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chapter S-2.1, r. 14

Regulation respecting occupational health and safety in mines

Act respecting occupational health and safety
(chapter S-2.1, ss. 223, 286, 294 and 310).

O.C. 213-93; O.C. 1236-98, s. 1.

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DIVISION I

INTERPRETATION AND SCOPE

1. In this Regulation,

"ANSI" means the American National Standards Institute; (*ANSI*)

"air recirculation" means the reintroduction of exhaust air from a main ventilation circuit or an auxiliary circuit in the main circuit; (*recirculation de l'air*)

"armoured cable" means any electrical cable covered with metal wires or tapes other than lead and forming an integral part of it; (*câble armé*)

"ASTM" means the American Society for Testing and Materials; (*ASTM*)

"auxiliary circuit" means the path travelled by a volume of air that takes its source from an auxiliary fan supplying air to all the workers and motorized equipment on a site or an underground working, from the main ventilation circuit to its discharge from the auxiliary circuit; (*circuit secondaire*)

"auxiliary fan" means the fan that ensures air circulation in areas outside the main ventilation circuit of the mine; (*ventilateur secondaire*)

"auxiliary overwind" means any safety device preventing a skip or a cage-skip assembly from rising to the rock dumping position when persons are being transported; (*interrupteur anti-déversement*)

"blasting accessory" means any explosive device used for firing explosives; (*accessoire de sautage*)

"blasting agent" means any explosive obtained by mixing an oxidizing agent with a carbon-containing substance in which none of the ingredients is an explosive and which cannot be detonated by a single No. 8 detonator; (*agent de sautage*)

"blasting area" means any place or space that presents a projection or blast hazard to a person or where a hazard exists because of the effects of the blasting; (*zone de tir*)

"blasting site" means any location where explosives are present in a drill hole in preparation for blasting; (*lieu de sautage*)

"body of water" means an accumulation of water or a mixture of water and loose soil likely to become liquefied; (*nappe d'eau*)

"booster fan" means the fan that supplements the principal fan in providing air circulation in an underground mine; (*ventilateur de renfort*)

"braking device" means any brake or all brakes activated independently from the energy of a hoist and capable of stopping a moving drum or friction pulley on a hoist; (*moyen de freinage*)

"bucket" means any conveyance in the form of a barrel suspended from the hoisting rope and used for the transport of persons, rock and materials during shaft sinking work; (*cuffat*)

"control device" means any device used to control circuits and electrical equipment such as a switch and a circuit-breaker but not an isolation switch; (*dispositif de commande*)

"conveyance" means any device used to transport persons or materials in a mine shaft by means of a hoist such as a cage, a skip, a bucket or a cage-skip assembly; (*transporteur*)

"CSA or ACNOR" means the Canadian Standards Association; (*ACNOR ou CSA*)

"detector" means any system of detection by radiation detecting the presence of a person or an obstacle behind a vehicle when it is backing up; (*détecteur*)

"development" means work preparatory to beginning operation of an underground mine or of the extension of a deposit in such a mine; (*développement*)

"development work" means shaft sinking work, excavation of ramps, drifts, cross-cuts or raises, except stope mining; (*travaux de développement*)

“embankment” means land arranged in a slope around an open-pit mine; (*talus*)

“explosive” means any substance fabricated, manufactured or used to produce an explosion or a detonation, such as gunpowder, blasting powder, dynamite, an explosive in solution, aqueous gelatin, a blasting agent or a blasting accessory; (*explosif*)

“fire-resistance” means the fire-resistance rating within the meaning of the National Building Code of Canada 1990; (*résistance au feu*)

“free fall test” means any test consisting of releasing a cage, a skip or a cage-skip assembly under maximum load permitted for the transport of persons so that the safety catches can grip the guides when the cage, skip or cage-skip assembly drops at maximum hoisting speed; (*essai par chute libre*)

“headsheave” means the grooved wheel located between the hoist and the conveyance, bearing the shaft cable and deflecting it into the longitudinal axis of the shaft; (*molette*)

“hoisting apparatus” means a crane, travelling crane, gantry, winch, hoist or other equipment of the same type used for the handling of material; (*appareil de levage*)

“IEC” means the International Electrotechnical Commission; (*CEI*)

“insulated” means separated from other conducting surfaces by a dielectric having sufficient resistance to the passage of current and a disruptive discharge to eliminate any risk of a shock or leakage of current; (*isolé*)

“ISO” means the International Organization for Standardization; (*ISO*)

“locked coil wire rope” means any smooth cylindrical single strand-cable whose external wires are contoured to fit into each other; (*câble clos*)

“loading area” means any space that includes the place of loading, drill holes loaded or being loaded and any space occupied by the material and equipment necessary for the loading; (*zone de chargement*)

“main fan” means the fan supplying an underground mine with fresh air from the atmosphere; (*ventilateur principal*)

“main ventilation circuit” means all the underground openings used to distribute fresh air from the atmosphere and to discharge foul air to the surface; (*circuit principal de ventilation*)

“mechanical damage” means any damage caused by the circulation of persons or vehicles, the falling of objects or equipment or any action by any other physical agent that affects the integrity or the operation of a grounding conductor or a telephone or signal apparatus; (*endommagement mécanique*)

“mine” means the establishment, with or without a treatment or processing plant, in which exploration work is performed, except the drilling of an artesian well, or the extraction of soil or sub-soil for removing a mineral substance in order to obtain a commercial or industrial product.

The buildings, warehouses, garages and plants located at the surface in which work is performed related to the exploration for or the extraction of a mineral substance are part of a mine.

Plants, treatment plants, pellet plants and land structures, such as conveyors, pipelines, roads, railway lines belonging to a mining enterprise and used for its operation, that are situated outside the exploration or extraction site, are also part of a mine.

The term includes a quarry and a sand-pit but excludes a peat bog; (*mine*)

“mineral substance” means any solid, liquid or gaseous natural substance present in the soil or sub-soil, including a fossilized organic substance; (*substance minérale*)

“misfire” means any part or remainder of a hole containing explosives that have not completely detonated following a blast; (*raté*)

“National Building Code of Canada 1990” means the National Building Code of Canada 1990, NRCC No. 32379, published by the National Research Council of Canada, with future amendments; (*Code national du bâtiment du Canada*)

"new development" means preliminary work for the development of a new deposit in an active underground mine, excluding the extension of an existing deposit, or the return to operation of an underground mine that has been closed and flooded for longer than 24 months; (*nouveau développement*)

"NIST" means the National Institute for Standards and Technology; (*NIST*)

"non-combustible construction" means any construction in which fire safety is assured through the use of non-combustible materials for structural members and other components and that complies with subsection 3.1.5 of the National Building Code of Canada 1990; (*construction incombustible*)

"non-combustible material" means any material that complies with CAN4-S114-M80, Standard Method of Test for Determination of Non-Combustibility in Building Materials; (*matériau incombustible*)

"place of loading" means any place where workers load drill holes; (*lieu de chargement*)

"protective wall" means the strip of land located between the excavation of an open-pit mine and a body of water; (*paroi de protection*)

"quick release test" means any test consisting of releasing the cage, skip or cage-skip assembly from a stationary position so that the safety catches can grip the guides; (*essai de dégagement rapide*)

"raise" means an underground excavation inclined at more than 20º from the horizontal and driven upward digging; (*montage*)

"remote control" means a device consisting of a transmitter, a link and a receiver that controls the movement of equipment at a distance; a remote control is termed "wired" when the link is through cables, hosing or flexible piping, and "wireless" when the link is a hertzian, optical or ultrasonic transmission; (*télécommande*)

"remote control system" means any system having a remote control and the components required to control the equipment remotely; the system consists of a transmitter, a receiver and, where applicable, an interface; (*système de télécommande*)

"remote controlled equipment" means any equipment operated by a remote control system; (*équipement télécommandé*)

"reuse of air" means the reuse of exhaust air from a main ventilation circuit or an auxiliary circuit to ventilate another ventilation circuit or an underground work station; (*réutilisation de l'air*)

"SAE" means the Society of Automotive Engineers;

"safety factor" means the ratio between breaking load and working load; (*facteur de sécurité*)

"seismic excavation" means an excavation in an underground mine where there is a risk of a projection or fall or rock caused by a seismic event;

"self-contained breathing apparatus" means an apparatus whose source of breathable air is completely isolated from the atmosphere in which the user is located; (*appareil de protection respiratoire autonome*)

"shaft" means a passage dug below ground whose longitudinal axis is at an angle of more than 20º from the horizontal and allowing various levels of an underground mine to be reached; (*puits*)

"sinking crosshead" means any metal structure supported by the hoisting rope and used as a linking device between the bucket and the guides in the shaft and the headframe; (*curseur de fonçage*)

"surface pillar" means bedrock of variable shape, mineralized or not, located above all the upper excavations of an underground mine; (*pilier de surface*)

"working face" means any surface of the working where blasting work is carried out. (*front de taille*)

The definitions of the Canadian Electrical Code (Part One) made by Order in Council 141-87 dated 28 January 1987 and the amendments for Québec made by Minister's Order dated 11 March 1987 and any subsequent Québec provision amending them also apply to this Regulation.

O.C. 213-93, s. 1; O.C. 1326-95, s. 1; O.C. 782-97, s. 1; O.C. 460-2000, s. 1; O.C. 465-2002, s. 1; O.C. 42-2004, s. 1; O.C. 119-2006, s. 1; O.C. 221-2009, s. 1; O.C. 1190-2010, s. 1; O.C. 445-2016, s. 1; O.C. 33-2024, s. 1.

2. This Regulation applies to a mine.

Notwithstanding the foregoing, only sections 3 to 7, 11.1, 11.2, 12.1, 21 to 24, 26, 88, 100, 113, 114, 117, 118, 130 to 132, 136, 137, 140 to 142, 145 to 147, 149, 150.1, 154, 164, 168, 215 to 349, 372, 373, 375 to 383, 402, 402.1, 408 to 411, 414 to 417, 422, 425 to 429, 435, 447, 478, 488, 491, 493, 494, 505, 506, 508 to 510, 512 and 538 apply to mineral substance treatment and processing mills and to buildings, warehouses, garages and plants located at the surface in which work is performed related to the exploration for or the extraction of a mineral substance.

O.C. 213-93, s. 2; O.C. 1326-95, s. 2; O.C. 460-2000, s. 2; O.C. 755-2017, s. 1; O.C. 945-2020, s. 1; O.C. 33-2024, s. 2.

DIVISION II

GENERAL

§ 1. — *Obligations of the employer*

3. The employer shall respect the standards prescribed in this Regulation.

O.C. 213-93, s. 3.

§ 2. — *Personal protective equipment*

3.1. Every person in an underground mine, except in a lunchroom, a cab or an office, is required to wear a body harness or safety belt.

O.C. 963-2014, s. 1.

4. The wearing of a full body harness is required where a worker is exposed to a fall of more than 3 m (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.

The first paragraph does not apply when using a tubular ladder emergency exit.

O.C. 213-93, s. 4; O.C. 460-2000, s. 3; O.C. 1431-2021, s. 1.

4.1. *(Revoked).*

O.C. 460-2000, s. 4; O.C. 80-2023, s. 2.

5. Full body harnesses must comply with CAN/CSA Standard Z259.10, Full body harnesses, and be connected by a fall-protection system to an anchorage system, in accordance with sections 6 to 7.01. This assembly must limit the maximum fall arrest force to 6 kN or the free fall distance to 1.8 m.

O.C. 213-93, s. 5; O.C. 460-2000, s. 5; O.C. 80-2023, s. 3.

5.1. Where a worker is equipped with a safety belt, it can be used only to limit the movement of the worker, to keep the worker in a working position or for mine rescue operations.

Such a belt must comply with CAN/CSA Standard Z259.1, Body belts and saddles for work positioning and travel restraint.

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

O.C. 460-2000, s. 6; O.C. 80-2023, s. 3.

6. The fall arrest connecting device must be composed of one or more of the following equipment, including at least the equipment provided for in paragraph 1 or 2:

(1) a shock absorber and a lanyard complying with CSA Standard Z259.11, Personal energy absorbers and lanyards. The lanyard, including the shock absorber, must have a maximum length of 2 m;

(2) a self-retracting lifeline complying with CAN/CSA Standard Z259.2.2, Self-retracting devices;

(3) a rope grab complying with CSA Standard Z259.2.5, Fall arresters and vertical lifelines, or CSA Standard Z259.2.4, Fall arresters and vertical rigid rails;

(4) a vertical lifeline complying with CSA Standard Z259.2.5, Fall arresters and vertical lifelines, or CSA Standard Z259.2.4, Fall arresters and vertical rigid rails, which must never be directly in contact with a sharp edge and must

(a) be used by only 1 person;

(b) be less than 90 m in length;

(c) be free of defects, knots and splices, except at the terminations of the lifeline;

(5) a connecting component, such as a spring hook, D-ring or snap hook in compliance with CAN/CSA Standard Z259.12, Connecting components for personal fall arrest systems.

O.C. 213-93, s. 6; O.C. 460-2000, s. 7; O.C. 80-2023, s. 3; O.C. 33-2024, s. 3.

7. The fall arrest connecting device of a full body harness must be secured to one of the following anchorage systems:

(1) a single point of anchorage with one of the following characteristics:

(a) have a breaking strength of at least 18 kN;

(b) be designed and installed in accordance with an engineer's plan in compliance with CSA Standard Z259.16, Design of active fall-protection systems, and

i. have a strength equal to twice the maximum arrest force as certified by an engineer; or

ii. be certified in accordance with EN Standard 795, Personal protective equipment against falls - Anchor devices, published by the European Committee for Standardization or with CAN/CSA Standard Z259.15, Anchorage connectors;

(2) a flexible continuous anchorage system (horizontal lifeline) with one of the following characteristics:

(a) be in compliance with the following minimum standards:

i. have a steel cable of a minimum diameter of 12 mm slackened to a minimum angle of 1 vertical to 12 horizontal, or 5° from horizontal;

ii. have a maximum distance of 12 m between the end anchors;

iii. have end anchors with a breaking strength of at least 90 kN;

(b) be designed and installed in accordance with an engineer's plan in compliance with CSA Standard Z259.13, Flexible horizontal lifeline systems, and CSA Standard Z259.16, Design of active fall-protection systems;

(3) a rigid continuous anchorage system designed and installed in accordance with an engineer's plan in compliance with CSA Standard Z259.16, Design of active fall-protection systems.

The flexible continuous anchorage system complying with subparagraph *a* of subparagraph 2 of the first paragraph may not be used by more than 2 workers simultaneously.

The anchorage system having the characteristics described in subparagraphs *b* of subparagraphs 1 and 2 of the first paragraph and the anchorage system referred to in subparagraph 3 of the first paragraph must, before it is first brought into service, be inspected and tested by an engineer or a qualified person acting under the supervision of an engineer, to ensure that the system is in compliance with the design and installation plans.

O.C. 213-93, s. 7; O.C. 460-2000, s. 8; O.C. 80-2023, s. 3.

7.01. The anchorage system

(1) must be designed so that the D-ring of the suspension point of a worker's full body harness cannot be moved horizontally by more than 3 m or an angle of 22°; and

(2) must be designed so that properly attached personal protective equipment cannot be detached involuntarily.

The anchorage system cannot be used by more than 1 person at a time, except in the case of a continuous anchorage system, such as a horizontal lifeline, or a rigid anchorage system, such as a rail.

The structure on which the anchorage system is installed must be able to withstand the effort exerted by the anchorage system in addition to the other efforts that it must ordinarily withstand.

O.C. 80-2023, s. 4.

7.1. Despite sections 5, 6, 7 and 7.01, the full body harness, the fall arrest connecting device and the anchorage system in a tubular ladder emergency exit are determined in accordance with sections 75.13 and 75.14.

O.C. 1431-2021, s. 2; O.C. 80-2023, s. 5.

8. Where work is carried out above a worker, the worker shall be protected from falling objects by means of a door, shield or shelter.

O.C. 213-93, s. 8.

9. Every person in a mine is required to wear a safety hat that complies with CSA Standard Z94.1-M1977 Industrial Protective Headwear.

Notwithstanding the foregoing, the wearing of a safety hat is not required in a lunchroom, a cab or an office.

O.C. 213-93, s. 9.

10. Every person in a mine is required to wear sight-adjusted protective glasses or a face shield complying with CAN/CSA Standard Z94.3-M1988 Industrial Eye and Face Protectors.

Notwithstanding the foregoing, the wearing of protective glasses or a face shield is not required in a lunchroom, a cab or an office.

O.C. 213-93, s. 10.

11. Every person in a mine is required to wear safety shoes that comply with CAN/CSA Standard Z195-M92, Protective Footwear, except subsection 3.4.

In an underground mine, safety shoes shall have metatarsal protection.

O.C. 213-93, s. 11; O.C. 1326-95, s. 3.

11.1. As of 23 December 2016, a person who is in an open-pit mine must wear apparel complying with the Guideline on Selection, Use, and Care of High-Visibility Safety Apparel, CSA Z96.1-08, and with the High-Visibility Safety Apparel standard, CSA Z96-09. Class 2 high-visibility safety apparel is required as a minimum.

Despite the foregoing, wearing high-visibility safety apparel is not required in a lunchroom, a cab or an office, or to get from the parking lot of the site entrance to a building.

O.C. 445-2016, s. 2.

11.2. As of 1 January 2018, every person underground must wear Class 3 apparel that meets CSA Standard Z96-09, High-Visibility Safety Apparel, or apparel whose juxtaposed fluorescent and retroreflective stripes or bands having a total width of not less than 100 mm are compliant with the stripes and bands provided for in that standard for Class 3 apparel.

As of 1 January 2018, every person on the surface of an underground mine must wear Class 2 or 3 apparel meeting CSA Standard Z96-09, High-Visibility Safety Apparel, or apparel whose juxtaposed fluorescent and retroreflective stripes or bands having a total width of not less than 100 mm are compliant with the stripes and bands provided for in that standard for Class 2 or 3 apparel.

The wearing of high-visibility safety apparel is not required in a lunchroom, a cab, an office or a refuge station, or to move at the surface of a mine in a lane reserved for pedestrians for access or regress from the work site at the beginning or the end of a work shift.

O.C. 755-2017, s. 2.

12. Where there is a risk of contact with moving parts, every worker shall comply with the following standards:

(1) clothing shall fit closely about the body and have no loose parts;

(2) necklaces, bracelets and rings shall not be worn, other than medic-alert bracelets that shall remain attached to the wrist;

(3) long hair shall be confined within a bonnet or hat.

O.C. 213-93, s. 12.

12.1. The quality of compressed air supplied to any breathing apparatus shall comply with CAN3-Z180.1-M85, Compressed Breathing Air and Systems.

O.C. 1326-95, s. 4.

13. A hoistman whose work station is underground or in the head frame of a shaft shall have available:

(1) a self-contained breathing apparatus which shall:

(a) have a regulator maintaining air pressure higher than atmospheric pressure at all times inside the facial part of the apparatus;

(b) have a connector that enables the worker to be supplied with compressed air from a cylinder as prescribed in paragraph 2;

(2) a cylinder of compressed air charged at not less than 13,800 kPa (2,001.5 lb/in^2), of a capacity of at least 6 m^3 (211.9 ft^3) of air at normal atmospheric conditions, equipped with a compressed air supply hose with a regulator and a recharge hose that can be attached to the self-contained breathing apparatus and long enough to enable the hoistman to have access to his work station, to the circuit breaker where the latter cannot be activated from his work station or to the pinion brake where the latter has to be engaged manually.

The device mentioned in subparagraph 1 of the first paragraph shall not have an automatic shutoff device closing off or restricting the air supply in the facial part.

Operating instructions for the self-contained breathing apparatus and the cylinder as well as emergency evacuation procedures shall be posted at the hoistman's work station.

The hoistman shall receive training every 2 months in the use and maintenance of the self-contained breathing apparatus and the cylinder.

The same model of self-contained breathing apparatus shall be used in the work stations mentioned in the first paragraph.

O.C. 213-93, s. 13; O.C. 1190-2010, s. 2.

§ 3. — *Check-in control*

14. The number and identity of the persons underground must be determined in accordance with the following procedure:

(1) before going underground, the worker shall leave his identification tag in the place designated check-in control; the tag shall bear the worker's name or identification number;

(2) after returning to the surface, the worker shall remove his identification tag from the place designated for check-in control and leave it in the place designated for check-out control;

(3) whenever a person accompanies a worker underground, that worker shall attach another tag bearing the word "visiteur" to his own identification tag.

O.C. 213-93, s. 14.

§ 4. — *Monitoring of work stations*

15. All work stations shall be checked at least once per shift.

Where raising work is done by means of a climber, at least 2 checks shall be done every 5 shifts.

When a worker is alone at his work station, the employer shall communicate with him at least every 2 hours unless that worker may be seen.

O.C. 213-93, s. 15; O.C. 1326-95, s. 6.

16. Any access to an abandoned underground working shall be closed off where the working is not in compliance with any of the standards set out in sections 28, 35, 51, 53 to 75, 85, 86, 95, 104, 120 and 398.

Signs reading “ACCÈS INTERDIT” shall be so placed at each of the closing points of the working as to be seen on the side where the working is not abandoned.

O.C. 213-93, s. 16; O.C. 460-2000, s. 9.

17. An underground mine in which work is in progress shall be equipped with the following minimum equipment:

(1) 6 units of self-contained oxygen breathing apparatus, a minimum utilization time of 60 minutes and a respiratory capacity of 30 litres per minute (1.06 ft^3 per minute);

(2) a direct reading apparatus for evaluation of gases including at least carbon monoxide, nitrogen dioxide, oxygen and combustible gas sensors; in addition, that apparatus or another apparatus must be equipped with sensors of other gases according to the risks inherent in the underground mine;

(3) a positive pressure oxygen therapy apparatus capable of supplying oxygen for medical use at a constant flow of at least 10 litres (0.35 ft^3) per minute for a duration of not less than 25 minutes;

(4) *(paragraph revoked);*

(5) a basket-shaped stretcher whose content complies with the latest edition of the Manuel de formation en sauvetage minier of the Commission des normes, de l’équité, de la santé et de la sécurité du travail;

(6) an appropriate rope system allowing a victim to be evacuated from an excavation opening at an angle exceeding 45° from the horizontal.

