### **FALL ARREST SYSTEM**

8.11. (1) Subject to subsection (5), where a person is exposed to the hazard of falling more than 3 m, a fall arresting device shall be provided to the person and he or she shall use the device.

(2) The fall arresting device required by subsection (1) shall comply with the relevant design and performance requirements of CAN/CSA-Z259.10-M90 Full Body Harnesses.

(3) Safety belts, harnesses, lanyards and lifelines shall not be knotted and shall not be allowed to become knotted or damaged.

(4) When in use with a fall arresting device, a lifeline shall be anchored so that a person cannot fall, free of arrest, for more than 1.22 m, and the lifeline shall be connected to an object that is free from sharp edges and capable of resisting the force of an arrest.

(5) Subsection (1) does not apply to a person employed in shaft sinking where measures are in effect to provide equal or greater protection against falling.

[R-008-2003, s. 72]

Also see:

### **SHAFT EXAMINATION**

11.98. (1) No person shall enter a hoisting compartment of a shaft in which hoisting operations are being conducted, except to enter or exit a conveyance in the compartment.

(2) No person shall work in a shaft compartment or in a place immediately adjoining the compartment or in that part of the headframe used in conjunction with the compartment while hoisting operations are being carried on in the compartment, except where:

- (a) the conveyance is necessary for carrying out the work and it has been equipped with a suitable working platform and overhead protection device;
- (b) the person is engaged in filling skips at a loading station and is properly protected in a location having sufficient room size for the person to safely carry out his or her duties;
- (c) the person is adequately protected from accidental contact with a moving conveyance and from the danger of falling material or rock; and
- (d) the work is being performed in a separate compartment that meets the requirements of section 11.04.

(3) The manager shall develop a procedure for shaft examination and provide it to the Committee for review and to the chief inspector.

[R-008-2003, s. 135]

**HANDLING OF BULK MATERIAL**

8.18 (1) Where a person may be endangered by the withdrawal, collapse, shifting or movement of bulk material such as rock, ore or other material in a stope, pass, chute or other storage area:

- (a) procedures shall be established respecting the precautions to be taken during and after removal of material therefrom; and
- (b) a person entering the affected area from above shall wear a fall arrest system.

(2) When pulling a chute, no person shall be positioned so that his or her access to an exit from the area may be blocked by an uncontrolled run of material, water or slime.

(3) A mechanical locking device shall be installed on power operated chute gates on an overcut, so that the gate may be locked in the open or closed position.

(4) Where an area is likely to be affected by the withdrawal or the collapse, shifting or movement of bulk material, the manager shall post warning signs and erect barriers in order that the area will not be accessed inadvertently.

(5) When a power operated safety guard or gate is used, the owner shall design and install the power operated safety guard or gate to minimize hazards when the power fails.

[R-008-2003, s. 75]

8.19. Where a person is working on top of bulk material in any silo, bin, hopper or other container or structure:

- (a) the person shall use a fall arrest system; and
- (b) at least one other person equipped with a suitable alarm shall be in constant attendance outside the container or structure.

**Nunavut**

Same regulations than Northwest Territories

**Yukon**

**Occupational Health and Safety Regulation, O.I.C. 2006/178**

**PROVISION AND USE**

1.37 Where it is not practical to protect a worker by guards, guardrails, safety nets or

other devices, the worker shall be provided with and required to use the appropriate fall arrest protection:

- (a) when working at a place from which a fall of;
  - i. 3 m (10 ft.) or more may occur, or
  - ii. less than 3 m (10 ft.), if it involves an unusual risk of injury,
- (b) where there is a possibility of falling into a pit, shaft, machinery, water or bulk material that could shift;
- (c) when climbing or descending from utility poles, communication and transmission towers or single point suspension equipment;
- (d) when working on a swing stage or thrust out scaffold, elevating work platform or basket or suspended platform or cage;
- (e) when barring or scaling loose material from a wall in an open pit or an earth work; or
- (f) when working on a roof;
  - i. having a slope of 2 vertical to 3 horizontal or steeper, or
  - ii. where the surface is slippery.

### **FALL PROTECTION PROGRAM**

1.38 Where work is performed at a location not protected by permanent guardrails and from which a fall of 7.5 m (25 ft.) or more may occur, a written fall protection plan shall be in place and communicated to workers with adequate consideration and description of:

- (a) falling hazards expected;
- (b) fall protection system or systems to be used;
- (c) the procedure to assemble, maintain, inspect, use and disassemble the fall protection system or systems; and
- (d) methods to rescue a fallen worker or one who is suspended by a personal fall protection system or safety net and is unable to effect self rescue.