O.C. 213-93, s. 17; O.C. 1236-98, s. 2; O.C. 1190-2010, s. 3; O.C. 945-2020, s. 2.

§ 5. — *Mine rescue*

17.01. At the request of the Commission des normes, de l’équité, de la santé et de la sécurité du travail, rescue stations, for underground mines must be organized, equipped and maintained.

O.C. 374-97, s. 10.

17.02. Each rescue station is under the control and supervision of a person appointed under the Public Service Act (chapter F-3.1.1). That person must ensure the maintenance of the rescue devices in the stations under his control and supervision and must give the training provided for in sections 18 to 20.

O.C. 374-97, s. 10.

18. Mine rescue in a working underground mine shall be provided by teams consisting of at least:

(1) 6 rescuers for every 50 workers or fewer working underground;

(2) 9 rescuers for at least 51 and not more than 99 workers working underground;

(3) 12 rescuers for at least 100 and not more than 149 workers working underground;

(4) 15 rescuers for at least 150 and not more than 199 workers working underground;

(5) 18 rescuers for at least 200 and not more than 249 workers working underground;

(6) 21 rescuers for at least 250 workers or more working underground;

(7) 3 substitute rescuers for the teams overall.

The rescuers shall receive at least 6 mine rescue training periods per year.

The substitute rescuers shall receive at least 4 mine rescue training periods per year.

O.C. 213-93, s. 18; O.C. 1326-95, s. 7.

19. The rescuers contemplated in section 18 shall:

(1) have been trained according to the most recent edition of the mine rescue manual of the Commission des normes, de l'équité, de la santé et de la sécurité du travail;

(a) in mine rescue methods;

(b) in the use and maintenance of:

i. self-contained breathing apparatus;

ii. fire-fighting procedures and equipment;

(2) be available for the mine rescue training prescribed in paragraph 1.

O.C. 213-93, s. 19; O.C. 1326-95, s. 8.

20. Where there are fewer than 6 workers, the workers shall be trained in the use of:

(1) self-contained breathing apparatus having a minimum utilization time of 60 minutes;

(2) *(paragraph revoked);*

(3) oxygen therapy apparatus;

(4) gas detectors.

Moreover, at least 3 workers shall be

(1) trained in mine rescue as prescribed in section 19 according to the frequency prescribed in the second paragraph of section 18;

(2) available for such training.

O.C. 213-93, s. 20; O.C. 1190-2010, s. 4.

§ 6. — *First Aid*

21. Every mine shall have at least one stretcher and blanket in each refuge station and lunchroom located at the surface.

O.C. 213-93, s. 21.

§ 7. — *Protection from dangerous or toxic substances*

22. Where dangerous or toxic compounds, solutions or gases are used or generated in a mine or plant, a quantity of antidotes and washes appropriate for the treatment of poisoning or injuries caused by those compounds, solutions or gases shall be kept in a room which is unlocked and located close to the place in which these substances, solutions or gases are used.

The antidotes and washes shall be labelled. Directions for their use shall be indicated on the packaging.

If the antidotes must be administered in the form of intravenous injections by a physician or nurse, the telephone number and address of such a person shall be posted near the room where the antidotes are stored.

O.C. 213-93, s. 22.

23. Acids and cyanides shall be stored and transported in such a way as to avoid their coming into contact with each other.

O.C. 213-93, s. 23.

24. When a treatment mill ceases operation, any hazardous chemicals, such as cyanides and acids, shall be disposed of.

O.C. 213-93, s. 24.

§ 8. — *Notice to the Commission des normes, de l'équité, de la santé et de la sécurité du travail*

25. Written notice of the opening of an underground mine or of new development shall be sent to the Commission at least 10 days before the beginning of work.

A copy of the notice shall be sent to the head of the mine rescue department, if there is one.

O.C. 213-93, s. 25.

25.1. A written notice shall be sent to the Commission within 24 hours

(1) of the occurrence of any of the following events:

(a) an accident or incident related to a crane, hoist, headsheave, hoisting rope, cage, skip, bucket or to the timbering of a shaft;

(b) an explosion or a fire related to a compressor, a compressed air tank or pipe;

(c) an explosion related to a boiler;

(d) an abnormal or unexpected inrush;

(e) a crack in a watertight bulkhead or dam retaining more than 23 m^3 of water (812 ft^3);

(f) a fire in an underground mine, the head frame of a shaft, a hoistroom or an explosives magazine;

(g) a premature or unexpected firing provoking the ignition of explosives;

(h) an air blast or an important and unexpected ground movement;

(i) the fainting of a person due to harmful gas or oxygen deficiency;

(2) of acknowledging of the presence of a flammable gas in an underground mine.

O.C. 465-2002, s. 2.

§ 9. — *Minimum age of workers*

26. No work may be done by a worker:

(1) who is less than 16 years of age:

(a) in an open-pit mine;

(b) in a concentrator;

(c) in a plant;

(2) who is less than 18 years of age:

(a) in an underground mine;

(b) to perform work on the working face in an open-pit mine;

(c) to use equipment that hoists or moves objects;

(d) to act as an assistant blaster;

(3) who is less than 20 years of age:

(a) to act as a blaster;

(b) to act as a hoistman.

O.C. 213-93, s. 26; O.C. 33-2024, s. 4.

§ 10. — *Registers*

27. The registers prescribed by sections 28.03, 87, 89, 103, 103.1, 108.2, 127, 142.2, 214, 283, 283.1, 344, 345, 347, 355, 360, 366, 370, 376, 397, 412, 437, 453.2 and 476.1 shall be drawn up, kept up to date, stored on the mine site and made available to members of the health and safety committee and the safety representative.

O.C. 213-93, s. 27; O.C. 1326-95, s. 9; O.C. 782-97, s. 2; O.C. 1236-98, s. 3; O.C. 42-2004, s. 2; O.C. 119-2006, s. 2; O.C. 221-2009, s. 2; O.C. 1190-2010, s. 5; O.C. 966-2015, s. 1; O.C. 1431-2021, s. 3.

§ 11. — *Training*

O.C. 1326-95, s. 10.

27.1. Any person working underground shall

(1) undergo training in occupational health and safety in accordance with Modules 1, 2, 3, 4, 5 and 7 of the modular course for miners published by the Centre de services scolaire de l'Or-et-des-Bois; and

(2) hold an attestation to that effect issued by the Centre de services scolaire de l'Or-et-des-Bois.

That person shall receive training in occupational health and safety in accordance with Modules 1, 2 and 3 within 4 months and, in accordance with Modules 4, 5 and 7 within 6 months of the date of hiring.

That person shall, until he meets the conditions prescribed in the first and second paragraphs, be accompanied by a person who has already received training in accordance with Module 1, 2, 3, 4, 5 and 7 of the course.

A person who occasionally works underground is exempted from the conditions prescribed in the first and second paragraphs; however, that person shall be accompanied by a person referred to therein.

A person who has undergone training in accordance with Modules U0000 to U0010 of the Ontario Training and Adjustment Board is exempt from the conditions prescribed in the first and second paragraphs, except training in accordance with Module 1.

A person who holds a vocational studies diploma in mining issued after 1 January 1995 by the Ministère de l'Éducation, du Loisir et du Sport is deemed to have passed the training referred to in the first and second paragraphs and is exempt from the conditions prescribed in those paragraphs.

O.C. 1326-95, s. 10; O.C. 1236-98, s. 4; O.C. 460-2000, s. 10; O.C. 465-2002, s. 3; O.C. 119-2006, s. 3; O.C. 221-2009, s. 3; O.C. 916-2011, s. 1; O.C. 80-2023, ss. 1 and 6.

27.2. Any person using manually operated underground drilling equipment shall

(1) undergo training in occupational health and safety in accordance with Module 6 of the modular course for miners published by the Centre de services scolaire de l'Or-et-des-Bois; and

(2) hold an attestation to that effect issued by the Centre de services scolaire de l'Or-et-des-Bois.

The person shall receive the training within 6 months of the date of hiring.

That person shall, so long as he has not undergone training as provided in the first paragraph, be accompanied by a person who has already received that training.

A person who has undergone training in accordance with Modules U0000 to U0010 of the Ontario Training and Adjustment Board is exempt from the conditions prescribed in the first and second paragraphs, except the training in accordance with Module 1 referred to in section 27.1.

A person who holds a vocational studies diploma in mining issued after 1 January 1995 by the Ministère de l'Éducation, du Loisir et du Sport is deemed to have passed the training referred to in the first and second paragraphs and is exempt from the conditions prescribed in those paragraphs.

O.C. 119-2006, s. 4; O.C. 221-2009, s. 4; O.C. 916-2011, s. 2; O.C. 80-2023, ss. 1 and 7.

27.3. Any person who uses a slusher, pneumatic loader or scooptram must

(1) undergo training in occupational health and safety in accordance with the following modules of the modular course for miners published by the Centre de services scolaire de l'Or-et-des-Bois: Module 8 for a slusher, Module 9 for a pneumatic loader and Module 10 for a scooptram; and

(2) hold an attestation to that effect issued by the Centre de services scolaire de l'Or-et-des-Bois.

A person who has undergone training in accordance with Modules U0000 to U0010 of the Ontario Training and Adjustment Board and the training in accordance with Module I referred to in section 27.1 is exempt from the conditions prescribed in the first and second paragraphs.

A person who holds a vocational studies diploma in mining issued after 1 January 1995 by the Ministère de l'Éducation, du Loisir et du Sport is deemed to have passed the training referred to in subparagraph 1 of the first paragraph and is exempt from the conditions prescribed in the first paragraph.

The person who uses a slusher, pneumatic loader or scooptram for the purposes of an inspection, a test or maintenance work is exempt from the conditions prescribed in the first paragraph.

O.C. 621-2013, s. 1; O.C. 80-2023, ss. 1 and 8.

27.4. To become a hoistman, a person must

(1) complete at least 160 hours of practical training with a hoistman;

(2) undergo training in occupational health and safety in accordance with modules 11 and 12 of the modular course for miners published by the Centre de services scolaire de l'Or-et-des-Bois; and

(3) hold an attestation to that effect issued by the Centre de services scolaire de l'Or-et-des-Bois.

The conditions prescribed by subparagraphs 2 and 3 of the first paragraph must have been met within 6 months of the beginning of the practical training.

A hoistman must receive, every 5 years, refresher training in module 12 offered by the Centre de services scolaire de l'Or-et-des-Bois.

O.C. 755-2017, s. 3; O.C. 816-2021, s. 94; O.C. 80-2023, s. 9.

27.5. Hoistmen must receive training on the characteristics of a hoist before using it. The training, offered by the employer or the person designated by the employer, must in particular cover the following elements:

(1) the safety devices of the hoist;

(2) the operation of the braking systems and the brake test procedure;

(3) the procedures for using the single-drum hoist;

(4) the hoist registers;

(5) the procedures and directives related to the hoist;

(6) the safety rules, measures and procedures, including those provided for in section 117;

(7) the signal and communications systems;

(8) the operating functions of the hoist.

O.C. 150-2019, s. 1.

27.6. Every person who issues signals using a signal system provided for in section 263 must

(1) have undergone training in occupational health and safety in accordance with Module 13 of the modular course for miners published by the Centre de services scolaire de l'Or-et-des-Bois; and

(2) hold an attestation to that effect issued by the Centre de services scolaire de l'Or-et-des-Bois.

O.C. 80-2023, s. 10.

27.7. Every person who constructs, inspects, rehabilitates or repairs a shaft in a mine or carries out work therein must

(1) have undergone training in occupational health and safety in accordance with Module 14 of the modular course for miners published by the Centre de services scolaire de l'Or-et-des-Bois; and

(2) hold an attestation to that effect issued by the Centre de services scolaire de l'Or-et-des-Bois.

The person who occasionally works in a shaft is exempt from the conditions prescribed in the first paragraph; however, that person must be accompanied by a person referred to therein.

O.C. 80-2023, s. 10.

27.8. Blasters in a mine must receive the training on explosives safety offered by the employer or the person designated by the employer. The training, given by a person with competency in the field of explosives, must in particular cover the following elements:

(1) the regulations that apply;

(2) the explosives safety data sheets used in the mine;

(3) the manufacturers' recommendations and best practices for the use of the explosives and equipment used;

(4) the procedures and directives drawn up by the employer;

(5) the firing devices;

(6) the inspection of explosives magazines, recesses, boxes and storage areas;

(7) the management of deteriorated or expired explosives.

Blasters must receive refresher training every 5 years.

This section does not apply to assistant blasters or to persons holding a shot-firer's certificate issued by the Commission des normes, de l'équité, de la santé et de la sécurité du travail or by an agency recognized by the latter in accordance with section 292 of the Regulation respecting occupational health and safety (chapter S-2.1, r. 13).

O.C. 33-2024, s. 5.

DIVISION III

WORK ENVIRONMENT

§ 1. — *Ground stability*

28. The roofs, walls and working faces of an underground working shall be drilled and scaled to keep them free of any rock likely to come loose.

Except in mines containing soluble minerals, the roofs, walls and working faces of mines shall be washed before sounding and scaling to eliminate any dust created following blasting.

Notwithstanding the first paragraph, when scaling is carried out using mechanized equipment, the roofs, walls and working faces of an underground excavation need not be drilled and scaled manually if the following conditions are met:

(1) the scaling is carried out in accordance with a procedure provided in writing by an engineer taking into account the ground control program and the mechanical properties of the rock; and

(2) surface support is installed on the roofs, walls and working faces.

O.C. 213-93, s. 28; O.C. 1236-98, s. 6; O.C. 33-2024, s. 6.

28.01. In order to ensure stability, no excavation work shall be undertaken in an underground mine or an open-pit mine without obtaining the plans and specifications of an engineer.

In an underground mine, the plans and specifications shall be updated by an engineer as the work progresses and be available at all times on the site of the mine.

In an open-pit mine, the plans and specifications shall be updated by an engineer according to the frequency the engineer determines and be available at all times on the site of the mine when work is being undertaken.

This section does not apply to a sand pit or to gravel operations.

O.C. 1326-95, s. 11; O.C. 945-2020, s. 3.

28.01.1. In addition to the standards provided for in section 28.01, excavation in a mine located in a permafrost zone may not be undertaken unless an analysis giving the anticipated effects of the excavation on the stability of the geological materials has been carried out.

O.C. 1236-98, s. 5; O.C. 460-2000, s. 11.

28.02. Permanent monitoring and control measures shall be developed by an engineer for any non-abandoned underground working.

O.C. 1326-95, s. 11.

28.03. In an underground mine, a register shall be available to allow the employer or worker to enter any abnormal ground control situation. The worker or employer enters the place concerned, the date and the work shift in the register and signs it.

The technical services or ground control representative designated by the employer signs the register for each day of the week, within 5 days. He conducts follow-up and, when the situation requires it, enters comments or recommendations in the register.

The employer checks the register between each work shift and signs it.

O.C. 1431-2021, s. 4.

28.04. The employer must adopt a ground control program that is adapted to the characteristics of an underground mine and ensure its application. The program addresses in particular

(1) the characterization of the rock;

(2) the design of the ground support system;

(3) the preparation of the excavation plans and specifications by an engineer in accordance with the sections of this subsection, consultations, approval, review and follow-ups;

(4) the methods ensuring the communication of information, such as the register provided for in section 28.03, as well as the training required to ensure safety;

(5) the roles and responsibilities of the employer's representatives and workers;

(6) the periodic verification of the efficiency of the program;

(7) the annual assessment of the application of the program; and

(8) the annual updating of the program.

The ground control program must be easily accessible for consultation by the health and safety committee and the safety representative.

O.C. 80-2023, s. 11.

29. The walls of an excavation or a trench dug on the surface for the discovery or preparation of a mine shall be shored in accordance with the plans and specifications of an engineer.

The plans and specifications shall be kept on the mine site and be available at all times.

O.C. 213-93, s. 29.

30. Notwithstanding section 29, shoring is not required for:

(1) an excavation or a trench:

(a) made in solid rock;

(b) where no worker is required to descend into it;

(2) walls where there is no danger of landslides and whose slope is less than 45º starting at 1.2 m (3.9 ft) from the bottom;

(3) walls whose slope presents no danger of landslides and for which an engineer certifies that it is not necessary to provide support, because of the slope, the nature of the soil and its stability; a copy of the engineer's certification shall be kept at the mine site.

O.C. 213-93, s. 30.

31. Unless it has been done before excavation begins, the shoring of the walls shall be done as work progresses.

O.C. 213-93, s. 31.

32. The walls shall be inspected and maintained during the work so that there is never:

(1) rock or material likely to become loose;

(2) any overhanging mass.

O.C. 213-93, s. 32.

33. Where the depth of a trench or excavation exceeds 1.2 m (3.9 ft), no person shall:

(1) deposit materials less than 1.2 m (3.9 ft) from the top of the trench or excavation walls;

(2) operate or park a vehicle or machine less than 3 m (9.8 ft) from the top of the trench or excavation walls, unless reinforced shoring has been provided.

O.C. 213-93, s. 33; O.C. 1326-95, s. 12.

34. Shoring shall be removed from bottom to top and only in places to which workers no longer have access.

O.C. 213-93, s. 34.

35. Except where the underground workings are closed off in accordance with section 16, the roof and walls of each underground working shall be free from unstable or loose rocks.

Moreover, the travelways of workers shall be inspected daily.

O.C. 213-93, s. 35.

36. A worker sounding or scaling manually shall remain on sounded or scaled land, take up a stable position and ensure that there is a free space allowing a sudden retreat.

While sounding work is being carried out, no person may use, near the sounding zone, any noisy machine or tool that prevents the worker from hearing the sound of his scaling bar.

O.C. 213-93, s. 36; O.C. 782-97, s. 3; O.C. 1236-98, s. 7; O.C. 33-2024, s. 7.

37. Scaling bars not exceeding 3.6 m (12 ft) shall be provided to the worker mentioned in section 36. The bars shall have a hand protector and be of such length and rigidity that the bar can be used at a 45º angle to the horizontal.

O.C. 213-93, s. 37; O.C. 782-97, s. 4.

38. The wall of a shaft or raise opening to the surface and excavated after 31 December 1971 shall be lined in concrete from the surface to bedrock.

O.C. 213-93, s. 38.

39. A stope shall not be closer than 6 m (19.7 ft) to a shaft in which persons travel or that is used for hoisting.

O.C. 213-93, s. 39.

40. Where clay, sand, gravel or other poorly consolidated mineral substance is being worked, and during the stripping of overburden:

(1) undermining is prohibited;

(2) trees and vegetation located less than 10 m (32.8 ft) from the rim of the tunnel faces shall be removed;

(3) mining shall be done in benches whose height shall not exceed:

(a) 3 m (9.8 ft), if loading is done without mechanical equipment;

(b) by more than 3 m (9.8 ft) the top of the boom or bucket of mechanical equipment when raised to its highest operating position, except for a sandpit operation where the slope of the tunnel face is at all points less than 45º from the horizontal;

(4) the parameters of the layers of soil required to calculate the critical height of the benches shall be determined and the contours of the tunnel faces and walls shall be fixed so as to secure their stability in the following cases:

(a) where signs of instability appear in the ground;

(b) heavy equipment or other overloads act on the rim of a tunnel face or wall;

(c) the land contains water or layers of clay;

(d) the width of the berm between two successive benches is less than either 8 m (26.2 ft) or the height of one of the benches;

(5) material on a berm shall not be allowed to accumulate if workers may be working on a lower bench near the berm.

O.C. 213-93, s. 40; O.C. 782-97, s. 5; O.C. 119-2006, s. 5.

41. Where an open-pit is in bedrock:

(1) overburden shall be removed from the upper rim of the working faces and walls so that:

(a) the cleared bench is at least 2 m wide (6.6 ft) at all times;

(b) the land located above that bench has a slope less than its natural embankment;

(2) undermining is prohibited;

(3) any overhang on a face or a wall shall be stoped immediately;

(4) no worker shall work on a working face or be located at a lower level in proximity to a working face or a wall, unless the working face or wall has been scaled beforehand of any rock likely to become detached therefrom;

(5) if the depth of the mine exceeds 25 m (82 ft), the contours of the profile of the working faces and walls shall be determined so as to ensure their stability and drilling and blasting must be controlled so that the intended profile of the faces and walls may be maintained;

(6) material on a berm shall not be allowed to accumulate if persons could be at a lower level near the berm.

O.C. 213-93, s. 41; O.C. 1326-95, s. 13.

41.1. The presence of a seismic excavation must be determined in writing by an engineer. The written document must be kept with the plans and specifications required pursuant to section 28.01.

The seismic excavation must be delimited and identified before the work begins and only authorized persons may be in the risk zone.

O.C. 33-2024, s. 8.

41.2. Scaling, drilling or support installation work in a seismic excavation must be carried out with mechanized equipment in accordance with a procedure established by an engineer.

The equipment must have an enclosed cab that complies with the plans and specifications of an engineer. The cab glass exposed to the risk of rock projection must be covered with metal mesh and of sufficient resistance to ensure worker safety or designed so as to provide safety equivalent to that combination.

Every person authorized to be in the seismic excavation must be in the enclosed cab for the duration of the work.

O.C. 33-2024, s. 8.

§ 2. — *Travelways*

42. For any development begun on or after 1 April 1993, there shall be clearance of at least 2 m (6.6 ft) above the floor of a drift.

When vehicles are travelling in the drift, there shall be clearance of at least 1.2 m (3.9 ft) above the bench or seat of the vehicle, and when a worker stands upright in the vehicle, the clearance shall be at least 2 m (6.6 ft) above the floor of the vehicle.

This section does not apply to rail car drawpoints in active worksites.

O.C. 213-93, s. 42; Erratum, 1993 G.O. 2, 2603.

43. In a drift where vehicles circulate on rails, one of the following standards shall be respected:

(1) clearance of one of the following minimum widths shall be provided for pedestrians between the wall of the drift and the farthest point of the vehicles travelling therein:

(a) when clearance is provided on both sides of the drift, 450 mm (17.7 in);

(b) when clearance is provided on only one side of the drift, 600 mm (23.6 in);

(2) safety bays shall be installed in the walls of the drift at intervals not exceeding 30 m (98.4 ft); they must be clear at all times, at least 1.5 m (4.9 ft) in width, 1.5 m (4.9 ft) in depth and 2 m (6.6 ft) in height, at a right angle to the wall of the drift and clearly identified by a notice inscribed on both sides with the words "BAIE DE SÉCURITÉ" in letters 102 mm (4 in) high. The notice shall hang from the roof of the drift in front of the safety bay.

O.C. 213-93, s. 43.

44. In a drift where motor vehicles travel but not on rails, the width of the travelway shall exceed by at least 1.5 m (4.9 ft) the outside width of the vehicles that travel there. The travelway shall be at least 2 m (6.6 ft) wider than the outside width of the vehicles travelling there if the travelway is used by pedestrians at the same time, unless safety bays are installed in accordance with paragraph 2 of section 43.

However, this section does not apply where motor vehicles not on rails are used solely to dig a travelway.

Where the travelway to be dug shall exceed 60 m (196.9 ft) in length, its width shall exceed by at least 1 m (3.3 ft) the outside width of the motor vehicles travelling therein and safety bays shall be installed in accordance with paragraph 2 of section 43.

O.C. 213-93, s. 44.

45. Haulage roads used by motorized vehicles in an open-pit mine shall:

(1) be edged by a pile of fill or a ridge where vehicles could fall more than 3 m (9.8 ft). The pile of fill or the ridge shall have a height equal to at least the radius of the largest wheel of any vehicle travelling on the road. A pile of fill or a ridge is also required along the edge of dumps;

(2) be maintained by clearing or scarifying or by spreading an abrasive substance, so as to keep a non-skid surface.

O.C. 213-93, s. 45; Erratum, 1993 G.O. 2, 2603; O.C. 1326-95, s. 14.

45.1. In addition to the standards prescribed in section 45, haulage roads:

(1) constructed on or after 1 April 1993 and used by motorized vehicles in an open-pit mine shall have a width at least equal to:

(a) 1 1/2 times the width of the widest vehicles if they are single-track roads;

(b) 2 1/2 times the width of the vehicles if they are 2-way roads;

(2) constructed in an open-pit mine at which operations begins on or after 1 April 1993 and used by motorized vehicles shall have a width at least:

(a) 2 times the width of the widest vehicles if they are single-track roads;

(b) 3 times the width of the vehicles if they are 2-way roads.

O.C. 1326-95, s. 14.

45.2. Service roads used by motorized vehicles in an open-pit mine shall:

(1) be edged by a pile of fill or a ridge where vehicles could fall more than 3 m (9.8 ft). The pile of fill or the ridge shall have a height equal to at least the radius of the largest wheel of any vehicle travelling on the road;

(2) be off-limits to any vehicle whose width exceeds that of the driving surface;

(3) be maintained by clearing or scarifying or by spreading an abrasive substance, so as to keep a non-skid surface.

O.C. 1326-95, s. 14.

45.3. A buffer shall be installed:

(1) at any underground dumping area where motorized vehicles could fall more than 3 m (9.8 ft);

(2) at any place aboveground where motorized vehicles could fall into a hopper or crusher.

O.C. 1326-95, s. 14.

45.4. The buffer prescribed in section 45.3 shall:

(1) be made of wood, steel or concrete;

(2) have a height equal to at least the radius of the largest wheel of any motorized vehicle travelling in the areas where the buffer must be installed;

(3) be kept clear at all times.

O.C. 1326-95, s. 14.

§ 3. — *Protective installations around dangerous excavations*

46. An opening to the surface of a shaft or raise that is no longer in use and is not filled in to its collar shall be closed by a slab of reinforced concrete that shall:

(1) rest on solid rock or a concrete collar;

(2) be at least 1.5 m (4.9 ft) in width, and have eyebolts for raising;

(3) be able to withstand a live load of 100 kN (22,481 lb) applied to its centre.

O.C. 213-93, s. 46.

47. An opening to the surface of a stope that is not filled in to the surface or closed by a slab in accordance with section 46 shall be surrounded by a fence made of:

(1) galvanized steel posts no less than 90 mm (3.5 in) in diameter, forming its ends, corners and gates;

(2) intermediate galvanized steel posts not less than 60 mm (2.3 in) in diameter and spaced at intervals not exceeding 3 m (9.8 ft);

(3) an upper bar of galvanized steel having a diameter of at least 45 mm (1.7 in) and placed at a height of at least 2.5 m (8.2 ft) above the ground;

(4) a lower bar of galvanized steel having a diameter of at least 40 mm (1.6 in) and placed at a height of not more than 10 cm (3.9 in) above the ground;

(5) galvanized No. 9 AWG steel wire mesh, forming links of not more than 60 mm (2.4 in) on a side, welded to the posts and bars at intervals not exceeding 400 mm (15.7 in);

(6) 3 rows of barbed wire fixed at the top and overhanging towards the outside.

O.C. 213-93, s. 47.

48. In the rock, the fence posts mentioned in section 47 shall be driven in holes adapted to their diameter and at a depth of at least 500 mm (19.7 in); in loose soil, they shall be driven to a depth of at least 1.2 m (3.9 ft) in holes having a diameter of at least 350 mm (13.8 in) at the opening. The space around the poles shall be filled with concrete.

O.C. 213-93, s. 48.

49. Where the fence has a gate, it shall be at least equal in strength, durability and height to the fence.

O.C. 213-93, s. 49.

50. *(Revoked).*

O.C. 213-93, s. 50; O.C. 1431-2021, s. 5.

51. In an underground mine, any opening more than 1.2 m (3.9 ft) deep shall be:

(1) surrounded by a guard rail that complies with paragraph 5 of section 66; or

(2) closed by a cover able to withstand a load at least equal to the greater of the following values:

(a) a single point load of 2 kN (450 lb) applied to any point on the cover; and

(b) a distributed load of 3.8 kN/m^2 (79.4 lb/ft^2).

Where a motorized vehicle is likely to travel over a cover, the cover shall have a resistance at least equal to 3 times the maximum load that may be exerted by the vehicle.

O.C. 213-93, s. 51; O.C. 1326-95, s. 15.

52. Unless it is permanently enclosed, every hoisting compartment of a shaft shall have a gate at each shaft station. The gate shall:

(1) be at least 1.2 m (3.9 ft) in height;

(2) have less than 80 mm (3.1 in) clearance between the floor and its lower edge;

(3) withstand a concentrated horizontal force of at least 1 kN (224.8 lb) applied at any point on the gate;

(4) withstand a concentrated horizontal force of at least 100 kN (22,481 lb) applied at any point on the gate if a travelway can bring a vehicle right to the gate;

(5) remain closed, except when a conveyance is loaded or unloaded at the shaft station.

O.C. 213-93, s. 52.

§ 4. — *Ladderways, stairways and other means of access to a work place*

53. Any shaft exceeding 30 m (98.4 ft) in depth shall be divided into 2 or more compartments, including one reserved exclusively for travel by persons using ladderways, stairways or a motorized device for the transport of persons independent of any hoisting plant.

Despite the foregoing, any new shaft dug as of 4 December 2014 that exceeds 500 m (1.640 ft) in depth must be served by a motorized device for the transport of persons or another motorized means of transport.

O.C. 213-93, s. 53; O.C. 963-2014, s. 2.

54. Where the compartment described in section 53 has a motorized device for the transport of persons, the device shall:

(1) be independent of any hoisting plant;

(2) be designed, installed, maintained and used in accordance with sections 215 to 349;

(3) be used solely for the transport of persons including the portable tools they carry with them;

(4) have a minimum capacity of 8 persons, except during the sinking of a shaft when the number of persons may be less than 8;

(5) be capable of obtaining power from at least 2 independent sources of electrical energy, one being a generator operated by a diesel-type internal combustion engine; the generator shall:

(a) have sufficient power to supply the facility and be reserved in priority to that facility;

(b) have sufficient power to ensure the starting and operation of the hoist motor at its rated load;

(c) be checked at least once each week; the check shall include a complete cycle in the shaft, and the result of the check shall be noted in the work station register concerning hoisting equipment as prescribed by section 344;

(6) have a speed between 225 m/min (730 ft/min) and 460 m/min (1,509 ft/min);

(7) have a hoist installed in a room with at least one hour resistance to fire and separated from other hoists, compressors or other similar equipment by a partition with similar fire resistance.

A hoistman shall be available in the hoist room of the motorized device for transporting persons or in another hoistroom of a hoist serving the same shaft while there are persons likely to use the device.

O.C. 213-93, s. 54; O.C. 1326-95, s. 16; O.C. 460-2000, s. 12; O.C. 465-2002, s. 4.

55. Where the compartment described in section 53 is served by a motorized device for the transport of persons, it shall:

(1) except at the collar, be free of chutes or doors that could obstruct the free passage of the cage in the compartment;

(2) comply with sections 52, 392 to 395 and 397.

Section 389 does not apply to a compartment served by the device described in the first paragraph.

During the sinking of a shaft, except when a bucket is used to transport persons, a temporary landing equipped with a signal system and a signalboard in accordance with section 263 shall be installed in the compartment mentioned in the first paragraph so that persons may use temporary ladderways to reach the lower limit of the travel of the cage of the motorized device for the transport of persons. A buffer shall also be installed at the lower end of each of the guides of this cage.

O.C. 213-93, s. 55; O.C. 460-2000, s. 13; O.C. 119-2006, s. 6.

56. During shaft sinking or development work, where there is no emergency exit and the motorized device for the transport of persons described in section 53 in out of service, all persons located underground shall be evacuated immediately except the worker responsible for repairing the device.

O.C. 213-93, s. 56; O.C. 916-2011, s. 3.

57. Where the compartment described in section 53 is served by ladderways or stairways, it shall be separated from other compartments of the shaft by a partition or protective screen, such that those persons travelling in the compartment will not be struck by the conveyance or the counterweight or be hit by rocks that may fall in the shaft.

In shafts sunk on or after 1 April 1993, the partition or protective screen shall be made of wood at least 35 mm (1.4 in) thick or of No. 9 AWG galvanized steel wire mesh, forming links of not more than 40 mm (1.6 in) on a side.

O.C. 213-93, s. 57; Erratum, 1993 G.O. 2, 2603; O.C. 1236-98, s. 8.

58. In shafts, no ladders except auxiliary ladders used in shaft sinking work may be inclined more than 80º from the horizontal.

O.C. 213-93, s. 58.

59. Any workplace in a shaft shall be accessible by a stairway, a rigid ladder or a motorized device for the transport of persons independent of the hoist.

When a shaft is being sunk, auxiliary ladders made of rigid sections longer than 1 m (3.3 ft) are permitted between the permanent ladders or the motorized device for the transport of persons and the bottom of the shaft.

O.C. 213-93, s. 59.

60. In an underground travelway inclined at 50º or more from the horizontal, rest landings covering the compartment served by ladders shall be installed at vertical distances not exceeding 7 m (23 ft), except for the openings allowing the passage of persons, which shall be 1 m^2 (10.8 ft^2) or less in area and, for every landing built on or after 10 July 1997, at least 70 cm (27.6 in) in width.

O.C. 213-93, s. 60; O.C. 782-97, s. 6; O.C. 1236-98, s. 9.

61. In an underground travelway inclined at 65º or more from the horizontal, the ladders shall be placed above the entrance to the lower landings.

O.C. 213-93, s. 61.

62. In places where the ladders are off-centre or where there is a difference of inclination of more than 10º between 2 ladders, landings shall be installed.

O.C. 213-93, s. 62.

63. Sections 60 to 62 do not apply to a ladder used in a raise.

O.C. 213-93, s. 63.

64. A ladder landing installed after 31 December 1971 shall be horizontal.

O.C. 213-93, s. 64.

65. Stairways with railings shall be used in an underground travelway inclined at between 20º and 50º from the horizontal.

O.C. 213-93, s. 65.

66. In an open-pit mine, at least one walkway giving access to each work level shall be laid out and maintained in accordance with the following standards:

(1) stairways or ladderways shall be installed where the walkway is inclined at more than 30º from the horizontal and where the angle is 50º or greater, only ladders may be installed;

(2) the ladderways shall:

(a) be firmly fixed in place by at least 2 independent supports;

(b) be inclined at less than 70º from the horizontal;

(c) contain rest landings with railings at least every 6 m (19.7 ft);

(3) the stairways shall:

(a) have uniform steps in each flight;

(b) have non-skid steps of a depth exceeding 150 mm (5.9 in);

(c) have firmly fixed railings on sides where there is a risk of falling;

(d) have a handrail on at least one side;

(4) the stairways and rest landings shall be designed and built to carry a live load of 4.8 kN/m^2 (100.2 lb/ft^2);

(5) the railings shall:

(a) be at least 1 m (3.3 ft) in height;

(b) be designed and built to withstand a concentrated horizontal force of at least 900 N (202.3 lb) applied to any point on the upper rail and a concentrated force of at least 450 N (101.2 lb) applied to any point on the upper rail;

(c) have an upper rail placed between 900 mm (35.4 in) and 1,100 mm (43.3 in) above the floor and an intermediate rail fixed midway between the upper rail and the floor.

O.C. 213-93, s. 66; O.C. 1326-95, s. 17.

67. The space between the tops of the rungs of a ladder shall be at least 250 mm (9.8 in) and not more than 300 mm (11.8 in), and that space may not vary by more than 13 mm (0.5 in) on any one ladder or from one ladder to another on the same ladderway.

O.C. 213-93, s. 67.

68. As of 1 April 1993, there shall be clearance of at least 150 mm (5.9 in) behind the rungs of a ladder.

O.C. 213-93, s. 68; Erratum, 1993 G.O. 2, 2603.

69. A ladder shall extend at least 1 m (3.3 ft) beyond its upper rest landing or failing which, fixed handles shall be installed at an equivalent height.

O.C. 213-93, s. 69.

70. A worker may not mount a ladder unless the tools he is carrying are well secured to his waist by a belt or placed in a bag carried across his shoulder.

O.C. 213-93, s. 70.

70.1. Any underground footbridge or platform higher than 1 m (3.3 ft) above the ground or floor, other than the platform referred to in section 364, shall be equipped with guardrails on sides where there is the risk of a fall.

O.C. 460-2000, s. 14.

§ 5. — *Emergency exits*

71. Except in a place where development work is being carried out, no work may be undertaken underground without having at least 2 separate passages to the surface by which workers may evacuate the mine.

The passages shall enable workers to pass from one level of the mine to another.

Notwithstanding the foregoing, a stope may be operated with only one passage to the surface where the following conditions are satisfied:

(1) the stope is operated for sampling purposes only;

(2) no other hoisting, exploration, development or new development work is carried out simultaneously with the operation of the stope;

(3) a refuge station complying with the standards in sections 127 and 128 is installed less than 10 minutes from the work station;

(4) the refuge station is equipped with one self-contained breathing apparatus and a minimum utilization time of 60 minutes for each worker assigned to the site and to any related haulage;

(5) the quantity of rock broken is absolutely necessary to render the sample representative of the deposit to be exploited;

(6) the timbering of the shaft and collar frame is kept wet.

O.C. 213-93, s. 71; O.C. 782-97, s. 7; O.C. 1190-2010, s. 6; O.C. 966-2015, s. 2.

71.1. Where the sole motorized device for the transport of persons to the surface is not available, no work may be undertaken underground, unless that means of transport is put back into operation within 2 hours.

O.C. 963-2014, s. 3.

72. In an underground mine whose operation begins on or after 1 April 1993, the passages prescribed in section 71 shall:

(1) be at least 30 m (98.4 ft) apart;

(2) have a cross-section of at least 1.5 m (4.9 ft) or a diameter of at least 1.5 m (4.9 ft), except for the openings in the rest landings of the ladderways;

(3) have exits on the surface in separate buildings built with non-combustible materials.

O.C. 213-93, s. 72; Erratum, 1993 G.O. 2, 2603; O.C. 1326-95, s. 18.

73. In an underground mine, a worker working underground shall:

(1) receive information and training about the location of the emergency exits; the exists shall be checked at least once each month;

(2) be guided by signs placed at each intersection of the travelways indicating the direction to take to reach the surface.

O.C. 213-93, s. 73.

74. Every stope shall have at least 2 access routes practicable at all times, except:

(1) stopes less than 30 m (98.4 ft) in length;

(2) retreat mining stopes;

(3) stopes mined by the rooms and pillars method.

O.C. 213-93, s. 74.

75. In any retreat mining stope, a telephone allowing communication with another person shall be installed as long as there are any workmen in the stope, except where remote control devices are used in the drawing of ore and where access to the stope is prohibited.

O.C. 213-93, s. 75.

75.1. Where a tunnel is used under a reserve of non-consolidated materials for the purpose of recovering those materials, the tunnel shall have at least 2 separate passages through which the workers may evacuate the work stations.

This section applies to tunnels built on or after 10 July 1997 and to tunnels on which extension work begins on or after 10 July 1997.

O.C. 782-97, s. 8.

§ 5.1. — *Tubular ladder emergency exit in an underground mine*

O.C. 1431-2021, s. 6.

75.2. A tubular ladder emergency exit shall be used exclusively for the evacuation of workers in an underground mine.

Subdivision 5 of Division III applies to a tubular ladder emergency exit, except paragraph 2 of section 72.

O.C. 1431-2021, s. 6.

75.3. A tubular ladder emergency exit shall be designed, built, maintained and used so as not to endanger the safety of workers.

O.C. 1431-2021, s. 6.

75.4. A tubular ladder emergency exit may not be installed in a shaft.

It shall comply with the plans and specifications of an engineer.

O.C. 1431-2021, s. 6.

75.5. The excavation in which a tubular ladder emergency exit is installed shall be free from any cables, pipes or other services.

O.C. 1431-2021, s. 6.

75.6. A tubular ladder emergency exit shall comply with the following standards:

(1) be built entirely of materials that, as of the date of manufacture, meet the requirements of the flame test for a vertical conduit of CAN/CSA Standard M427-M1991, Fire-Performance and Antistatic Requirements for Ventilation Materials;

(2) be inclined at least 65° and not more than 80°;

(3) be free from any cables, pipes or other services, with the exception of those required for the installation of a fall-protection system pursuant to section 75.13 or a climb assist system;

(4) provide inside clearance of at least 70 cm (27.6 in) in diameter at all points;

(5) where the height of the exit is greater than 75 m (246.1 ft), have a climb assist system installed in accordance with the plans and specifications of an engineer and used and maintained in accordance with the manufacturer's recommendations.

O.C. 1431-2021, s. 6.

75.7. The ladder of a tubular ladder emergency exit shall comply with the following standards:

(1) have a minimum width of 450 mm (17.7 in) between the rails;

(2) have a distance of at least 185 mm (7.3 in) from the front of the rung to the wall of the tubular ladder emergency exit located behind the rung, measured perpendicularly from the centre of the rung;

(3) have a space between the top of the rungs of the ladder that complies with the dimensions provided for in section 67.

O.C. 1431-2021, s. 6.

75.8. The rungs of the ladder of a tubular ladder emergency exit shall be covered with non-slip materials or be constructed so as to prevent slipping.

O.C. 1431-2021, s. 6.

75.9. The ladder of the tubular ladder emergency exit shall extend at least 1 m (3.3 ft) beyond its upper rest landing or failing which, fixed handles shall be installed at an equivalent height.

O.C. 1431-2021, s. 6.

75.10. Handrails or rails that provide 3 fulcrum points shall be installed in the tubular ladder emergency exit for the use of the ladder.

O.C. 1431-2021, s. 6.

75.11. In places where the tubular ladder emergency exits are off-centre or where there is a difference of inclination of more than 10° between them, landings shall be installed.

O.C. 1431-2021, s. 6.

75.12. The material required for mine rescue, such as a hoist and rope, shall be accessible on the site of a mine that has a tubular ladder emergency exit and be adapted to the height of the emergency exit.

O.C. 1431-2021, s. 6.

75.13. Full body harnesses that comply with CAN/CSA Standard Z259.10, Full Body Harnesses, shall be connected to a fall-protection system installed and designed in accordance with CSA Standard Z259.16, Design of Active Fall-Protection Systems, based on the number of persons who can use the tubular ladder emergency exit at the same time, as determined by an engineer.

Every worker who uses a tubular ladder emergency exit is required to wear a full body harness.

O.C. 1431-2021, s. 6; O.C. 80-2023, s. 12.

75.14. The full body harnesses used for a tubular ladder emergency exit shall have at least rings on the sternum, back and shoulders to allow for mine rescue.

O.C. 1431-2021, s. 6.

75.15. The full body harnesses and the fall-protection system equipment determined in accordance with section 75.13 shall be accessible at the ends of a tubular ladder emergency exit in sufficient number for all users.

O.C. 1431-2021, s. 6.

75.16. A worker may not enter a tubular ladder emergency exit unless the tools he is carrying are well secured to his waist by a belt or placed in a bag carried across his shoulder.

O.C. 1431-2021, s. 6.

75.17. Bollards or other objects of the same kind shall be installed near the ends of a tubular ladder emergency exit to protect its integrity.

O.C. 1431-2021, s. 6.