### **COMPONENTS**

1.39 A worker shall:

- (a) when using a personal protection system for fall arrest, wear a full body harness or other such acceptable harness or device which meets the requirements of CSA Standard Z259.10-M90, Full Body Harness or other similar standard acceptable to the director;
- (b) when using a personal protection system for fall arrest, wear an energy absorbing system which meets the requirements of CSA Standard Z259.11-05, Energy Absorbers and Lanyards or other similar standard acceptable to the director; and
- (c) when using a personal protection system for fall restraint, wear a safety belt, a full body harness or other such acceptable harness or device and lanyard which

meets CSA Standard Z259.1-95, Safety Belts and Lanyards, or other similar standard acceptable to the director.

### **VERTICAL LIFELINES**

1.40 A vertical lifeline shall meet the requirements of CSA Standard Z259.2.1-98, Fall Arresters, Vertical Lifelines and Rails, or other similar standard acceptable to the director, and it shall be:

- (a) secured independently to an anchor with adequate strength;
- (b) padded or protected at points of attachment and everywhere else the lifelines may come in contact with sharp or abrasive edges;
- (c) used to protect only one worker per line;
- (d) first grade, three strand, hawser laid manila rope of not less than 0.019 m (3/4 in.), having a breaking strength of not less than 24 kN (5400 lbs.), or synthetic or wire rope of at least equal strength;
- (e) wire rope or wire-cored manila rope when there is a possibility of the line being cut, burned or other quick severing incidence;
- (f) non-conductive and used in duplicate (two lines per worker), where workers are using the lifelines in proximity of an energized electrical line;
- (g) less than 90 m (300 ft.) in length; and
- (h) extended to within 3 m (10 ft.) of the ground or other safe landing.

### **HORIZONTAL LIFELINE USAGE**

1.41 Where a horizontal lifeline is used as a temporary system of fall restraint, it shall:

- (a) be designed to provide an ultimate load capacity of at least 3.5 kN (800 lbs.) for each worker connected to it; and
- (b) be either certified by a professional engineer as meeting the requirements of a permanent system as outlined in section 1.42; or
- (c) meet the following requirements:
  - i. the horizontal lifeline shall be a minimum of 0.012 m (1/2 in.) diameter wire rope with a breaking strength of at least 89 kN (20,000 lbs.),
  - ii. the horizontal lifeline shall be free of splices except at the terminations,
  - iii. all connecting hardware and end anchors shall have ultimate load capacity of at least 71 kN (16,000 lbs.),
  - iv. the lifeline shall span at least 6 m (20 ft.) and not more than 18 m (60 ft.),
  - v. the unloaded sag in the lifeline shall be approximately equal to the span length divided by 60, with a minimum elevation of 1 m (39 in.) above the work surface,
  - vi. any free fall distance shall be limited to 1.2 m (4 ft.),
  - vii. a minimum of 3.5 m (12 ft.) of unobstructed clearance shall be available below the working surface,
  - viii. no more than three workers shall be secured to a horizontal lifeline, and
  - ix. the lifeline shall be positioned so it does not impede safe movement of a

worker.

### **HORIZONTAL LIFELINE DESIGN**

1.42 A permanent horizontal lifeline shall be designed by a professional engineer, who shall provide the workplace with signed and dated drawings and instructions for the lifeline system, indicating:

- (a) the layout in plan and elevation, including anchor locations, installation specifications, anchor design and detailing;
- (b) system specifications that include permissible free fall distance, clearance to obstructions below, and rope size, breaking strength, termination details and initial sag or tension;
- (c) the number of workers permitted to connect to the lifeline, and maximum arrest force to each worker; and
- (d) written certification that the lifeline system has been installed in accordance with the design documents.

### **LIFELINES AND LANYARDS**

1.43 Workers using lifelines and lanyards shall ensure that they are:

- (a) free of knots or splices except at their terminals; and
- (b) capable of limiting the worker's free fall to less than 1.2 m (4 ft.).

## **Federal Sector**

### **Canada Occupational Safety And Health Regulations, SOR/86-304**

#### **FALL-PROTECTION SYSTEMS**

12.10 (1) Subject to subsection (1.1), every employer shall provide a fall-protection system to any person, other than an employee who is installing or removing a fall-protection system in accordance with the instructions referred to in subsection (5), who works:

- (a) from an unguarded structure or on a vehicle, at a height of more than 2.4 m above the nearest permanent safe level or above any moving parts of machinery or any other surface or thing that could cause injury to a person on contact;
- (b) from a temporary structure at a height of more than 6 m above a permanent safe level; or
- (c) from a ladder at a height of more than 2.4 m above the nearest permanent safe level where, because of the nature of the work, that person is unable to use at least one hand to hold onto the ladder.