75.18. The ventilation in a tubular ladder emergency exit shall comply with the plans and specifications of an engineer.

The ventilation flow shall supply at least 5 changes of air per hour.

O.C. 1431-2021, s. 6.

75.19. In addition to the safety measures provided for in section 117, a rescue procedure and an evacuation procedure specific to the use of the tubular ladder emergency exit shall be developed and tested.

The employer shall demonstrate, in particular by carrying out an evacuation drill, the effectiveness, reliability and safety of the tubular ladder emergency exit and its equipment before it is used for the first time and thereafter at least once a year.

O.C. 1431-2021, s. 6.

§ 6. — *Underground and surface waters*

76. For the purposes of this Subdivision:

(1) an underground excavation is under the influence of a body of water where the excavation is less than 100 m (328.1 ft) from the rock contour below the body of water at its highest point;

(2) an open-pit mine is under the influence of a body of water where the width of the protective wall is less than 100 m (328.1 ft) from the body of water at its highest point.

O.C. 213-93, s. 76.

77. An underground excavation under the influence of a body of water may not be begun without there being obtained from an engineer plans and specifications accompanied by studies covering the following elements;

(1) a study of the surface of the site under which the surface pillars will be located;

(2) a soil distribution study;

(3) a study of the mechanical properties of the soil;

(4) a study of the mechanical properties of the rock to be excavated;

(5) a study of the hydrogeological conditions;

(6) the data necessary for a surface pillar checking and maintenance system.

The plans and specifications and the accompanying studies shall be kept at the mine site and shall be available at all times.

O.C. 213-93, s. 77.

78. The excavation of an open-pit mine less than 100 m (328.1 ft) from a body of water may not be undertaken without the engineer's plans and specifications accompanied by the studies prescribed by subparagraphs 4 to 6 of section 77 being obtained.

The second paragraph of section 77 applies to this section.

O.C. 213-93, s. 78.

79. Any abandoned stope under the influence of a body of water and located less than 40 m (131.2 ft) from the surface of the rock shall be backfilled or isolated by a dam or a bulkhead.

O.C. 213-93, s. 79.

80. The roof of a stope that has not been backfilled and is or has been mined under the influence of a body of water shall be inspected a least once each day.

The frequency of such inspections may be reduced to once per week where the stope is monitored by a visual and audible monitoring system.

O.C. 213-93, s. 80; O.C. 1326-95, s. 19.

81. The construction of a dam or bulkhead intended to hold back water or water or air under pressure underground may not be begun without the plans and specifications for the dam or bulkhead being obtained from an engineer.

The plans and specifications shall be kept at the site of the mine and be available at all times.

O.C. 213-93, s. 81.

82. Every mine shall be provided with pumping equipment capable of discharging the underground water which, if accumulated, could endanger the life of workers in the mine or in a neighbouring mine.

O.C. 213-93, s. 82.

83. If water infiltrates into fill, the fill shall be kept in place by bulkheads constructed of antirot materials and equipped with a drainage system.

O.C. 213-93, s. 83.

84. Where tailings are used for backfilling underground excavations, the water contained in such residues and leaking therefrom may not have a cyanide content higher than 0.005%, expressed in potassium cyanide.

O.C. 213-93, s. 84.

DIVISION IV

QUALITY OF THE WORK ENVIRONMENT

§ 1. — *Air Quality*

85. Before resuming work in an underground mine that has been abandoned or part of an underground mine located outside a ventilation circuit, rescuers must monitor the air quality to determine if it meets the standards provided for in sections 40 and 41 of the Regulation respecting occupational health and safety (chapter S-2.1, r. 13) and its Schedule I.

Rescuers carrying out the monitoring must

(1) have received the training provided for in section 19 and work in teams of not fewer than 3 rescuers;

(2) wear a self-contained breathing apparatus having an autonomy of not less than 4 hours; and

(3) have measurement instruments for detecting the concentration of oxygen and any contaminant likely to be found in the mine or part of the mine.

O.C. 213-93, s. 85; O.C. 1326-95, s. 20; O.C. 885-2001, s. 381; O.C. 755-2017, s. 4.

86. An underground mine shall be ventilated mechanically.

O.C. 213-93, s. 86.

87. The fresh air introduced underground may not be contaminated by air previously exhausted from the mine or by any other fixed source of contamination present on the mine site.

Notwithstanding the foregoing, where the fresh air introduced underground is heated directly by a flame, the following conditions shall be satisfied:

(1) the heating system shall comply with CGA/CAN1 3.7-1977 Direct Gas-Fired Non-Recirculating Make-up Air Heaters;

(2) the entire installation shall comply with the Regulation respecting gas and public safety (R.R.Q., 1981, c. D-10, r. 4), as well as with CAN/CGA-B149.1-M91 Natural Gas Installation Code, where natural gas is used as fuel, or CAN/CGA-B149.2M91 Propane Installation Code, where propane is used as fuel;

(3) a combustible gas detector shall be installed to ensure the cut-off of combustible gas to the burner where the gas used as fuel could make its way into the mine;

(4) an environmental monitor shall be installed to ensure that the carbon monoxide concentration in the air exhausted by the main burners in working condition does not at any time exceed the concentration indicated in Table II of Schedule A to CGA/CAN1 3.7-1977 Direct Gas-Fired Non-Recirculating Make-up Air Heaters;

(5) a carbon monoxide concentration reading shall be taken at least once weekly and shall be recorded in a register, except where it is recorded on a graph or in a computer system.

For the purposes of the first paragraph, a system that automatically shuts off the fresh air supply fan must be installed when the monitor referred to in subparagraph 4 of the second paragraph indicates that the carbon monoxide concentration exceeds 11.4 mg/m^3 (10 ppm).

O.C. 213-93, s. 87; O.C. 782-97, s. 9; O.C. 119-2006, s. 7.

88. The air supplied to an underground mine shall not be contaminated by combustion fumes from the stack of any device.

O.C. 213-93, s. 88.

89. Main fans and auxiliary fans shall not recirculate air to ventilate an underground work station.

However, reuse of air in a main ventilation circuit or an auxiliary circuit is permitted under the following conditions:

(1) the concentration of carbon monoxide in the ambient air must be measured at the inlet of each circuit where air is reused;

(2) these measurements must be taken at least once a week during mucking operations carried out with diesel equipment and each time the ventilation equipment is altered; and

(3) when the concentration of carbon monoxide exceeds 11.4 mg/m^3 (10 ppm), a response plan must be implemented to reduce and maintain the concentration below that level.

The results of those measurements must be recorded in a register.

O.C. 213-93, s. 89; O.C. 42-2004, s. 3.

90. The air intake of an auxiliary fan shall be placed so as not to reintroduce previously exhausted air into the zone served by it.

O.C. 213-93, s. 90.

91. The percentage of air recirculated by a booster fan installed underground shall be less than 25%.

O.C. 213-93, s. 91.

92. *(Revoked).*

O.C. 213-93, s. 92; O.C. 460-2000, s. 15.

93. Fans may not be reversed for as long as workers have not been located or evacuated, unless there is a fire in the main fan or its shelter.

O.C. 213-93, s. 93.

94. A fan shall be in continuous operation when a person is within its ventilation circuit.

O.C. 213-93, s. 94.

95. No person may enter a workplace located within the ventilation circuit of a fan that has been stopped until it has been re-started and its air changed at least once in that workplace.

O.C. 213-93, s. 95.

96. After blasting, a worker may not return to his underground work station before:

(1) it and the travelway leading to it have been ventilated, in a manner meeting the requirements of section 41 of the Regulation respecting occupational health and safety (chapter S-2.1, r. 13);

(2) at least one change of air has been made in the work station.

O.C. 213-93, s. 96; O.C. 885-2001, s. 382.

97. Local exhaust ventilation for trapping dust emitted by a specific source is not required where the emission of dust is controlled by a system of humidification meeting the standards of Schedule I to the Regulation respecting occupational health and safety (chapter S-2.1, r. 13).

O.C. 213-93, s. 97; O.C. 1326-95, s. 21; O.C. 885-2001, s. 383.

98. Whenever dust is created by movement of rock, materials or mobile equipment, some means of control, such as calcium, water or foam, shall be used to reduce or prevent the emission of the dust.

O.C. 213-93, s. 98.

99. In an underground mine, no new ventilation installation or change in existing installation shall be undertaken unless plans and specifications, including, in particular, illustrations of the direction and volume of air displacement, location of fans, fire doors, doors and bulkheads used to control air circulation, have been obtained from an engineer. The plans shall be:

(1) updated not later than 1 February of each year so that the plans indicate the state of the ventilation at 31 December of the preceding year;

(2) kept on the site of the mine and be available at all times.

A copy of the plans and specifications shall be sent to the Commission where it so requests.

O.C. 213-93, s. 99.

100. Exhaust gases of an internal combustion engine installed in a building shall be exhausted to the outside of the building. The exhaust pipes shall be installed so as to prevent the return of gases to the building, their introduction into the compressor’s air intake and the contamination of the air in a neighbouring building or in the underground mine.

O.C. 213-93, s. 100.

100.1. The minimum rate of ventilation of a diesel engine used in an underground mine shall be that appearing on the certificate of homologation issued by the Mining and Mineral Sciences Laboratories, MMSL-CANMET, in accordance with CAN/CSA-M424.2-M90 Non-railbound Diesel-powered Machines for Use in Non-gassy Underground Mines or CAN/CSA-M424.1-88 Flameproof Non-Rail-Bound Diesel-Powered Machines for Use in Gassy Underground Mines, if applicable and, in accordance with the provisions of Schedule VII, or that provided for in the United States federal certification index, according to Parts 31 and 32, Title 30, Code of Federal Regulations, Mine Safety and Health Administrative or, failing the above, shall be 5.5 m^3 per minute per kW (144.8 ft^3 per minute per HP) at the engine shaft.

For the purposes of this section, CAN/CSA-M424.2-M90, Non-Rail-Bound Diesel-Powered Machines for Use in Non-Gassy Underground Mines and CAN/CSA M424.1-88, Flameproof Non-Rail-Bound Diesel-Powered Machines for Use in Gassy Underground Coal Mines shall apply to any diesel motor used underground notwithstanding the field of application specified in those standards.

O.C. 782-97, s. 10; O.C. 1236-98, s. 10; O.C. 460-2000, s. 16; O.C. 42-2004, s. 4.

101. An underground mine shall be supplied with fresh air from the atmosphere at a minimum rate of flow equivalent to the more demanding of the following standards:

(1) 15 m^3 (529.7 ft^3) per minute for each worker underground;

(2) where equipment operated by a diesel engine is used, the rate of ventilation required to meet the requirements of section 100.1 and subparagraphs 1 and 2 of the first paragraph of section 102.

O.C. 213-93, s. 101; O.C. 782-97, s. 11.

102. When internal combustion engines are used for operating equipment in an underground mine, they shall be diesel-type engines and their use shall be subject to observance of the following conditions:

(1) the ventilation in places where such engines are used shall be sufficient to dilute the contaminants present in the exhaust gases to weighted average exposure values measured in the worker's respiratory zone; those exposure values shall be:

(a) below 0.4 mg of total carbon per cubic metre of air;

(b) below the exposure values provided for in Schedule I of the Regulation respecting occupational health and safety (chapter S-2.1, r. 13);

(1.1) the sampling and analysis method for diesel particulate matter in terms of total carbon is the method NIOSH 5040: DIESEL PARTICULATE MATTER as it reads in version 3 dated 15 March 2003 published by the National Institute for Occupational Safety and Health (NIOSH), in NIOSH Manual of Analytical Methods (NMAM), Fourth Edition.

The laboratory analysing the total carbon must be certified under a recognized standard such as the international standard ISO/CEI 17025:2005 – General requirements for the competence of testing and calibration laboratories published by ISO. It must be certified by a recognized certifying body, such as the Standards Council of Canada.

(2) notwithstanding paragraph 2 of section 101, when several pieces of equipment operated by diesel engines are used simultaneously in one ventilation circuit, the volume of fresh air shall be:

(a) for motors certified under Part 31 and Part 32 of Title 30, Code of Federal Regulations, Mine Safety and Health Administration, and for non-certified motors, 100% of the flow given for the most demanding unit in terms of ventilation, 75% of the flow given for the second unit and 50% of the flow given for any additional unit, up to a minimum of 2.7 m^3 per minute per kW (71 ft^3 per minute per HP) at the engine shaft;

(b) for motors certified under CAN/CSA M424.2-M90, Non-Rail-Bound Diesel-Powered Machines for Use in Non-Gassy Underground Mines or under CAN/CSA M424.1-88, Flameproof Non-Rail-Bound Diesel-Powered Machines for Use in Gassy Underground Coal Mines, and, in accordance with the provisions of Schedule VII, 100% of the flow given for each motor used in the ventilation circuit;

(c) equal to or greater than the total of the fresh air flow prescribed in subparagraph *a* or *b*, as the case may be, when the diesel engines referred to therein are used simultaneously;

(3) *(subparagraph revoked);*

(3.1) the addition of an additive to the diesel fuel must not result in the flash point of the fuel being lower than 37.8 °C (100 °F);

(4) the sulphur content of the diesel fuel shall be less than 0.05%;

(5) the engine may not constantly emit black smoke;

(6) every diesel engine shall be fitted with a device for purifying or diluting exhaust gases;

(7) the injection pump of a diesel engine and its governor shall be sealed;

(8) a manual or controlled shut-off valve shall be placed on the fuel line between the tank and the engine;

(9) the terminals of the electric storage battery shall be insulated by a non-conducting material;

(10) the electrical installation of a diesel engine shall have a master switch making it possible to shut off the current at the battery outlet.

For the purposes of subparagraph *b* of paragraph 2, CAN/CSA M424.2-M90, Non-Rail-Bound Diesel-Powered Machines for Use in Non-Gassy Underground Mines, and CAN/CSA M424.1-88, Flameproof Non-Rail-Bound Diesel-Powered Machines for Use in Gassy Underground Coal Mines, apply to any diesel engine used underground notwithstanding the area of application specified in those standards.

O.C. 213-93, s. 102; O.C. 1326-95, s. 22; O.C. 782-97, s. 12; O.C. 460-2000, s. 17; O.C. 885-2001, s. 383; O.C. 42-2004, s. 5; O.C. 119-2006, s. 8; O.C. 445-2016, s. 3.

103. At least once each week, the flow of air in cubic metres per minute supplying a zone affected by the operation of an underground diesel engine shall be measured and entered in the register of the work station concerning diesel engines.

O.C. 213-93, s. 103; O.C. 782-97, s. 13.

103.1. The measurements evaluating the total carbon exposure values provided for in section 102 shall be taken as follows:

(1) at least once every 6 months;

(2) following any alteration likely to affect the quality of the air;

(3) the strategy for sampling such dust must be applied in accordance with the common practices of industrial hygiene summarized in the Guide d’échantillonnage des contaminants de l’air en milieu de travail published by the Institut de recherche Robert-Sauvé en santé et en sécurité du travail.

O.C. 782-97, s. 14; O.C. 465-2002, s. 5; O.C. 445-2016, s. 4.

103.2. Any underground equipment powered by a diesel engine shall be stopped if the following occurs:

(1) the concentration of carbon monoxide in the undiluted exhaust gases of the engine exceeds 750 ppm for haulage, clearing or service equipment;

(2) its use becomes dangerous due to a defect in the engine.

O.C. 1236-98, s. 11; O.C. 119-2006, s. 9.

103.3. The concentration of carbon monoxide in the undiluted exhaust gases of underground diesel engines shall be measured when the engines are first put into operation and thereafter at least every 300 hours of operation or at least every 6 months, whichever event occurs first.

The results of these measurements shall be entered in the register provided for in section 103.

O.C. 1236-98, s. 11.

104. The ventilation flow at any underground work station shall generate an air speed in a travelway of at least 15 m (49.2 ft) per minute or shall be equivalent to 50 m^3 (1,765.7 ft^3) per minute per worker at a work station.

O.C. 213-93, s. 104.

104.1. In a raise:

(1) notwithstanding section 104, the ventilation flow in the work station shall supply at least 5 changes of air per hour;

(2) ventilation shall be supplied by means of a compressed air pipe that is:

(a) less than 6.1 m (20 ft) from the heading;

(b) equipped with a muffler;

(c) directed towards the heading;

(d) independent of any compressed air pipe supplying a drill or other pneumatic tool.

O.C. 782-97, s. 15.

105. In an underground mine, any diesel engine in the zone affected by the shutting-off of a fan shall be stopped within 15 minutes.

O.C. 213-93, s. 105.

106. No blasting may be done in a zone when the fan serving it is not operational.

O.C. 213-93, s. 106.

107. The air flow control devices for ventilating a raise shall be:

(1) designed so that a minimum ventilation of 5 changes of air per hour is maintained in the work station at all times;

(2) placed outside and less than 10 m (32.8 ft) from the raise.

O.C. 213-93, s. 107; O.C. 782-97, s. 16.

§ 2. — *Lighting*

108. Every person who is underground is required to wear a miner's lamp affixed to the safety hat and attached to the clothing, harness or safety belt.

However, the wearing of such lamp is not required in the locations set forth in section 109, provided that the lamp is within the person's reach.

O.C. 213-93, s. 108; O.C. 782-97, s. 17; O.C. 963-2014, s. 4.

108.1. A miner's lamp used underground shall yield a level of illumination of at least 1500 lux at 1.2 m (4 ft) from the light source.

Notwithstanding the foregoing, if the ground to be evaluated is more than 3.6 m (12 ft) from the miner's lamp, auxiliary lighting shall also be installed.

O.C. 782-97, s. 18.

108.2. In an underground mine, measures shall be developed in compliance with the manufacturer's recommendations to evaluate and maintain miners' lamps.

The results of inspections on such lamps shall be entered in the register concerning miners' lamps.

O.C. 782-97, s. 18; O.C. 755-2017, s. 5.

109. Fixed lighting yielding a level of illumination of at least 50 lux shall be installed:

(1) in each shaft station of a shaft in use;

(2) in an underground crushing room;

(3) in a room or area underground containing electrical equipment;

(4) in an underground refuge station.

O.C. 213-93, s. 109.

110. The level of illumination shall be measured using a light meter corrected for incident light.

O.C. 213-93, s. 110.

§ 3. — *Sanitary standards*

111. An underground mine shall be equipped at each level used by workers as access to a stope or a working face with at least one sanitary convenience for each group of 30 or fewer workers.

O.C. 213-93, s. 111.

112. A sanitary convenience shall:

(1) be located in a compartment sheltered from view; the compartment shall have a door that can be locked from the inside, toilet paper placed in a holder and a clothes hook;

(2) have a plastic seat;

(3) be heated and lighted, where it is located near a lunch room.

O.C. 213-93, s. 112.

113. A dryhouse shall be provided for each sex and shall be equipped with:

(1) individual lockers for clean clothes and hooks for hanging up work clothes; each worker shall have a seat opposite the locker with clearance of at least 600 mm (23.6 in) from the locker;

(2) a system capable of drying work clothes before the beginning of the next shift on which they will be used;

(3) hot and cold showers, with one shower per group of 10 or fewer workers ending a shift at the same time, except those installed before 1 April 1993;

(4) washbasins, soap, hand dryers or towels;

(5) at least one sanitary convenience for each group of 30 or fewer workers;

(6) an airlock at each door leading directly to the outside.

O.C. 213-93, s. 113; Erratum, 1993 G.O. 2, 2603.

114. A dryhouse shall be kept at a minimum temperature of 22º C (71.6º F) and have a minimum illumination of 250 lux, measured in accordance with section 110.

O.C. 213-93, s. 114.

115. An underground lunchroom shall:

(1) be located more than 20 m (65.6 ft) from any inflammable substances or explosives magazine;

(2) be provided with a source of drinking water;

(3) have at least one washbasin provided with soap or another cleaning material and towels or a hand dryer;

(4) have at least one washbasin with hot water and cold water provided with soap or another cleaning material and towels or a hand dryer, where the lunchroom is installed on or after 1 April 1993.

O.C. 213-93, s. 115; Erratum, 1993 G.O. 2, 2603.

DIVISION V

SAFETY MEASURES TO PREVENT CERTAIN EVENTS

§ 1. — *General*

116. No person may light or feed a fire underground.

O.C. 213-93, s. 116.

117. Safety procedures in case of fire, infiltration, flood, landslide or other event of a similar nature shall be prepared for every underground mine. The procedures shall include the following elements:

(1) the obligations of the worker who discovers such an event;

(2) the organization of rescue operations;

(3) the persons to be informed and methods of contacting them;

(4) procedures for activating the alarm system;

(5) the organization of the evacuation of the mine;

(6) monitoring of persons brought to the surface in an evacuation and tasks of persons designated to do the monitoring;

(7) persons designated to draw up the list of persons still underground as evacuation takes place;

(8) a list of the persons responsible for seeing to the operation of the installations necessary for rescue of the workers, in particular, hoists, fans, compressors, electrical substations and the control and monitoring equipment for the substations powering the hoists, fans, and compressors;

(9) persons assigned to contact outside institutions that may be needed during operations and the method of contacting them;

(10) persons responsible for guiding persons from outside, including physicians, ambulances and rescue teams;

(11) the organization of gathering information relating to the rescue of persons;

(12) the methods used to see that such procedures are known and thoroughly understood by the persons involved.

O.C. 213-93, s. 117; O.C. 1326-95, s. 23.

118. The procedures prescribed by section 117 shall be reviewed at least annually.

The procedures prescribed in paragraph 3 of that section and the text of any revision shall be posted in the dryhouse, shaft buildings, landings, lunchrooms and safety stations.

Only a summary of the procedures prescribed in paragraphs 1 and 5 of section 117 and the text of any revision shall be posted in the locations listed in the second paragraph.

O.C. 213-93, s. 118.

119. Where an event described in section 117 occurs, it is prohibited to make changes in the ventilation system as long as there are people in the mine who have not been located or evacuated, unless there is a fire in a main fan or its shelter.

O.C. 213-93, s. 119.

§ 2. — *Alarm system*

120. In an underground mine an alarm system shall be installed. The system shall comply with the following standards:

(1) it must be protected against weather at all times;

(2) it may be activated at all times;

(3) it is at all times capable of warning all underground workers of the necessity of evacuating the mine.

O.C. 213-93, s. 120.

121. No stench warning system may be installed in a building covering an opening that is normally used for the entrance or exit of an underground mine.

O.C. 213-93, s. 121.

122. The procedure for activating the alarm system prescribed in section 120 shall be posted in the locations where the alarm may be activated.

O.C. 213-93, s. 122.

§ 3. — *Evacuation drill*

123. An evacuation drill to check the effectiveness and operation of the alarm system shall be carried out at least once a year and shall be conducted in alternance with all the different work shifts.

The drill shall be carried out during the work shift when the greatest number of workers are present and no later than 2 hours before the end of the shift.

O.C. 213-93, s. 123.

124. The evacuation drill prescribed by section 123 shall be the subject of a report containing the following information:

(1) the date of the drill;

(2) the times of the beginning and end of the shift during which the alarm system was activated;

(3) the exact time at which the alert was given;

(4) the name and title of the person who gave the alert;

(5) the place from which the alert was given;

(6) the name and position of the person who activated the alarm system;

(7) the exact time at which the alarm system was activated;

(8) the exact time and place at which the last worker was located;

(9) the number of workers who were underground;

(10) where applicable, the work place of each worker not alerted by the alarm system.

The report must be forwarded to the mine's health and safety committee, the Commission des normes, de l'équité, de la santé et de la sécurité du travail and the mine rescue department.

O.C. 213-93, s. 124; O.C. 42-2004, s. 6.

124.1. When a worker has not been reached following the evacuation drill described in section 123, corrective measures must be taken to remedy the situation, and they must be followed up to prevent a recurrence of the situation.

O.C. 42-2004, s. 7.

125. Where a stench alarm system was used for the evacuation drill, the odor shall have dissipated from all work places before the workers return to them.

O.C. 213-93, s. 125.

§ 4. — *Refuge stations*

126. A refuge station must be installed on any working underground level from which it is not possible, after the alarm system has been activated, to reach another refuge station or the surface within 30 minutes for a mine whose operation began before 1 April 1993, or 20 minutes for a mine whose operation began on or after that date.

For any new development or for any underground mine whose operation begins on or after 20 January 2011, a refuge station must be installed at the shortest distance from a work station, between 1,000 m (3,280 ft) and a 15-minute walk.

A refuge station installed as of 4 December 2014 may not be located more than 1 km from the nearest refuge station.

O.C. 213-93, s. 126; Erratum, 1993 G.O. 2, 2603; O.C. 1326-95, s. 24; O.C. 1190-2010, s. 7; O.C. 963-2014, s. 5.

127. A refuge station shall

(1) be constructed with non-combustible materials and have a fire resistance of at least one hour;

(2) be identified by notices posted approximately 20 m (65.6 ft) from the station;

(3) provide an area of at least 1 m^2 (10.8 ft^2) per worker needing to seek refuge there;

(4) be constructed so that it is airtight against smoke when the door is closed;

(5) be connected to the surface by a means of voice communication;

(6) have a source of drinking water;

(6.1) have at least 1 portable toilet;

(7) have a compressed air line complying with Division 8 of the latest edition of the Manuel de formation en sauvetage minier of the Commission des normes, de l'équité, de la santé et de la sécurité du travail or, if it is impossible because of permafrost conditions, have an oxygen supply system with regulated flow able to remove carbon dioxide from the ambient air according to the number of workers that the station can contain;

(7.1) not be supplied with air by a backup compressor located underground;

(8) have fire retardant sealant to seal any leak;

(9) have a notice board on which are posted a plan of the level, the air supply circuit of the mine and the rescue procedures;

(10) be equipped with an airlock in compliance with Division 8 of the latest edition of the Manuel de formation en sauvetage minier of the Commission des normes, de l'équité, de la santé et de la sécurité du travail, as of 20 January 2011.

The system referred to in subparagraph 7 of the first paragraph shall

(1) have a minimum range of 70 hours for the number of workers who may be present in the station;

(2) be the subject of a monthly preventive maintenance program whose results are entered in a register.

In addition, underground workers must receive training on the use of that system.

O.C. 213-93, s. 127; O.C. 1326-95, s. 25; O.C. 119-2006, s. 10; O.C. 1190-2010, s. 8.

128. A refuge station installed on or after 1 April 1993, in addition to having the characteristics prescribed by section 127, shall:

(1) be located more than 60 m (196.9 ft) from an inflammable substances or explosives magazine;

(2) have a minimum height of 2 m (6.6 ft).

O.C. 213-93, s. 128; Erratum, 1993 G.O. 2, 2603.

128.1. A mobile refuge station installed on or after 11 july 2013, in addition to having the characteristics prescribed by sections 21, 109, 126, 127 and 128, must

(1) ensure its tightness by means of appropriate pressure tests according to the recommendations of the manufacturer, with the results entered in a register;

(2) be the subject of a monthly preventive maintenance program which necessarily includes maintenance every time it is moved and whose results are entered in a register;

(3) be located so that it is impossible for a vehicle to collide with the mobile refuge station.

O.C. 621-2013, s. 2.

128.2. No person may park a motorized vehicle less than 60 m (196.9 ft.) from a mobile refuge station.

O.C. 621-2013, s. 2.

128.3. A site plan of a mobile refuge station must be designed and updated every time it is moved and a copy of that plan must be kept on the mine site and available at all times.

O.C. 621-2013, s. 2.

§ 5. — *Extinguishing equipment*

129. A shaft station, at the surface or underground, shall have a fire hose equipped with a nozzle and connected to a system that can supply at least 450 litres (99 gallons) of water per minute under a pressure of at least 700 kPa (101.5 lb/in^2).

In a salt mine, a powder extinguishing system having a rated capacity of at least 9 kg (20 lb) shall be available at each shaft station. Where the shaft house is constructed with combustible materials, the rated capacity of the system at the surface station shall be at least 113 kg (250 lb).

O.C. 213-93, s. 129; O.C. 1236-98, s. 12.

130. At least one portable extinguisher having a minimum capacity of 4 kg (8.8 lb) shall be available in each of the following locations:

(1) the building covering an opening to the surface of an underground mine;

(2) the crushing room;

(3) the pumping room;

(4) the battery charging station;

(5) the room or enclosure for underground transformers;

(6) the garage or workshop;

(7) the mobile arc welding or welding torch unit;

(8) the combustible liquids and grease depot;

(9) the diesel or electric motor;

(10) the fuel distribution station;

(11) the vehicle transporting explosives;

(12) the hoistroom;

(13) the shaft station;

(14) the lunchroom and the refuge station;

(15) the combustible material warehouse; and

(16) the raise climber.

O.C. 213-93, s. 130; O.C. 42-2004, s. 8; O.C. 119-2006, s. 11.

131. The choice of portable extinguisher to be used in case of a fire shall be made according to the types of fire as set out in the table in Schedule I.

O.C. 213-93, s. 131.

132. A portable extinguisher not designed to fight Class C fires may not be placed in an area containing electrical equipment.

O.C. 213-93, s. 132.

133. In an underground mine, an automatic extinguishing system shall be installed:

(1) on any motorized vehicle powered by a diesel engine or electric motor, on tires or tracks, manufactured after 1 April 1993 and any remote-controlled vehicle not equipped with a release device on the remote control, containing more than 100 litres (22 gallons) of hydraulic fluid other than a fluid in accordance with CSA Standard CAN/CSA-M423-M87-Fire Resistant Hydraulic Fluids;

(2) in a depot containing more than 1,000 litres (220.0 gallons) of combustible liquids and grease;

(3) on any raise climber powered by a diesel engine or electric motor; in the case of a diesel engine, the hydraulic fluid used for the climber must comply with the standard referred to in subparagraph 1;

(4) on every motorized vehicle used to transport combustible liquids in a portable tank, as defined in NFPA 30-1996, Flammable and Combustible Liquids Code;

(5) on every motorized vehicle powered by a diesel engine used in the supply of magazines or the loading of explosives underground;

(6) at portable combustible liquid supply stations with an electric pumping system, unless the system is explosion-proof.

For the purposes of this section, “automatic extinguishing system” means a system that is activated when exposed to heat.

O.C. 213-93, s. 133; Erratum, 1993 G.O. 2, 2603; O.C. 42-2004, s. 9; O.C. 119-2006, s. 12; O.C. 221-2009, s. 5.

134. In an underground mine, a semi-automatic extinguishing system shall be installed:

(1) on the vehicles mentioned in subparagraph 1 of the first paragraph of section 133 manufactured before 1 April 1993, this installation shall be carried out not later than one year after 1 April 1993;

(2) in a depot containing between 101 and 1,000 litres (22.2 and 220.0 gallons) of combustible liquids and grease.

For the purposes of this section, “semi-automatic extinguishing system” means a system that is activated manually.

O.C. 213-93, s. 134; Erratum, 1993 G.O. 2, 2603; O.C. 465-2002, s. 6; O.C. 119-2006, s. 13.

135. The extinguishing systems prescribed by sections 133 and 134 shall be designed and installed so that they may be activated manually at an easily accessible place.

O.C. 213-93, s. 135.

136. The condition of the portable extinguishers, fire hoses and the automatic or semi-automatic extinguishing systems shall be checked at least once a month.

O.C. 213-93, s. 136.

137. A label showing the date of the latest check and the initials of the worker who made it shall be attached to an extinguisher, fire hose in service and an automatic or semi-automatic extinguishing system.

O.C. 213-93, s. 137.

§ 6. — *Fire doors*

138. A fire door must be installed

(1) in a drift leading to a shaft as soon as the travelway is 100 m (328.1 ft) from a shaft station such that it is isolated from the other parts of the mine in case of fire; and

(2) at every access to a garage designed in accordance with the mine engineering plans and built on or after 23 March 2006.

The door must

(1) be built of fireproof materials and be fire resistant for at least 1 hour;

(2) be free of any obstruction;

(3) have an automatic closing device in the case of a garage referred to in subparagraph 2 of the first paragraph; and

(4) contain a small door for the circulation or evacuation of persons or have such a door alongside it.

For the purposes of this section, "garage" means the place where maintenance and mechanical repair are performed on the main mobile equipment, such as boom drills and scoop trams.

O.C. 213-93, s. 138; O.C. 119-2006, s. 14; O.C. 445-2016, s. 5.

§ 7. — *Protection of the surface openings of an underground mine*

139. A structure containing or surrounding a fan providing ventilation underground shall be fireproof.

O.C. 213-93, s. 139.

140. A building erected on or after 1 April 1993 shall be at least 12 m (39.4 ft) away from a building covering the surface opening to the surface of an underground mine, unless the building covering the opening and the building to be erected are constructed with non-combustible materials.

O.C. 213-93, s. 140; Erratum, 1993 G.O. 2, 2603; O.C. 1326-95, s. 27.

141. A building may form an integral part of a building covering the surface opening of an underground mine provided that:

(1) *(paragraph revoked);*

(2) each part of the integrated building is of non-combustible construction and each part of the building covering the surface opening of the underground mine is constructed with non-combustible materials;

(3) the part of the building covering the surface opening of the underground mine is separated from the rest of the building by a wall having a fire resistance of at least one hour and is constructed with non-combustible materials.

O.C. 213-93, s. 141; O.C. 1326-95, s. 28.

142. It is prohibited to install an internal combustion engine, an apparatus under pressure, a combustion heating apparatus, a repair workshop, a warehouse or have an office in a building covering a surface opening of an underground mine. This prohibition does not apply to:

(1) a building that is an integral part of a building covering the opening, subject to section 145;

(2) the grinding of drill bits when sinking a shaft;

(3) the storage of wood required for shaft sinking work where the wood is placed to thaw in the building covering the shaft;

(4) the heating systems provided for in sections 87 and 142.1.

O.C. 213-93, s. 142; O.C. 782-97, s. 19; O.C. 465-2002, s. 7.

142.1. A stationary natural gas or propane heating system may not be used to heat a building covering an opening to the surface of an underground mine, except where the following conditions are satisfied:

(1) the heating unit is certified by a recognized body such as the Canadian Standards Association (CSA), the Canadian Gas Association (CGA), the Canadian Underwriters' Association (CUA) or a similar body;

(2) the entire installation complies with the Regulation respecting gas and public safety (chapter D-10, r. 4), as well as with CAN/CGA-B149.1-M91 Natural Gas Installation Code, where natural gas is used as fuel, or CAN/CGA-B149.2-M91 Propane Installation Code, where propane is used as fuel;

(3) where the fuel is propane, a combustible gas detector is installed to ensure the cut-off of fuel to the heating apparatus if propane gas should accumulate inside the building;

(4) the heating apparatus is installed in such a manner that the distance between it and any explosive is never less than 4 m (13.1 ft).

O.C. 782-97, s. 20.

142.2. Every gas-fired heating system shall be inspected at least once a week while in service and shall be check tested at least once a year before the heating season by a person holding the appropriate certificate of qualification issued under the Act respecting workforce vocational training and qualification (chapter F-5).

The results of those inspections and checks shall be entered in a register.

O.C. 782-97, s. 20; O.C. 221-2009, s. 6.

143. The exterior of a building covering a surface opening of an underground mine shall be constructed with non-combustible materials.

O.C. 213-93, s. 143; O.C. 1326-95, s. 29.

144. If a mine hoist is installed over a shaft, the structure supporting and sheltering it shall be constructed with non-combustible materials.

O.C. 213-93, s. 144; O.C. 1326-95, s. 30.

145. If is prohibited to install an internal combustion engine other than a diesel engine at a distance of less than:

(1) 23 m (75.5 ft) from the building sheltering a hoist;

(2) 30 m (98.4 ft) from a surface opening of an underground mine or a building covering such an opening.

O.C. 213-93, s. 145.

146. As of 1 April 1993, it is prohibited to install a diesel engine or boiler at a distance of less than:

(1) 15 m (49.2 ft) from a surface opening of an underground mine used as an air exhaust;

(2) 25 m (82 ft) from a surface opening of an underground mine used as an air intake;

(3) 15 m (49.2 ft) from a building covering a surface opening of an underground mine.

O.C. 213-93, s. 146; Erratum, 1993 G.O. 2, 2603.

147. As of 1 April 1993, it is forbidden to install a diesel engine or a compressor in a room containing a hoist.

O.C. 213-93, s. 147; Erratum, 1993 G.O. 2, 2603; O.C. 1326-95, s. 31.

147.1. As of 2 November 1995, where a room containing a hoist is an integral part of a building, the room shall have a fire resistance of at least one hour and shall be constructed with non-combustible materials.

O.C. 1326-95, s. 32.

148. An oil heating installation for the air in an underground mine shall be:

(1) equipped with tanks located at a lower level than the burners;

(2) in accordance with CSA B139-1976 Installation Code for Oil Burning Equipment, and its supplement entitled Supplement No. 1 to B139-1976, Installation Code for Oil Burning Equipment, CSA B139S1-1982.

O.C. 213-93, s. 148.

§ 8. — *Combustible and inflammable substances*

149. Underground, in a building covering a surface opening of an underground mine and in a room containing a hoist, combustible wastes shall be enclosed in a metal container having a rigid cover attached to the container and arranged so that it closes by gravity.

O.C. 213-93, s. 149; O.C. 1326-95, s. 33.

150. The container mentioned in section 149 shall be emptied at least once a week, and its contents transported to the surface, except for solid wastes which may be buried in a fill.

O.C. 213-93, s. 150; O.C. 460-2000, s. 18.

150.1. No person shall allow any oil, grease or other combustible substance to accumulate in a hoist pit.

O.C. 1326-95, s. 34.

151. It is prohibited to accumulate unused combustible substances underground or inside a building covering a surface opening of an underground mine or less than 15 m (49.2 ft) from such an outlet or building.

O.C. 213-93, s. 151.

151.1. When more than 10 tires or more than 2,000 kg (4,409 lb) of other combustible materials, such as conveyor belts or ventilation ducts, are stored underground in the same location, the tires or materials must be stored in a depot or enclosure that

(1) is identified;

(2) has a fire hose or fire extinguishing system; and

(3) is located at least 15 m (49.2 ft) from any place where welding or cutting work is carried out.

In addition, no person may park an unsupervised motorized vehicle less than 15 m (49.2 ft) from a depot or enclosure referred to in the first paragraph or carry out repair or maintenance work inside the depot or enclosure.

O.C. 119-2006, s. 15.

151.2. The installation of an internal combustion engine, the parking of internal combustion motorized equipment or the storage of combustible materials or wastes between a shaft station and a fire door may not exceed 12 hours and shall be monitored by a worker.

Despite the first paragraph, internal combustion motorized equipment equipped with an extinguishing system that is activated when exposed to heat may be parked between a shaft station and a fire door until the completion of the work carried out at the shaft station.

O.C. 1431-2021, s. 7.

151.3. Internal combustion motorized equipment equipped with an extinguishing system that is activated when exposed to heat may be parked at a shaft station or in the drift until the fire door is installed in the drift.

O.C. 1431-2021, s. 7.

152. Accumulating or storing an inflammable substance in a building covering a surface opening of an underground mine is prohibited, except if stored in an buried tank.

O.C. 213-93, s. 152.

153. It is prohibited to store or use propane underground.

O.C. 213-93, s. 153.

154. It is prohibited to store combustible or inflammable substances less than 30 m (98.4 ft) from a surface opening of an underground mine or a building covering such an opening except if they are stored in a buried tank.

A sump having a capacity at least equal to that of the tank shall be installed beneath the tank to absorb any leakage from the storage facility.

O.C. 213-93, s. 154.

155. Combustible liquids and grease stored underground shall be kept in a depot

(1) identified by a sign bearing the words “LIQUIDES COMBUSTIBLES ET GRAISSES” in reflective paint in letters at least 150 mm (5.9 in) high on a contrasting background, affixed to the wall of the depot;

(2) built of fireproof materials;

(3) separated from any travelway such that motorized vehicles cannot strike the tank or the pipes connected to it;

(4) sheltered from any source of heat greater than 50 ºC (122 ºF);

(5) located outside the zone between a shaft and a fire door;

(6) at least 10 m (32.8 ft) away from another depot for inflammable or combustible substances or substances that could react with the combustible liquids and grease;

(7) located at least 60 m (196.9 ft) from a shaft, shaft station, explosives magazine, emergency exit, transformer room or enclosure, lunchroom or refuge station, except if the depot was laid out before 1 April 1993;

(8) with a self-closing fire door having a fire resistance rating of at least one and a half hours or a device having a similar resistance;

(9) laid out so that any combustible liquid leak from a tank is contained in a basin having a capacity at least equal to that of the largest tank in the depot;

(10) provided with pans to be used during a transfer to catch any combustible liquid that may be accidentally spilled;

(11) provided, where applicable, with a level control device preventing the transfer of diesel fuel from the surface when the tank is full;

(12) having a smooth, easy-to-clean floor without depressions in which combustible liquid could accumulate;

(13) ventilated in accordance with subsection 4.4.2 of NFPA 30-1996, Flammable and Combustible Liquids Code; and

(14) provided with a minimum quantity of 25 kg (55.1 lb) of absorbent.

Subparagraph 6 of the first paragraph does not apply to a diesel fuel depot existing on 9 April 2009.

This section applies to depots storing 101 litres (22.2 gallons) or more of combustible liquids and grease, except subparagraph 8 of the first paragraph which applies only to depots storing 501 litres (110 gallons) or more.

O.C. 213-93, s. 155; O.C. 221-2009, s. 7.

156. The quantity of oil and grease stored in an underground depot may not exceed 7 days requirements.

O.C. 213-93, s. 156.

156.1. The quantity of diesel fuel stored in a depot located underground may not exceed 7 days’ fuel requirements, but without exceeding 9,000 litres (1,980 gallons).

O.C. 119-2006, s. 16.

157. Underground, containers of oil or grease shall be returned to the depot not later than the end of each shift, except quantities of up to 23 litres (5.1 gallons) used to lubricate tools.

O.C. 213-93, s. 157.

158. If plastic containers are used underground to carry oil or grease needed for the lubrication of tools used by workers in stopes or in workings under development, the containers shall comply with CSA Standard B376-M1980 Portable Containers for Gasoline and Other Petroleum Fuels.

O.C. 213-93, s. 158; O.C. 1326-95, s. 35.

159. It is prohibited to bring lubricating oil or grease into a lunchroom or refuge station located underground.

O.C. 213-93, s. 159.

160. Every fuel supply system must be

(1) equipped with an anti-siphon device and a flow controller in order to prevent tank overflow; and

(2) designed so that the fuel is never supplied by gravity feed.

O.C. 213-93, s. 160; O.C. 42-2004, s. 10.

161. A fuel nozzle used to disperse fuel to a vehicle shall be of the automatic shut-off type and shall not have a latch-open device.

O.C. 213-93, s. 161.

162. If the fuel is piped underground, the fill pipe located on the surface and supplying the fuel line shall be padlocked and identified by a sign indicating that it is a fill pipe for an underground fuel tank.

O.C. 213-93, s. 162.

163. A fuel line supplying an underground tank shall:

(1) be physically distinguishable from other piping;

(2) contain fuel only while the tank is being filled;

(3) be of steel.

O.C. 213-93, s. 163.

164. It is forbidden to transfer fuel:

(1) in a shaft station or in the zone between a shaft and a fire door;

(2) at a distance of less than 15 m (49.2 ft) from an explosives magazine or a depot for cylinders of combustible gas;

(3) in the enclosed area around stationary underground fuel tank.

O.C. 213-93, s. 164.