(1.1) Where an employee is required to work on a vehicle on which it is not reasonably practicable to provide a fall-protection system, the employer shall:

- (a) in consultation with the policy committee or, if there is no policy committee, the work place committee or the health and safety representative;
  - (i) perform a job safety analysis to eliminate or minimize the need for the employee to climb onto the vehicle or its load, and
  - (ii) provide every employee who is likely to climb onto the vehicle or its load with training and instruction on the safe method of climbing onto and working on the vehicle or its load,
- (b) make a report in writing to the regional health and safety officer setting out the reasons why it is not reasonably practicable to provide a fall-protection system and include the job safety analysis and a description of the training and instruction referred to in paragraph (a); and
- (c) provide a copy of the report referred to in paragraph (b) to the policy committee or, if there is no policy committee, the work place committee or the health and safety representative.

(1.2) The job safety analysis, training and instruction referred to in paragraph (1.1)(a) shall be reviewed every two years in consultation with the policy committee or, if there is no policy committee, the work place committee or the health and safety representative.

(2) The components of a fall-protection system shall meet the following standards:

- (a) CSA Standard Z259.1-1976, Fall-Arresting Safety Belts and Lanyards for the Construction and Mining Industries, the English version of which is dated November, 1976, as amended to May, 1979 and the French version of which is dated April, 1980;
- (b) CSA Standard Z259.2-M1979, Fall-Arresting Devices, Personnel Lowering Devices and Life Lines, the English version of which is dated November, 1979 and the French version of which is dated October, 1983; and
- (c) CSA Standard Z259.3-M1978, Lineman's Body Belt and Lineman's Safety Strap, the English version of which is dated September, 1978, as amended to April, 1981 and the French version of which is dated April, 1980, as amended to April, 1981.

(3) The anchor of a fall-protection system shall be capable of withstanding a force of 17.8 kN.

(4) A fall-protection system that is used to arrest the fall of a person shall prevent that person:

- (a) from being subjected to a peak fall arrest force greater than 8 kN; and
- (b) from falling freely for more than 1.2 m.

(5) Where an employee is about to install or remove a fall- protection system, the

employer shall:

- (a) prepare written instructions for the safe installation or removal of the fall-protection system; and
- (b) keep a copy of the instructions readily available for the information of the employee.

[SOR/2002-379, s. 1]

See also:

**Aviation Occupational Health and Safety Regulations, SOR/2011-87**

**SAFETY RESTRAINING DEVICES**

6.10 (1) If a person, other than a person who is exiting from an aircraft, is near an open aircraft door or hatch, the employer shall provide the person with a safety restraining device.

(2) Every safety restraining device shall be secured to the primary structure of the aircraft in a manner that prevents the person using the device from falling out of the aircraft.

**RECORDS**

6.14 (1) A record of all protection equipment provided by the employer, other than earplugs and other non-reusable equipment, shall be kept by the employer for a period of two years after the day on which it ceases to be used.

(2) The record shall contain:

- (a) a description of the equipment and the date of its acquisition by the employer;
- (b) the date and result of each inspection and test of the equipment;
- (c) the date and nature of any maintenance work performed on the equipment since its acquisition by the employer; and
- (d) the name of the person who performed the inspection, test or maintenance of the equipment.

**INSTRUCTION AND TRAINING**

6.15 (1) Every person who uses protection equipment shall be instructed in the use of the equipment.

(2) Every employee who uses protection equipment shall be instructed and trained in the use, operation and maintenance of the equipment.

(3) The training referred to in subsection (2) shall be set out in writing and kept readily available by the employer for examination by the employee.

## **DEFECTIVE PROTECTION EQUIPMENT**

6.16 If an employee identifies a defect in protection equipment that may render the protection equipment unsafe for use, the employee shall, as soon as possible, mark or tag the equipment as unsafe for use and report the defect to the person in charge of the aircraft.

## **Maritime Occupational Safety and Health Regulations, SOR/2010-120**

### **FALL-PROTECTION SYSTEMS**

144 (1) The employer must provide a fall-protection system to every person, other than an employee who is installing or removing a fall-protection system, who is granted access to:

- (a) an unguarded work area that is;
  - (i) more than 2.4 m above the nearest permanent safe level,
  - (ii) above any moving parts of machinery or any other surface or thing that could cause injury to a person on contact, or
  - (iii) above an open hold,
- (b) a structure referred to in Part 2 that is more than 3 m above a permanent safe level; or
- (c) a ladder at a height of more than 2.4 m above the nearest permanent safe level and because of the nature of the work, that person can use only one hand to hold onto the ladder.