165. *(Revoked).*

O.C. 213-93, s. 165; Erratum, 1993 G.O. 2, 2603; O.C. 221-2009, s. 8.

§ 9. — *Welding and cutting*

166. Cylinders of oxygen or acetylene shall be brought to the surface when empty.

O.C. 213-93, s. 166.

166.1. Where cylinders of oxygen or combustible gas used for cutting or welding underground are set in a place not readily accessible to the worker using a welding torch, a second worker shall constantly monitor the cylinder control devices.

O.C. 1326-95, s. 36.

167. It is prohibited to use a gasoline-fired welding torch underground.

O.C. 213-93, s. 167.

168. The oxygen supply hose and the combustible gas supply hose of a welding torch shall be equipped with at least one nonreturn gas device and at least one nonreturn flame device. Those devices must be installed according to the instructions of the manufacturer.

O.C. 213-93, s. 168; O.C. 465-2002, s. 8.

169. Before welding torch or electric arc work is begun:

(1) combustible materials near the place of work shall be removed, sprinkled or protected from flames and hot particles;

(2) hoses, gas cylinders and welding or cutting apparatus shall be protected from flames and hot particles;

(3) welding or cutting apparatus shall be inspected to detect leakage.

O.C. 213-93, s. 169.

170. Before a worker leaves the place where welding torch or electric arc work was carried out, the following standards shall be repeated:

(1) any hot particles or sources of heat that could cause a fire shall be eliminated;

(2) the timbering and combustible materials shall be sprayed when the ambient temperature is above the freezing point and there is no electrical equipment; otherwise there shall be no risk of fire.

O.C. 213-93, s. 170.

170.1. In addition to complying with the standards referred to in Division XXVII of the Regulation respecting occupational health and safety (chapter S-2.1, r. 13), welding and oxygen cutting must comply with Chapter 10 of CSA Standard W117.2-94, Safety in Welding, Cutting and Allied Processes, except section 10.10 of that standard.

O.C. 119-2006, s. 17.

§ 10. — *Methane in an underground mine*

171. In any part of an underground mine in which methane is present, possession of matches, cigarette lighters, cigarettes or other potential sources of heat is forbidden.

O.C. 213-93, s. 171.

172. Where a release of methane is detected, and its concentration is unknown:

(1) all sources of ignition shall be eliminated;

(2) electrical equipment shall be disconnected;

(3) the premises affected shall be evacuated except for the worker responsible for measuring the concentration of methane.

O.C. 213-93, s. 172.

173. Where work is carried out in the presence of methane, the following standards shall be respected:

(1) the concentration of the gas in the workplaces affected shall be measured at least once every 2 hours and kept at less than 1%;

(2) the electrical equipment and engines used in such places shall be designed to function in a firedamp atmosphere.

O.C. 213-93, s. 173.

DIVISION VI

MOTORIZED VEHICLES

§ 1. — *Accessories on a motorized vehicle*

174. A motorized vehicle shall be equipped with a sound warning device to be used when approaching pedestrians and corners and, in the case of a locomotive, before moving under its own power.

O.C. 213-93, s. 174.

174.01. Any non-railbound motorized vehicle powered by a diesel engine, manufactured on or after 10 July 1997 and used in an underground mine shall comply with CAN/CSA-M-424.2-M90 Non-railbound Diesel-powered Machines for Use in Non-gassy Underground Mines.

O.C. 782-97, s. 21.

174.02. Any motorized vehicle powered by a diesel engine or electric motor must be maintained to prevent accumulation of oil, grease or other combustible materials.

O.C. 42-2004, s. 11.

175. The following motorized vehicles shall be equipped with an automatic back-up sound warning device:

(1) trucks having a rated load capacity of 5,000 kg (11,000 lb) or more;

(2) wheeled loaders, except scoop-tram loaders used underground, having a rated load capacity of 2,250 kg (4,960.3 lb) or more;

(3) graders and wheeled bulldozers.

The sound warning device must be set off automatically activated when reverse gear is engaged or must be activated by a detector.

For the purposes of this section, "rated load capacity" means the load established by the manufacturer as being the load that a truck may carry in its body or on its flatbed and, in the case of a loader, the load that it may carry in its bucket.

O.C. 213-93, s. 175; O.C. 1326-95, s. 37.

176. Except when used exclusively in zones or buildings having a minimum lighting level of 50 lux, a motorized vehicle shall have at least one headlight in front and a light in the rear.

O.C. 213-93, s. 176.

177. A motorized vehicle designed to operate forwards and backwards, such as a scoop-tram, shall have at least one headlight in the front and one in the rear.

O.C. 213-93, s. 177.

178. If a train moves one or more cars, the unit at the tail end shall be equipped with a rear light.

O.C. 213-93, s. 178.

179. Except for vehicle on rails, a motorized vehicle used underground or on the surface at night shall have lights or reflectors indicating its width in the direction in which it is moving.

A motorized vehicle designed to operate forwards and backwards, such as a scoop-tram, shall be equipped with lights or reflectors for both directions.

O.C. 213-93, s. 179.

179.1. Every motorized vehicle must be easily and safely accessible by means of a step, grip handles or ladder.

O.C. 80-2023, s. 13.

180. A motorized vehicle used on the surface shall have rearview mirrors.

O.C. 213-93, s. 180.

181. A trailbound motorized vehicle shall have service brakes capable of stopping the vehicle and keeping it stationary independent of its dynamic brake.

O.C. 213-93, s. 181; O.C. 782-97, s. 22.

181.1. A non-railbound motorized vehicle shall:

(1) have service brakes capable of stopping the vehicle and keeping it stationary when it carries the maximum load for which it was designed on the steepest slope on which it may be required to travel;

(2) have a parking brake that:

(a) is mechanically operated;

(b) is capable of keeping the vehicle stationary when loaded;

i. on a slope of 15% in the case of a vehicle used on the surface;

ii. on a slope of 20% in the case of a vehicle used underground;

(c) when applied, is capable of maintaining its power despite contraction of the brake parts, depletion of the power source, or any leakage.

For the purposes of this section, “service brakes” means any type of main system used to stop a vehicle and keep it stationary without the assistance of any deceleration device or dynamic braking.

O.C. 782-97, s. 23.

182. The wheels of a motorized vehicle whose payload is greater than 2,300 kg (5,070.5 lb) shall be blocked by chocks or other means preventing any movement of the vehicle on a slope when the driver leaves it or when it is being serviced.

O.C. 213-93, s. 182.

183. The following motorized vehicles manufactured on or after 1 April 1993 and used exclusively in an open pit mine shall be equipped with a protective rollover structure in accordance with CSA Standard B352-M1980 Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines and its Schedule A:

(1) industrial tractors, self-propelled graders, tractors, skidders, tracked bulldozers, tracked loaders, wheeled bulldozers and wheeled loaders having a mass greater than 700 kg (1,543.2 lb);

(2) compactors and compressor-rollers having a mass greater than 2,700 kg (5,952.4 lb);

(3) wheeled farm tractors having an engine with a power greater than 15 kW (20.1 HP).

The design, manufacturing or installation of a protective structure is deemed to be made in accordance with Chapter 6 of the standard provided for in the first paragraph, if it is subject to an attestation signed and sealed by an engineer according to which the design, manufacturing or installation of the structure corresponds to the standard provided for in Chapter 6.

For the motorized vehicles referred to in the first paragraph that were manufactured before 1 April 1993, section 278 of the Regulation respecting occupational health and safety (chapter S-2.1, r. 13) applies.

O.C. 213-93, s. 183; Erratum, 1993 G.O. 2, 2603; O.C. 465-2002, s. 9; O.C. 119-2006, s. 18.

184. Haulage trucks used on the surface and manufactured on or after 1 April 1993, having a mass greater than 17,000 kg (37,478 lb) shall be equipped with a rollover protective structure in accordance with SAE Standard J1040-APR88 Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry and Mining Machines.

O.C. 213-93, s. 184; Erratum, 1993 G.O. 2, 2603; O.C. 1326-95, s. 38.

185. For any underground mine and for any new development and its subsequent operation, motorized vehicles manufactured on or after 1 April 1993 must be protected against falling objects by a protective structure complying with ISO Standard 3449:1992, Earth-moving machinery – Falling-object protective structures – Laboratory tests and performance requirements (FOPS).

The design, manufacturing or installation of a protective structure is deemed carried out in accordance with the standard referred to in the first paragraph if an engineer has issued a signed and sealed certificate certifying that the design, manufacturing or installation of the structure complies with the standards referred to in the first and third paragraphs.

The first paragraph does not apply to motorized vehicles manufactured on or after 1 April 1993 if those vehicles comply, as at 12 February 2004, with SAE Standard J231-JAN81, Minimum Performance Criteria for Falling Object Protective Structure (FOPS).

O.C. 213-93, s. 185; Erratum, 1993 G.O. 2, 2603; O.C. 42-2004, s. 12.

186. All motorized vehicles designed initially to support a protective structure and used underground for the working of a deposit where the travelways comply with the second paragraph of section 42 shall be protected from falling objects by a protective structure complying with the standard prescribed by section 185.

O.C. 213-93, s. 186.

187. The cab of motorized vehicles covered by sections 183 and 184 shall comply with SAE Standard J397-APR88 Deflection Limiting Volume — ROPS/FOPS Laboratory Evaluation.

O.C. 213-93, s. 187.

188. Any alteration to the structure, chassis, cab, or rollover or falling object protective structure of a motorized vehicle must comply with the standards referred to in sections 183 to 187, SAE Standard J674A (1976), Safety Glazing Materials - Motor Vehicles, and for rigid plastic materials, ANSI Standard Z26.1-1977, Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways.

Any alteration to the structure, chassis, cab or protective structure is deemed carried out in accordance with the standards referred to in the first paragraph if an engineer has issued a signed and sealed certificate certifying that the alteration of the structure, chassis, cab or structure complies with the standards.

O.C. 213-93, s. 188; O.C. 42-2004, s. 13.

189. A motorized vehicle equipped with a rearmounted winch for pulling materials shall be equipped with a protective screen complying with SAE Standard J1084-APR80 Operator Protective Structure Performance Criteria for Certain Forestry Equipment.

The screen shall have a permanently attached plate:

(1) indicating the name and address of the manufacturer;

(2) identifying the standard prescribed by the first paragraph.

O.C. 213-93, s. 189.

190. The driver of a motorized vehicle equipped with a rollover protective structure shall wear a safety belt complying with Schedule A to CSA Standard B352-M1980 Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines.

O.C. 213-93, s. 190.

§ 2. — *Use of a motorized vehicle*

191. The units of a moving train used underground shall be coupled together.

O.C. 213-93, s. 191.

192. A motorized vehicle may not be put in self-propelled motion unless a driver is at the controls of the vehicle or unless its operation depends on an automatic control system or a remote control system.

Such systems must be designed so that any failure of the system that could lead to loss of control of the moving vehicle causes the vehicle to stop immediately.

O.C. 213-93, s. 192; O.C. 221-2009, s. 9.

193. Underground, a motorized vehicle shall not be left stopped unsupervised unless the controls of the vehicle are in the parking position and the brakes are applied. Where such a vehicle is powered by electicity, the driving motors shall be disconnected from their power source.

O.C. 213-93, s. 193; O.C. 1326-95, s. 39.

193.1. While a truck is being loaded at a stockpile or working face, the driver shall remain inside the cab of the truck or outside the loading zone.

O.C. 1236-98, s. 13.

§ 3. — *Transport of workers*

194. In every motorized vehicle used for the transport of workers, each worker shall have a seat or bench that is attached to the vehicle, unless the vehicle is equipped with devices enabling standing workers to keep their balance during the trip.

O.C. 213-93, s. 194; O.C. 1326-95, s. 40.

195. Entering or leaving a motorized vehicle shall be permitted only when it is fully stopped and the access devices provided for this purpose are used.

O.C. 213-93, s. 195.

196. A motorized vehicle used for the transport of workers shall be:

(1) *(subparagraph revoked);*

(2) equipped with a device enabling passengers to communicate with the driver where his cab is separated from the passenger compartment;

(3) free of objects projecting inside the vehicle that could be dangerous for the driver or the passengers;

(4) *(subparagraph revoked);*

(5) covered by a roof having a minimum inside height above the floor of at least 2 m (6.6 ft) for vehicles so fitted on or after 1 April 1993, except those used in an underground mine;

(6) provided with side walls having a minimum height of 1.2 m (3.9 ft) above the floor;

(7) equipped with a heating system when it is used on the surface.

Subparagraph 5 of the first paragraph does not apply to vehicles such as cabs, automobiles or panel trucks inside which workers are not required to move about. In such vehicles, each worker shall have a seat or bench.

O.C. 213-93, s. 196; Erratum, 1993 G.O. 2, 2603; O.C. 1326-95, s. 41; O.C. 80-2023, s. 14.

197. The seat or bench of a motorized vehicle used for the transport of workers shall have:

(1) a minimum width of 460 mm (18.1 in) per place;

(2) a height of between 380 mm (15 in) and 480 mm (18.9 in) above the floor;

(3) a minimum depth of 300 mm (11.8 in);

(4) a back rising at least 500 mm (19.7 in) above the level of the seat or bench, unless it rests against the slatted sides or the walls of the vehicle.

O.C. 213-93, s. 197.

198. Between the rows of seats or benches of a motorized vehicle used for the transport of workers, there shall be a passage having a minimum width of 600 mm (23.6 in) if they are face to face, and 300 mm (11.8 in) in all other cases.

O.C. 213-93, s. 198.

199. *(Revoked).*

O.C. 213-93, s. 199; O.C. 1326-95, s. 42.

200. A mine car used for the transport of workers shall:

(1) comply with section 179.1 and subparagraph 3 of the first paragraph of section 196;

(2) have seats or benches attached to it and complying with the standards provided for in sections 197 and 198;

(3) have a guard rail with a minimum height of 900 mm (35.4 in) above the floor for its entire perimeter;

(4) have a roof.

O.C. 213-93, s. 200; O.C. 1326-95, s. 43; O.C. 33-2024, s. 9.

200.1. *(Revoked).*

O.C. 1326-95, s. 44; O.C. 150-2019, s. 2.

200.2. A worker is allowed to board a locomotive or mechanical haulage equipment if the worker stands on a foot-step, at the back of the locomotive that is not connected to a mine car, or at the back of the mechanical haulage equipment, if the following conditions are met:

(1) the locomotive or mine car is equipped with handles and a foot-step allowing the worker to stand;

(2) the clearance above the top of the foot-step is at least 2 m (6.6 ft);

(3) the foot-step is used by a maximum of 2 workers.

For the purposes of the first paragraph, the back is determined by the direction opposite the direction of travel.

O.C. 150-2019, s. 3.

201. Only hand tools may be transported with workers in a mine car for passengers.

O.C. 213-93, s. 201.

202. It is prohibited to transport a dangerous substance within the meaning of section 1 of the Act respecting occupational health and safety (chapter S-2.1) in a motorized vehicle used for the transport of workers unless the substance is transported in a closed container and outside the compartment occupied by the driver of the vehicle and the passengers.

O.C. 213-93, s. 202.

203. Any cutting tool transported in the driver's cab or in the passenger compartment shall be placed in a closed container or protected by a sheath covering the cutting blade.

O.C. 213-93, s. 203.

204. Any bulk materials transported in the passenger compartment shall be retained by partitions or placed in a closed container.

O.C. 213-93, s. 204.

205. In an underground mine where workers travel mainly on ramps, motorized vehicles shall be provided to transport workers where the vertical distance to reach the place of work underground is more than 100 m (328.1 ft).

O.C. 213-93, s. 205.

206. It is prohibited to use the bucket of a loader to transport a worker.

O.C. 213-93, s. 206.

207. It is prohibited to use the bucket of a loader to raise a worker.

O.C. 213-93, s. 207; O.C. 80-2023, s. 15.

208. *(Revoked).*

O.C. 213-93, s. 208; O.C. 460-2000, s. 19; O.C. 80-2023, s. 16.

§ 4. — *Signaller*

209. In every truck loading or unloading area where there is a signaller directing the movements of motorized vehicles:

(1) the vehicles may not move in the truck loading or unloading area until they have received a signal from the signaller to do so;

(2) only one signaller may be allowed in each truck loading or unloading area;

(3) no other person may circulate on foot in such area without prior permission from the signaller;

(4) the signaller may not allow anyone to circulate on foot in that area unless he has stopped all the vehicles circulating in the area;

(5) the signaller shall wear an orange vest with reflective strips.

O.C. 213-93, s. 209.

§ 5. — *Remote controlled equipment*

209.1. The provisions of this subdivision apply, subject to the following exceptions:

(1) a wired remote control is not subject to subparagraphs 2 and 3 of the first paragraph of section 211 or sections 212 to 214;

(2) a remote controlled door is not subject to sections 210 and 210.1 or subparagraphs 1 and 3 to 5 of the first paragraph of section 211;

(3) a travelling crane is not subject to paragraphs 2 and 3 of section 210, section 210.1, subparagraphs 1 and 3 of the first paragraph of section 211 or subparagraph 2 of the second paragraph of section 214;

(4) rail-bound equipment is not subject to subparagraph 3 of the first paragraph of section 211, in which case the equipment operator must stay clear of the track.

O.C. 221-2009, s. 10.

210. Equipment controlled by a wired or wireless remote control used in a mine or at a work site shall be

(1) equipped with a selector device making it possible to choose the method of controlling the equipment, either manual or remote;

(2) used within the operator's sight, except

(a) where a camera system is used; or

(b) where a robot system is used, in which case access to the work site where the system is used must be barricaded and under surveillance, in particular by a camera system or a motion detector; and

(3) identifiable by means of a sign at the surface or a flashing light and a sign underground, placed at the entrance to the work site; in addition, any other access to the remote controlled equipment must be under surveillance or barricaded.

O.C. 213-93, s. 210; O.C. 221-2009, s. 11.

210.1. Notwithstanding paragraph 2 of section 210, rail-bound equipment may be used where it is only partly visible to the operator provided that measures be taken to meet one of the following conditions:

(1) no one, with the exception of those persons whose presence is required to operate the equipment, may enter the area where the equipment is moving;

(2) the remote control shall be equipped with a device that will stop the equipment as soon as any person enters the area where the equipment is moving.

O.C. 460-2000, s. 20.

211. The remote control system for equipment mentioned in section 210 shall:

(1) be equipped with a device stopping the engine of the equipment and applying the brakes when it reaches an inclination of 45 º from the horizontal;

(2) except for a digital remote control with single encoding, answer to a frequency assigned to it so that it can only operate one piece of remote controlled equipment; however, in the case of fixed equipment such as a door, a gate or a chimney cover, the same frequency may be used to operate more than one piece of equipment of that type if

(a) the range of the transmitter is adjusted so that it cannot operate more than one receiver at a time;

(b) the remote controlled equipment is within the view of the operator; and

(c) a sign is affixed to or posted near the remote controlled equipment indicating that the equipment may be remotely activated;

(3) be equipped with a device stopping the equipment when it approaches to within less than 3 m (9.8 ft) of the remote control, in the case of a drill, or to within less than 10 m (32.8 ft), in the case of all other equipment, except where the operator and nearby workers are in a wall recess or on a raised platform;

(4) be equipped with an emergency switch making it possible to stop the engine and apply the brakes of the remote controlled equipment. Such a switch shall be red and operate when pressed;

(5) be disconnected and locked by a safety device when not in use;

(6) be designed so that it is impossible to remotely control if a command is pressed upon activation;

(7) be inspected for proper functioning by the operator prior to use; and

(8) have analogue controls on the manual controls in terms of function, arrangement and operating direction.

Subparagraph 3 of the first paragraph does not apply to rail-bound equipment, in which case the equipment operator shall remain outside the track.

O.C. 213-93, s. 211; O.C. 1326-95, s. 45; O.C. 460-2000, s. 21; O.C. 465-2002, s. 10; O.C. 221-2009, s. 12.

211.1. The remote control must stop or put in neutral the remote controlled equipment when at least one of the following malfunctions occurs on the remote control:

(1) loss of the nominal voltage recommended by the manufacturer;

(2) discrepancy between the status of the output relay and the input signal at the receiver;

(3) reception of 2 conflicting signals, in particular as regards the forward/reverse command;

(4) reception of parasitic or altered signals; and

(5) loss of transmitter signal for the period of time recommended by the manufacturer.

O.C. 221-2009, s. 13.

212. No wireless remote control shall be capable of inadvertently firing a detonator.

O.C. 213-93, s. 212; O.C. 221-2009, s. 14.

213. Except for a digital remote control with single encoding, where remote controlled equipment is used in contiguous mining operations, each employer shall choose a frequency such that one remote control cannot operate a piece of equipment in the other contiguous operation.

O.C. 213-93, s. 213; O.C. 465-2002, s. 11.

213.1. A remote control system must be supplied with the following instructions and information:

(1) the name of the manufacturer, the information required under section 214 pertaining to the remote control model, the configuration diagram and specifications such as nominal voltage, output power and transmitter range, operating temperature range and mass of the remote control station;

(2) precautions pertaining to the installation and connections of the system’s components;

(3) indications regarding the function and location of control knobs;

(4) instructions regarding the safe operation of the system; and

(5) the manufacturer’s recommendations and warnings for system adjustments, maintenance, alterations and repairs.

The instructions and information required by the first paragraph shall be kept on the mine site and be available to users in the French language.

O.C. 221-2009, s. 15.

214. All information regarding a remote control system such as brand, model, serial number, frequency used, seal numbers, name of the person in charge of the adjustments, maintenance, alterations or repairs and results of the adjustments, maintenance, alterations or repairs must be entered in the work station register for equipment remote control systems.

In addition, the adjustments, maintenance, alterations or repairs to a remote control system must

(1) comply with the requirements of the manufacturer and be carried out by a qualified person;

(2) be tested first on a test bed and then on the equipment on which the system is installed in compliance, in the latter case, with subparagraph 3 of the first paragraph of section 211;

(3) be carried out after ensuring that the remote controlled equipment cannot be inadvertently activated; and

(4) be such that the elements permitting adjustment, maintenance or alteration of the safety parameters including frequency are sealed.

O.C. 213-93, s. 214; O.C. 221-2009, s. 16.

§ 6. — *All-terrain vehicles*

O.C. 465-2002, s. 12.

214.1. The use of all-terrain vehicles in an underground mine is permitted only under the following conditions:

(1) it is mounted on at least 4 wheels;

(2) it is equipped with a rotating light placed at least 2 m (6.6 ft) off the ground;

(3) it is equipped with a fixed closed box for the transportation of tools and small material;

(4) it is prohibited to install a winch on the vehicle;

(5) it may not be used to transport personnel;

(6) the driver has the skill and knowledge required to safely use the vehicle; and

(7) the driver shall wear the following pieces of individual protective equipment:

(a) a motorcycle or snowmobile protective helmet conforming to the Protective Helmets Regulation (chapter C-24.2, r. 6); and

(b) flexible leather gloves or gloves made of a material that ensures a good grip on the handles and controls of the vehicle.

For the purposes of this section, “all-terrain vehicle” means a pleasure vehicle designed for driving elsewhere than on public highways and having a net mass not exceeding 450 kg (990 lb).

O.C. 465-2002, s. 12.

DIVISION VII

HOISTING PLANT

§ 1. — *General*

215. The operator of a hoist used for the transport of persons shall have a medical certificate issued by a physician within 12 months before he commences his duties certifying that he has been examined and that he does not have any physical or mental handicaps or any deficiency in sight or hearing which, in the exercise of his duties, could endanger the safety of the persons transported.

The certificate shall be renewed not later than 12 months after its issue date and annually thereafter.

O.C. 213-93, s. 215.

215.1. The shift planned on the workday schedule of the hoistman must not exceed 12 hours and a period of continuous work may not exceed 14 hours per 24-hour period.

O.C. 963-2014, s. 6.

216. A hoist may not be installed without first obtaining from an engineer plans and specifications indicating the total load to be suspended, the maximum out of balance and, for a drum hoist, the maximum load permitted for each drum and the maximum number of layers of rope that can be wound on each drum.

The plans and specifications shall be kept on the mine site and shall be available at all times.

A copy of the plans specifications shall be sent to the Commission where it so requests.

O.C. 213-93, s. 216.

216.1. Where at least one programmable control system is used to implement protection on the hoist safety circuit, the requirements in the RF-412 data sheet entitled Safety of Mine Hoists Controlled by Programmable Systems, published by the Institut de recherche Robert-Sauvé en santé et sécurité du travail, must be complied with.

O.C. 221-2009, s. 17.

217. The safety circuit of a hoist may not be supplied by a voltage of more than 120 V.

O.C. 213-93, s. 217.

218. No alteration intended to increase the hoisting capacity of any hoist may be undertaken without a prior certificate from an engineer certifying the reliability of the hoist. The certificate shall be kept on the mine site.

O.C. 213-93, s. 218.

218.1. No alteration or adjustment to the main shaft of the hoist, the bearings, the brake rods or any other important part that could affect the integrity or the safe operation of the hoist may be undertaken prior to obtaining a certificate from an engineer. The certificate shall be kept on the mine site.

O.C. 916-2011, s. 4.

219. Before a hoist is put into service for the first time and thereafter at intervals not exceeding 5 years, the main shaft of the hoist, the axes of the control devices, the drums, the brake rods and any other important part

that could affect the safe operation of the hoist shall be checked by some form of non-destructive testing, such as ultrasound, X-ray or magnetic particle testing.

O.C. 213-93, s. 219; O.C. 221-2009, s. 18.

220. The bolts and the various elements of which the hoisting plant is composed whose working loose constitutes a possible danger shall be kept in place by means of locking devices, in particular by locking pins, self-locking nuts and counterscrews.

O.C. 213-93, s. 220.

221. Before a hoist or an altered hoist is used for the first time to raise or lower persons, the registers prescribed by sections 344, 345, 347 and 397, and the tests and inspections of safety devices prescribed by sections 222, 302 and 326 shall be checked. The results of the tests and inspections shall be entered in the register of the work station concerning the hoisting equipment prescribed in section 344.

O.C. 213-93, s. 221.

222. Where a hoist is used, the conditions and operation of the entire hoisting plant, in particular, the brakes, the safety devices required in this Regulation, the interlocks, the clutches, the depth indicators, the signal system, the sheaves, the conveyances, the counterweights and the loading and unloading devices shall be checked at least once each week.

O.C. 213-93, s. 222; O.C. 465-2002, s. 13.

223. The results of the checks prescribed by section 222 shall be entered in the register of the work station concerning the hoisting equipment prescribed in section 344.

O.C. 213-93, s. 223.

224. Where a hoist is not used for one week, the checks prescribed by section 222 shall be made before the hoist is used for the transport of workers.

O.C. 213-93, s. 224.

225. At the beginning of his shift and before transporting persons, materials or equipment, the hoistman shall check that each braking device required in section 250 can stop and hold the maximum load suspended from the corresponding drum by trying each braking device according to a procedure established by an engineer or a body specializing in the field. He shall not disengage the hoist clutch before carrying out the tests.

The testing of the braking devices of a hoist operated by automatic or semi-automatic control, used exclusively for the transportation of materials, may be conducted once a day by a hoistman.

The testing procedure shall be available at the hoistman’s work station.

O.C. 213-93, s. 225; O.C. 639-2000, s. 1; O.C. 465-2002, s. 14; O.C. 119-2006, s. 19; O.C. 916-2011, s. 5.

226. Where a pinion brake is used to meet the requirements of sections 233 and 250, it shall be tested in accordance with section 225, and if there is more than one, they shall be tested simultaneously.

O.C. 213-93, s. 226.

227. The operation of the overwind, auxiliary overwind, and upper and lower limit of travel switches shall be checked every day that the hoist is in use and the results of these checks shall be entered in the register of the work station concerning the operator of the hoist prescribed in section 347.

O.C. 213-93, s. 227; O.C. 1326-95, s. 46.

228. As long as there is a person underground, the hoistman shall remain at his work station or be near enough to be able to hear the hoist signal system or the bell of a telephone located inside the building housing the hoist or inside the shaft building, unless there is another mechanical means of transport to the surface available to such a person.

O.C. 213-93, s. 228; O.C. 1326-95, s. 47; O.C. 119-2006, s. 20.

228.1. When manually operating a hoist, the operator shall not simultaneously perform other tasks.

O.C. 221-2009, s. 19.

§ 2. — *Compressed air or steam hoisting plant*

229. A compressed air or steam hoisting plant shall have:

(1) a gauge that can be read by the operator when he is at the controls of the hoist and that continuously indicates the feed pressure;

(2) an overwind limit switch, controlled directly by the conveyance or the counterweight;

(3) an underwind limit switch;

(4) a manual intake cut-off valve;

(5) a manual exhaust cut-off valve.

O.C. 213-93, s. 229.

230. The switches prescribed by paragraphs 2 and 3 of section 229 shall activate an exhaust throttle governor which shall immobilize the hoist before the conveyance, counterweight or rope attachments reach the sheave or any other obstacle in the shaft or headframe.

Notwithstanding the foregoing, during shaft sinking working, the lower limit of travel shall be adjusted to allow the conveyance to reach the bottom of the shaft but the length of cable that can be unwound after the conveyance has reached the bottom of the shaft shall be less than twice the circumference of the drum of the hoist.

O.C. 213-93, s. 230.

231. The speed of a compressed air or steam hoist may not exceed 2.5 m (8.2 ft) per second.

O.C. 213-93, s. 231.

§ 3. — *Electrical hoisting plant*

232. An electrical hoisting plant shall be equipped with:

(1) a red manually operated emergency switch to cut off power from the hoist installed within the operator's reach when he is at the controls of the hoist and at any other place from which the hoist can be controlled;

(2) an overwind limit switch controlled directly by the conveyance or the counterweight;

(3) an upper and lower limit travel switch;

(4) an automatic overspeed protective device adjusted to the speed determined in subparagraph *a* of paragraph 1 of section 241 and section 242;

(5) a manually operated backout device which, in the closed position, permits return to the overwind or underwind protection position;

(6) an amperemeter that the operator can read when he is at the controls of the hoist and continuously indicating the voltage of the engine of the hoist;

(7) protective devices against low voltages, overloads and short circuits;

(8) a limit switch for the braking mechanism;

(9) an instrument indicating the speed of the conveyance;

(10) a slack rope device or a device providing equivalent safety;

(11) a high water level detection device, of the fail-safe type, placed under the lower limit of travel of the shaft.

During the sinking of a shaft, the device must be located under the lower chair of the timbering.

O.C. 213-93, s. 232; O.C. 1326-95, s. 48; O.C. 465-2002, s. 15; O.C. 221-2009, s. 20; O.C. 963-2014, s. 7.

232.1. Sound and visual alarms must go off at the controls of the hoist when the high water level detection device goes off.

O.C. 963-2014, s. 8.

232.2. An electrical hoisting plant, Blair multi-rope type, must be equipped with

(1) a rope tension balancing system installed at the headsheaves;

(2) a failure detection device for the tension balancing system;

(3) at least 2 fastening points independently linked to the conveyance;

(4) a continuous monitoring device for the load conveyed.

O.C. 966-2015, s. 3.

233. An electric hoist shall be installed such that the power supply to the engine of the hoist is cut off, and the braking force necessary to immobilize the hoist is automatically applied:

(1) when the emergency switch is in the open position;

(2) when the conveyance or the counterweight travels beyond an overwind or upper and lower limit travel switch before the conveyance, the counterweight or the cable attachments can reach the headsheave or any other obstacle in the shaft or the headframe; however, during shaft sinking, the lower limit of travel shall be regulated to enable the hoist to reach the bottom of the shaft, but the length of rope that can be unwound after the hoist has reached the bottom of the shaft shall be less than twice the circumference of the hoist drum;

(3) when there is an interruption in electrical power supply to the hoist;

(4) when the automatic overspeed protective device is activated;

(5) when there is a preset drop in voltage;

(6) when there is a power overload exceeding by a preset percentage the power required for normal hoisting operations;

(7) when there is a short circuit in the electrical system of the hoist;

(8) before any part of the control mechanism of a brake reaches its limit of travel while the brake is being applied.

O.C. 213-93, s. 233; O.C. 1326-95, s. 49.

234. During the sinking of a shaft, the automatic overspeed protective device of an electrical hoist shall be adjusted so that the speed of the hoist is reduced to less than 30% of the normal operating speed when the bucket is at the lower chair level and less than 3 m (9.8 ft) per second between the lower chair and the bottom of the shaft.

O.C. 213-93, s. 234.

235. Where an electrical hoist transports persons in a skip or a cage-skip assembly, an auxiliary overwind device shall be installed and operated. This device shall be adjusted so as to stop the conveyance before it reaches the dumping position.

Where the auxiliary overwind device is not automatically activated by the hoistman's signal system, it shall be installed so that the safety circuit opens when the hoistman operates the signal system.

If the auxiliary overwind device is automatically operated by the answering 3 bells of the hoistman, the circuit shall be designed so that the auxiliary overwind device does not fail if there is a defect in a relay coil.

O.C. 213-93, s. 235.

§ 4. — *Friction hoist*

236. On a friction hoist a device shall be installed to synchronize the safety devices mentioned in paragraphs 3 and 4 of section 232 and sections 235, 241, 243 and 244 with the position of the conveyance.

O.C. 213-93, s. 236.

237. A friction hoist shall have a device causing application of the braking devices and stopping the hoist when:

(1) slipping produces a difference in speed of 2 m (6.6 ft) per second or more between the pulley and a rope;

(2) the loop of a tail rope rises 1 m (3.3 ft) or more;

(3) a hoist or a counterweight traverses 25% of the upper retarding zone at its full rated speed.

O.C. 213-93, s. 237; O.C. 465-2002, s. 16.

237.1. Section 237 shall apply to a hoist controlled by a programmable electronic system, except for paragraphs 1 and 2.

O.C. 465-2002, s. 17.

238. The level of the water and the accumulated debris at the bottom of a shaft shall be constantly maintained at more than 1 m (3.3 ft) below the loop of a tail rope.

O.C. 213-93, s. 238.

239. In a shaft or a headframe served by a friction hoist, a retarding device shall be installed above the upper limit of travel and below the lower limit of travel of the conveyance and the counterweight, if any.

These devices shall brake and stop the conveyance and the counterweight, if any, before overwinding or before the underwind clearance below the lower limit of travel has been covered for its whole distance.

O.C. 213-93, s. 239.

240. Where persons are transported by means of a multirope friction hoist, the hoisting compartments shall have safety catches at the upper limit of travel. The catches shall hold the cage, the skip and the counterweight at full load if the hoisting rope should break.

O.C. 213-93, s. 240.

§ 5. — *Speed of hoists*

241. Each drum or friction pulley of a hoist whose rope speed is 4 m (13.1 ft) per second or more shall be equipped with:

(1) safety devices, automatically controlled by the drum or the friction pulley and causing the driving power to the hoist motor to be cut off and the automatic application of the brakes to the drum or to the friction pulley either:

(a) before the speed of the cable reaches 120% of the maximum operating speed; or

(b) when the conveyance or the counterweight moves beyond the preset upper and lower limits in the shaft or the headframe prescribed in paragraphs 2 and 3 of section 232;

(2) a sound warning device automatically informing the hoistman that the speed of the conveyance or the counterweight is approaching the speed limit for that part of the shaft or the headframe.

O.C. 213-93, s. 241; O.C. 1326-95, s. 50.

242. When transporting persons, a conveyance shall travel at a speed of less than 8 m (26.2 ft) per second.

A greater speed that does not exceed the rated speed of the conveyance is permitted for the transportation of persons if

(1) alignment tests are carried out on the shaft guides with a decelerometer and recorded at intervals not exceeding 6 months; an alignment test is also required following any incident damaging the shaft structure; and

(2) the results of the tests performed at the speed referred to in the second paragraph with a load corresponding to the maximum number of persons permitted in the conveyance show a deceleration lower than 0.5 G in the vertical, lateral and longitudinal axes.

Where the rated speed of the conveyance is greater than 8 m (26.2 ft) per second, a speed limiting device must be installed to be activated automatically when the hoistman responds to a 3-bell signal.

O.C. 213-93, s. 242; O.C. 460-2000, s. 22; O.C. 119-2006, s. 21.

§ 6. — *Depth indicator and warning device*

243. A hoist shall have a depth indicator continuously showing the hoistman the position of the conveyance and the counterweight in the shaft and the headframe. In case the electrical supply breaks down, that indicator shall show the position of the conveyance and the counterweight for at least 1 hour and return to the value corresponding to the return current.

O.C. 213-93, s. 243; O.C. 465-2002, s. 18.

244. Where the depth of a shaft exceeds 100 m (328.1 ft), a sound warning device shall inform the hoistman that the conveyance is approaching a deceleration zone.

O.C. 213-93, s. 244.

§ 7. — *Brakes*

245. The brakes of a hoist shall operate independently from the energy that powers the machine and be designed to allow them to be tested separately.

The brake controls shall be arranged so that they can be activated by the hoistman directly from his hoist post.

O.C. 213-93, s. 245.

246. Where a hoist shall be equipped with a braking device on the pinion shaft in accordance with the standards prescribed in sections 233 and 250, the braking device shall be capable of stopping and holding any drum or friction pulley bearing its maximum load.

O.C. 213-93, s. 246; O.C. 465-2002, s. 19.

247. A loss of fluid pressure in a hydraulic or pneumatic braking system may not cause the brakes of the hoist to become loose or impede their application.

O.C. 213-93, s. 247.

248. The emergency braking system of a hoist used for the transport of persons may not produce any deceleration greater than 7.5 m (24.6 ft) per second squared.

In the case of a hoist installed on or after 1 April 1993, the deceleration shall be less than 5 m (16.4 ft) per second squared if it occurs at a speed greater than 3 m (9.8 ft) per second and shall be less than 7.5 m (24.6 ft) per second squared if it occurs at a speed of 3 m (9.8 ft) or less per second.

O.C. 213-93, s. 248; Erratum, 1993 G.O. 2, 2603.

249. The emergency braking system of a hoist shall be designed so that the emergency brakes cannot be locked in the release position following opening of the safety circuit of the hoist, unless the service brakes exert their total force. It shall not be possible to close the safety circuit if the services brakes are not fully applied.

O.C. 213-93, s. 249; O.C. 1326-95, s. 51.

250. Where a hoist is used to transport persons, materials or equipment or during shaft sinking work, it shall have at least 2 separate braking devices that are activated by independent systems.

However, a machine with 2 drums, even if not equipped with a pinion brake, may be used single drum:

(1) to bring up persons if a break prevents the balanced use of the hoist and there is no other mechanical means of evacuating those persons;

(2) during shaft inspections or maintenance work; the persons may then remain in or on the conveyance suspended from the fixed or clutched drum when changing balance;

(3) to transport material during shaft maintenance work.

Where a hoist has more than 2 braking systems for a single drum or for a friction hoist, the braking capacity must be such that the drum or friction hoist can be stopped even if one of the braking systems fails.

For the purposes of the first paragraph, a throttle controlled exhaust of a compressed air or steam hoist is considered to be a second means of braking.

O.C. 213-93, s. 250; O.C. 1326-95, s. 52; O.C. 465-2002, s. 20; O.C. 119-2006, s. 22; O.C. 221-2009, s. 21.

251. The braking devices and clutch of a drum hoist shall be interlocked mechanically such that it is impossible to unclutch a drum unless the brakes of the drum are applied and kept on until the clutch of the drum is fully engaged. They shall also have a locking mechanism preventing the disengagement of any clutch from starting until the braking devices have been applied on both drums.

O.C. 213-93, s. 251; O.C. 465-2002, s. 21.

252. *(Revoked).*

O.C. 213-93, s. 252; O.C. 963-2014, s. 9.

252.1. A hoist may not be equipped with a friction clutch.

O.C. 963-2014, s. 10.

252.2. Despite section 252.1, a hoist installed before 1 April 1993 may be equipped with a belt-type friction clutch if the following conditions are met:

(1) its action is neutralized by a locking mechanism between the driving part and the driven part of a drum supporting the cage used for the transportation of persons;

(2) a slip detection device between the driving part and the driven part of a drum supporting a skip opens the safety circuit of the hoist.

O.C. 963-2014, s. 10.

§ 8. — *Automatically or semi-automatically controlled hoists*

253. A device for selecting manual, automatic or semi-automatic controls shall be installed in the same place as the manual controls.

O.C. 213-93, s. 253; O.C. 465-2002, s. 22; O.C. 221-2009, s. 22.

253.1. To ensure safety during transportation of personnel, a device which prevents the start-up of the hoist must be installed when the doors of the cage are open.

O.C. 621-2013, s. 3.

253.2. An automated hoist installed as of 26 November 2015 must be equipped with a monitoring system for the load conveyed.

The load monitoring system must open the safety circuit when the load on the rope reaches, over all the distance of the travel, the following values in either situation:

(1) slack rope situation:

the load is less than 60% of the weight of the empty conveyance;

(2) tensed rope situation:

the load exceeds the maximum static load on the rope plus a load corresponding to 10% of the rope's initial breaking strength.

The opening of the safety circuit must immobilize the hoist by cutting off the power supply to the motor and by automatically applying the brakes.

O.C. 966-2015, s. 4.

254. Where a hoist can be controlled from control panels located in shaft stations or in a conveyance, the control selection device shall be designed so that it can be operated only when the conveyance is stopped at a shaft station and only from that place.

O.C. 213-93, s. 254.

255. Devices for semi-automatic installations installed in shaft stations for the purpose of determining the destination of the conveyances and for starting up a hoist shall be designed so that they can be operated only at the station where the conveyance is stopped, unless the installation was designed for the use of a call device in the conveyance.

O.C. 213-93, s. 255; O.C. 1326-95, s. 53.

256. Except during the operation to align a hoist with the floor of a shaft station:

(1) the devices installed in the shaft stations for starting up a hoist shall be designed so that they can be operated only when the gate of the shaft is closed at the level where the conveyance is stopped;

(2) there shall be a minimal delay of 5 seconds between the operation of any shaft station device to initiate hoist motion and the actual motion.

O.C. 213-93, s. 256.

257. A device installed in a shaft station and used to control the start-up of the hoist shall be located so that it can be operated from the inside of a conveyance stopped at the shaft station.

O.C. 213-93, s. 257.

258. A device installed in a shaft station and used to adjust the level of a conveyance with the floor of a shaft station shall be located so that it cannot be operated from the inside of a conveyance.

O.C. 213-93, s. 258.

259. Except for the operation consisting of adjusting the level of a cage with the floor of a shaft station, the devices installed in a cage for the purpose of controlling the start-up of the hoist shall be designed so that they can be operated only when the cage doors are closed.

O.C. 213-93, s. 259.

260. If an emergency stop occurs during automatic or semi-automatic hoisting, an alarm signal shall be activated and the hoist shall be operated only manually until the defect has been corrected. Thereafter, at least one complete cycle of descending and rising shall be made manually with the hoist.

O.C. 213-93, s. 260; O.C. 221-2009, s. 23.

260.1. Where a hoist is controlled by a programmable electronic system, a continuous alternate supply source shall be provided to ensure the operation of the control in case the electrical supply breaks down, in order to adjust the deceleration until the hoist comes to a complete stop. The operation of that alternate supply source shall self-check itself.

O.C. 465-2002, s. 23.

261. Whenever a hoist is controlled automatically or semi-automatically, a hoistman shall be present at the manual controls of the hoist for at least one complete cycle of descending and rising.

O.C. 213-93, s. 261.

262. Whenever a 9-bell danger signal is given, a hoistman shall go to the manual controls of the hoist and shall be ready to take over the manual control when the conveyance tender asks him to do so.

O.C. 213-93, s. 262.

§ 9. — *Signal and communications systems*

263. A signal system allowing communication between the hoistroom and any shaft station or level where the conveyances can stop shall be installed for each hoisting compartment. Signals issued by means of such a system shall comply with the signal codes prescribed in sections 269 and 277 and shall be different:

(1) from the other ambient signals;

(2) from one hoist to another, where there is more than one hoist the shaft.

During inspections or shaft maintenance work, a radiotelephone communication system may be used where:

(1) the provisions of sections 264 to 280 are complied with;

(2) the system operates throughout the shaft;

(3) a signal device linked to the system provided for in the first paragraph is available to workers in the shaft.

O.C. 213-93, s. 263; O.C. 1326-95, s. 54; O.C. 1236-98, s. 14.

264. Only persons who underwent the training mentioned in section 27.6 and who are authorized by the employer who has authority over the establishment may issue the signals prescribed in section 263.

The names of the persons referred to in the first paragraph shall be entered on a list. The list shall be posted as updated at the workstation of the hoistman.

O.C. 213-93, s. 264; O.C. 80-2023, s. 17.

265. The signal system prescribed in section 263 shall allow the hoistman to respond to the person giving the signal by repeating it.

O.C. 213-93, s. 265.

266. The hoistman shall return all signals before raising or lowering persons or equipment.

O.C. 213-93, s. 266.

267. In shaft sinking operation, signals shall be visible to workers at the bottom of the shaft.

O.C. 213-93, s. 267.

267.1. A voice communication system must be established in shaft sinking operations in accordance with a specific procedure for the use of auxiliary hoists to move heavy equipment used at the bottom of the shaft, such as a work platform, a clamshell or a boom drill. This procedure must also require that the hoistman repeat the instructions.

This communication system must be separate from the system referred to in the second paragraph of section 263.

O.C. 42-2004, s. 14.

268. When signals are issued from a conveyance, the signalling device shall be within the reach of the conveyance tender.

Where signals are given by means of a rope, its length may not exceed:

(1) 25 m (82 ft) for shaft sinking operation;

(2) 50 m (164 ft) for shaft inspection.

O.C. 213-93, s. 268.

269. The signal code prescribed by Schedule II shall be used for moving a conveyance in any underground mine using a hoist, except when the movement of the conveyance is controlled in automatic or semi-automatic mode.

O.C. 213-93, s. 269; O.C. 42-2004, s. 15; O.C. 1190-2010, s. 9.

270. Strokes on the bell shall be given at regular intervals.

O.C. 213-93, s. 270.

271. When persons are raised or lowered by means of a hoist, the signals shall be given in the following order:

(1) warning signal;

(2) destination signal;

(3) executive signal.

O.C. 213-93, s. 271.

272. The hoistman shall wait at least 3 seconds before starting up the conveyance after receiving an execution signal whenever the transport of persons is involved. If it is not possible to act within one minute of the reception of a complete signal, he shall operate the hoist only after receiving a complete signal again.

O.C. 213-93, s. 272.

273. When the hoistman receives a 3-bell signal, he may not respond until he has applied the service brakes of the hoist. He shall then remain at the hoist control.

However, in the event of shaft maintenance work and in other circumstances requiring a lengthy stop, the hoistman may leave the hoist control after having received a 3-bell signal under the following conditions:

(1) the hoist power supply is turned off; and

(2) the hoistman remains inside the room housing the hoist control.

O.C. 213-93, s. 273; O.C. 1236-98, s. 15.

274. When the hoistman receives a 5-bell signal, he may perform any operation with the conveyance.

O.C. 213-93, s. 274.

275. The 9-bell alarm signal may be used only in case of accident, fire, infiltration, flood, landslide or other event of a similar nature. The destination signal for the level on which the danger exists shall be given after the alarm signal. These signals shall be given by telephone or by the conveyance calling device.

However, where these communication systems cannot be installed, the signal system mentioned in section 263 may be used.

O.C. 213-93, s. 275.

276. After receiving an execution signal, the hoistman may not interrupt the requested operation after having begun unless he receives a stop signal or the operation could endanger the health and safety of the workers in the conveyance.

O.C. 213-93, s. 276.

277. The destination signals added to the signal code prescribed in section 269 shall comply with Schedule III.

O.C. 213-93, s. 277.

278. The destination signals of the intermediate levels or sublevels or shaft stations that are secondary stops owing to their location between the level shaft stations set at nearly uniform intervals for operating purposes shall be determined by using the destination signal of the shaft station at the main level located immediately above, followed by the signal corresponding to the number assigned to each sublevel.

O.C. 213-93, s. 278.

279. The numbering of each level shall be independent from one shaft to the next, and the number assigned to each level of a particular shaft shall correspond to the order actually occupied by that level in relation to the other levels of the shaft starting from its outlet.

O.C. 213-93, s. 279.

280. The signal codes prescribed in sections 269 and 277 shall be posted at the work station of the hoistman and at each shaft station or other level where such signals may be given or received.

O.C. 213-93, s. 280.

281. Where a hoist is used in an open pit mine and the conveyance is not visible to the hoistman, a signal system shall be installed to direct the operations of the hoist.

O.C. 213-93, s. 281.

282. In a shaft where a conveyance calling system is installed, it may not be connected to the hoistroom.

O.C. 213-93, s. 282.

283. A telephone connecting the surface to all the shaft stations and other levels used, including the loading hoppers, shall be installed in each underground mine.

The telephone bell may not be used as a conveyance calling device.

During shaft sinking work, the telephone shall be extended to the blasting set.

A telephone connection jack for the mine rescue teams shall be installed near each telephone station.

Each telephone connection jack must be inspected every 6 months. The inspections' result must be recorded in a register.

O.C. 213-93, s. 283; O.C. 966-2015, s. 5.

283.1. A telephone connecting the surface, equipped with a telephone connection jack for mine rescue, must be installed on the outside wall of the airlock of every refuge station built on or after 20 January 2011.

Each telephone connection jack must be inspected every 6 months. The inspections' result must be recorded in a register.

O.C. 1190-2010, s. 10; O.C. 966-2015, s. 5.

§ 10. — *Ropes*

284. Each hoisting rope, a tail rope, a rubbing rope or a guide rope in service shall be accompanied by a manufacturer's certificate giving the following particulars:

(1) manufacturer's name;

(2) the serial number of the coil or reel containing the rope before its installation;

(3) its date of manufacture;

(4) its diameter and circumference in millimetres;

(5) its mass in kilograms per metre;

(6) the type of construction;

(7) the number of strands;

(8) the number of wires per strand;

(9) the class of core;

(10) the brand name of its interior lubricant;

(11) the diameter of the wires in millimetres;

(12) the results of a torsion test on its wires taken individually;

(13) the breaking load of the steel of which its wires are made, in kilograms per square millimetre;

(14) its length in metres.

O.C. 213-93, s. 284; O.C. 1326-95, s. 55.

285. The certificate prescribed in section 284 shall be accompanied by a report on the breaking test of a rope specimen conducted by a laboratory specializing in breaking tests and independent of the rope manufacturer, and a copy of the documents shall be kept on the mine site.

O.C. 213-93, s. 285.

286. A rope specimen used in a breaking test shall:

(1) be at least 2.5 m (8.2 ft) in length;

(2) be fastened at both ends;

(3) be removed from above the attachment of the conveyance or the counterweight if the rope is in use.

O.C. 213-93, s. 286.

287. When a breaking test is performed on a rope manufactured in a continuous operation, a rope specimen removed from between 2 ropes may be used to test the 2 ropes.

O.C. 213-93, s. 287.

288. When new, a hoisting rope installed on a drum hoist shall have a safety factor that meets the following minimum requirements:

(1) subject to paragraph 2, at least 8.5 at the end of the rope attached to the counterweight or conveyance and having a service load consisting of the mass of the conveyance added to the maximum mass that can be transported in it;

(2) at least 7.5 at the end of the rope attached to the counterweight or to the skip and having a service load consisting of the mass of the skip added to the maximum mass than can be weighed;

(3) subject to paragraph 4, at least 5.0 at the headsheave when the conveyance or counterweight is at the lower limit of travel in the shaft, the service load then consisting of the mass of the counterweight or conveyance added to the maximum mass that can be transported in it and the mass of the part of the rope located between the headsheave and the conveyance;

(4) at least 5.0 at the headsheave when an overload protection device is used continuously, the service load consisting of the mass of the counterweight or conveyance added to the mass loaded in the conveyance and the mass of the part of the rope located between the headsheave and the conveyance.

O.C. 213-93, s. 288; O.C. 1236-98, s. 16; O.C. 221-2009, s. 24.

288.1. Despite section 288, the minimum safety factor of a new hoisting rope installed on a drum hoist used in a vertical shaft is determined according to the following formula:

minimum safety factor = 25,000/(4,000 + L)

(L being the maximum length of rope in metres suspended below the head sheave where the conveyance is at the lower limit of travel).

In such a case, the following standards and conditions must be met:

(1) the drum hoist must comply with SABS Standard 0294:2000, Code of Practice for the Performance, Operation, Testing and Maintenance of Drum Winders relating to Rope Safety, subject to the adaptation guide of South African Standard SABS0294:2000 in accordance with the Mine Occupational Health and Safety Regulation (chapter S-2.1, r. 14) published by the Mining and Mineral Sciences Laboratories, MMSL-CANMET;

(2) the hoisting rope must be used, maintained and checked in accordance with SABS Standard 0293:1996, Code of Practice for the Condition Assessment of Steel Wire Ropes on Mine Winders, subject to the adaptation guide of South African standard SABS0293:1996 in accordance with the Mine Occupational Health and Safety Regulation published by the Mining and Mineral Sciences Laboratories, MMSL-CANMET; and

(3) the drum hoist must be equipped with a device continuously monitoring the condition of the rope, which must be able to detect a sudden loss of the rope section and stop the drum hoist if the loss exceeds 10%.

O.C. 639-2000, s. 2; O.C. 42-2004, s. 16; O.C. 1190-2010, s. 11.

289. A hoisting rope installed on a friction hoist shall have a safety factor when new of at least 5.5, or, as calculated according to the following formula, taking the highest possible value:

Safety factor = 9.5 - 0.00246 L

(L being the maximum length in metres of rope suspended below the pulley).

O.C. 213-93, s. 289.

290. The safety factor for a multirope friction hoist shall be calculated by the breaking load of the weakest hoisting rope multiplied by the number of ropes and divided by the sum of the masses of the conveyance, the attachments, the ropes suspended in the shaft compartment and the maximum mass that can be transported in the conveyance.

O.C. 213-93, s. 290.

291. The safety factor when new of a tail rope shall be at least 7.

O.C. 213-93, s. 291.

292. The safety factor when new of a guide rope and a rubbing rope shall be at least 5.

O.C. 213-93, s. 292.

293. A hoisting rope or a tail rope shall be withdrawn from service when:

(1) during a breaking test, the stretch of a rope specimen has been reduced to less than 60% of its stretch recorded during its breaking test when new;

(2) the number of broken wires in a segment of rope equal to the length of one lay of the rope is more than 5% of the total number of wires in the rope;

(3) in the case of a hoisting rope, the breaking load or the loss of cross-section at any point is at least 10% less than its condition when new, unless the damaged part of the rope can be entirely removed and the remainder of the rope meets the requirements of this section;

(4) in the case of a tail rope, an electromagnetic examination indicates a loss of cross-section of 12% or more at any point for a deformed rope and 25% for an undeformed rope;

(5) the loss of torsion strength exceeds 85%, unless an independent specialized enterprise performs electromagnetic inspections at intervals the enterprise determines and the inspections are documented.

O.C. 213-93, s. 293; O.C. 119-2006, s. 23.

294. A guide rope or a rubbing rope shall be withdrawn from service when an electromagnetic examination indicates a loss of resistance of 25% or more at any point of the rope.

O.C. 213-93, s. 294.

295. A hoisting rope of a drum hoist shall:

(1) be subjected to a breaking test during the first 12 months after it is put into service and subsequently at intervals not exceeding 6 months; however, where a breaking test reveals a loss of resistance of more than 6%, that interval shall be reduced to 3 months. Six months after its installation, the part of the rope forming the attachment to the conveyance or counterweight must be cut and discarded;

(2) be subjected to an electromagnetic examination at intervals not exceeding 6 months. Where an electromagnetic examination reveals a loss of cross-section of more than 6%, that interval shall be reduced to 3 months;

(3) where it is used during shaft sinking work, be subjected to a breaking test at intervals not exceeding 6 months; however, where a breaking test reveals a loss of resistance of more than 6%, that interval shall be reduced to 3 months.

Subparagraph 3 of the first paragraph applies to the hoisting rope of a friction hoist.

O.C. 213-93, s. 295; O.C. 465-2002, s. 24.

295.1. Notwithstanding subparagraph 1 of the first paragraph of section 295, where the expected life of a hoisting rope of a drum hoist is less than 15 months, the rope shall undergo an electromagnetic examination at intervals not exceeding 3 months and a breaking test at intervals not exceeding 6 months after it is put into service.

For the purposes of this section, the expected life of a hoisting rope of a new installation of a drum hoist or of a change in such a hoist that may affect the life of the rope is considered to be less than 15 months.

O.C. 465-2002, s. 25.

296. A tail rope shall be subjected to an electromagnetic examination during the first 12 months after it is put into service and at intervals not exceeding 6 months thereafter.

Where an electromagnetic examination reveals a loss of cross-section of more than 8%, that interval shall be reduced to 3 months.

O.C. 213-93, s. 296.

297. A guide rope and a rubbing rope shall be subjected to an electromagnetic examination during the first 12 months after being put into service and at intervals not exceeding 6 months thereafter.

Where an electromagnetic examination reveals a loss of cross-section of more than 15%, that interval shall be reduced to 3 months.

O.C. 213-93, s. 297.

298. A hoisting rope of a drum hoist shall be fixed to the drum in accordance with the manufacturer's instructions, and at least 3 complete turns of the rope shall remain on the drum when the conveyance or the counterweight is at the lowest level it can reach in the shaft.

O.C. 213-93, s. 298.

299. In the clamped rope attachments between the hoisting rope and the conveyance or the counterweight, these attachments shall be made in accordance with the specifications in Schedule V. The length of the thimble shall be at least 12 times the diameter of the rope and its width shall be at least 8 times the diameter of the rope.

O.C. 213-93, s. 299; O.C. 1326-95, s. 56.

300. Where "U" clamps are used, the "U" part of the clamp shall be located on the dead end of the rope.

O.C. 213-93, s. 300.

301. The suspension gear between a conveyance or a counterweight and a hoisting rope or a tail rope, and the attachment devices between a cage and a skip shall have a static safety factor of at least 10 when new.

O.C. 213-93, s. 301.

302. After a rope is installed and cut and before operation of the hoist is resumed, the following standards shall be respected:

(1) 2 complete descending and rising cycles shall be performed with an empty conveyance;

(2) the tightening torque of the clamps and the absence of slipping in the attachment shall be checked;

(3) 2 complete descending and rising cycles shall be performed while the conveyance is carrying its maximum load of materials; before those 2 cycles are carried out, the use of the hoist to lower a conveyance tender is authorized;

(4) the checks prescribed in paragraph 2 shall be carried out a second time.

O.C. 213-93, s. 302.

303. A spliced rope may not be used as a hoisting rope, tail rope, guide rope or rubbing rope.

O.C. 213-93, s. 303.

304. A hoisting rope may not be reversed.

O.C. 213-93, s. 304.

304.1. Where hoisting ropes and tail ropes are stored for more than 5 years after their date of manufacture, they shall be subjected to non-destructive testing prior to being installed.

O.C. 1326-95, s. 58.

304.2. Any used rope that is used as a hoisting rope or tail rope in a mine shall be subjected to a non-destructive test prior to being reinstalled and shall be accompanied by the manufacturer's certificate and by all the reports on non-destructive tests and breaking tests carried out in the period prior to the rope's most recent withdrawal from service, and by the information prescribed in sections 345 and 346.

O.C. 1326-95, s. 58.

305. Any hoisting rope or tail rope and their attachments shall be:

(1) examined visually at least once per day of use in order to detect any visible deterioration;

(2) examined at least once a week in order to ensure that the rope is lubricated, to detect any deterioration, including the part of the rope that normally rests on the drum and its attachment to the drum and its attachment to the conveyance or the counterweight;

(3) examined at least once per month at intervals not exceeding 45 days; for this purpose, the rope shall be cleaned at cross-over points and at least every 100 m (328.1 ft); at all such points, the diameter of the rope shall be measured and its surface examined to detect broken wires or other defects.

Despite the foregoing, an electromagnetic monitoring system of the rope may replace the examination referred to in subparagraph 1 of the first paragraph and an electromagnetic examination may replace the examination referred to in subparagraph 3 of the first paragraph.

O.C. 213-93, s. 305; O.C. 1190-2010, s. 12.

306. Every hoisting rope of a drum hoist and every tail rope of a friction hoist shall be lubricated at least once per month.

O.C. 213-93, s. 306.

307. The results of the examinations and measurements prescribed in section 305 and the lubrications prescribed in section 306 shall be entered in the register of the work station concerning the hoisting equipment prescribed in section 344.

O.C. 213-93, s. 307.

308. During shaft sinking, the bucket may not be attached under a cage or a skip.

O.C. 213-93, s. 308.

309. In any winding layer superimposed on a drum, the rope shall rise gradually from one layer to another and shall wind without cutting down between the turns of the previous winding.

O.C. 213-93, s. 309.

310. No rope of a friction hoist shall slide on the pulley when the hoist is stopped or started.

O.C. 213-93, s. 310.

§ 11. — *Diameter of drums, pulleys and headsheaves*

311. The installation of a drum hoist or an alteration made to such a hoist to increase the maximum suspended load may only be carried out where:

(1) the drum used with more than one layer of rope and with a diameter exceeding 1,550 mm (61 in) is equipped with grooving fitting the rope; however, during shaft sinking work, preparatory work or temporary work is in progress, the use of a plain drum hoist is authorized;

(2) the winding of the rope on the drum does not exceed 3 layers of superimposed turns when the drum is plain or there is spiral grooving and does not exceed 4 layers of superimposed turns when the grooving is parallel;

(3) the diameter of the drum complies with the standards prescribed in the following table when shaft sinking work, preparatory work or temporary work is in progress;

Diameter of rope in millimetres	(inches)	Minimum diameter of drum in millimetres	(inches)
16	(0.6)	760	(29.9)
19	(0.7)	910	(35.8)
22	(0.9)	1,070	(42.1)
26	(1.0)	1,220	(48.0)
29	(1.1)	1,520	(59.8)
32	(1.3)	1,830	(72.0)
35	(1.4)	2,080	(81.9)
38	(1.5)	2,290	(90.2)
41	(1.6)	2,440	(96.1)
44	(1.7)	2,540	(100.0)
48	(1.9)	2,790	(109.8)
51	(2.0)	3,050	(120.1);

(4) the diameter of the drum complies with the standards prescribed in the following table for work other than work mentioned in subparagraph 3:

Diameter of rope in millimetres	(inches)	Minimum diameter of drum in millimetres	(inches)
16	(0.6)	910	(35.8)
19	(0.7)	1,070	(42.1)
22	(0.9)	1,220	(48.0)
26	(1.0)	1,520	(59.8)
29	(1.1)	1,830	(72.0)
32	(1.3)	2,440	(96.1)
35	(1.4)	2,740	(107.9)
38	(1.5)	3,050	(120.1)
41	(1.6)	3,300	(129.9)
44	(1.7)	3,560	(140.2)
48	(1.9)	3,810	(150.0)
51	(2.0)	4,060	(159.8).

Subparagraph 2 of the first paragraph does not apply to shaft sinking work, where the maximum number of layers of rope shall be such that the distance between the flanges of the rope drum and the last layer of rope is at least twice the diameter of the rope.

O.C. 213-93, s. 311; O.C. 1326-95, s. 59.

312. The diameter of the pulley of the friction hoist may not be less than 80 times the diameter of the hoisting rope except when a locked-coil wire rope is used, in which case the diameter of the pulley may not be less than 100 times the diameter of the locked-coil wire rope.

O.C. 213-93, s. 312.

313. The diameter of a headsheave and a deflection sheave shall comply with the standards prescribed for the drums in the table in subparagraphs 3 and 4 of the first paragraph of section 311.

O.C. 213-93, s. 313.

314. The radius of curvature of the bottom of the groove of a headsheave and a deflection sheave shall be at least 5% greater than the rated radius of the rope.

O.C. 213-93, s. 314.

§ 12. — *Conveyances*

315. A conveyance may not be used for the first time without a certificate of strength being obtained from an engineer, containing the following particulars:

(1) the maximum mass that can be transported in the conveyance;

(2) the maximum mass that can be suspended below it, in the case of a cage.

The certificate shall be kept on the mine site.

O.C. 213-93, s. 315.

316. Except for shaft sinking work and subject to section 317, where the depth of a vertical shaft exceeds 60 m (196.9 ft), it shall be equipped with a cage for raising and lowering workers at each change of shift. The cage shall meet the standards set out in sections 323 to 325, have metal side walls with doors and be independent from any motorized device for the transport of persons described in section 53.

O.C. 213-93, s. 316; O.C. 460-2000, s. 23.

317. If, owing to an accident or a breakdown, the workers working underground are brought to the surface in a skip, the rate of ascent of the skip may not exceed 5 m (16.4 ft) per second, and the switch for the upper range of travel or the auxiliary overwind device, whichever applies, shall be adjusted so as to prevent the skip from reaching the dumping point.

O.C. 213-93, s. 317.

318. Where, during sinking a vertical shaft, the depth of the shaft exceeds 50 m (164.0 ft), a bucket and a sinking crosshead shall