(2) The components of a fall-protection system must meet the following standards:

- (a) CSA Standard Z259.1-05, Body Belts and Saddles for Work Positioning and Travel Restraint;
- (b) CSA Standard CAN/CSA-Z259.2.1-98 (R2008), Fall Arresters, Vertical Lifelines and Rails;
- (c) CSA Standard CAN/CSA-Z259.2.2-98 (R2009), Self-Retracting Devices for Personal Fall-Arrest Systems;
- (d) CSA Standard Z259.2.3-99 (R2004), Descent Control Devices;
- (e) CSA Standard Z259.10-06, Full Body Harnesses;
- (f) CSA Standard Z259.11-05, Energy Absorbers and Lanyards;
- (g) CSA Standard CAN/CSA-Z259.12-01 (R2006), Connecting Components for Personal Fall Arrest Systems (PFAS);
- (h) CSA Standard Z259.13-04 (R2009), Flexible Horizontal Lifeline Systems; and
- (i) CSA Standard Z259.16-04 (R2009), Design of Active Fall-Protection Systems.

(3) The anchor of a fall-protection system must be capable of withstanding a force of 17.8 kN.

(4) A fall-protection system that is used to arrest the fall of a person must prevent that person:

- (a) from being subjected to a peak fall arrest force of more than 8 kN; and
- (b) from falling freely for more than 1.2 m.

(5) An employer must train and instruct every employee required to install or remove a fall-protection system in a work place in the procedures to be followed for the installation or removal of the system.

## **Oil and Gas Occupational Safety and Health Regulations, SOR/87-612**

### **FALL-PROTECTION SYSTEMS**

13.10 (1) Where a person, other than an employee who is installing or removing a fall-protection system in accordance with the instructions referred to in subsection (5), works from:

- (a) an unguarded structure that is;
  - (i) more than 2.4 m above the nearest permanent safe level,
  - (ii) above any moving parts of machinery or any other surface or thing that could cause injury to an employee upon contact,
  - (iii) above an open hopper, vat, or pit, or
  - (iv) above water more than 1 m deep, or
- (b) a ladder at a height of more than 2.4 m above the nearest permanent safe level where, because of the nature of the work, that person can use only one hand to hold onto the ladder, the employer shall provide a fall-protection system.

(2) The components of a fall-protection system shall meet the following standards:

- (a) CSA Standard Z259.1-1976, Fall-Arresting Safety Belts and Lanyards for the Construction and Mining Industries, the English version of which is dated November 1976, as amended to May 1979 and the French version of which is dated April 1980;
- (b) CSA Standard Z259.2-M1979, Fall-Arresting Devices, Personnel Lowering Devices and Life Lines, the English version of which is dated November 1979 and the French version of which is dated October 1983; and
- (c) CSA Standard Z259.3-M1978, Lineman's Body Belt and Lineman's Safety Strap, the English version of which is dated September 1978, as amended to April 1981 and the French version of which is dated April 1980, as amended to April 1981.

(3) The anchor of a fall-protection system shall be capable of withstanding a force of 17.8 kN.

(4) A fall-protection system that is used to arrest the fall of a person shall prevent that person:

- (a) from being subjected to a peak fall arrest force greater than 8 kN; and

(b) from falling freely for more than 1.2 m.

(5) Every employee required to install or remove a fall-protection system in a work place shall be instructed and trained by the employer in the procedures to be followed for the installation or removal of the system.

## Comments

### Standards

B167-1964, General Purpose Electric Overhead Travelling Cranes  
C22.2 No.33-M1984, Construction and Test of Electric Cranes and Hoists  
Z259.1-05, Body Belts and Saddles for Work Positioning and Travel Restraint  
Z259.1-95, Safety Belts and Lanyards  
Z259.2.1-98, Fall-arresters, Vertical life lines, and Rails  
Z259.2-M1979, Fall-arresting Devices, Personnel Lowering Devices and Life Lines  
Z259.2.2-98, Self-Retracting Devices for Personal Fall-Arrest Systems  
Z259.2.3-99, Descent Control Devices  
Z259.10-06, Full Body Harnesses  
Z259.10- M90, Full Body Harness  
Z259.11-05, Energy Absorbers and Lanyards  
Z259.11-M92, Shock Absorbers for Personal Fall- Arrest Systems  
Z259.12-01, Connecting Components for Personal Fall-Arrest Systems  
Z259.13-04, Flexible Horizontal Life Line Systems  
Z259.14-01, Fall Restricting Equipment for Wood Pole Climbing  
or Z259.1-1976, Fall Arresting Safety Belts and Lanyards for the Construction and Mining Industries;  
CAN/CSA-Z259.2.1-M98, Fall Arresting Devices and Vertical Lifelines.  
or Z259.2-M1979, Fall-Arresting Devices, Personnel Lowering Devices, and Life Lines  
or CAN/CSA-Z259.2.2-M98, Self-Retracting Devices for Personal Fall Arrest Systems  
Z259.16-04, Design of Active Fall-Protection Systems  
Z150-1974, Safety Code for Mobile Cranes

Prepared by:

Date: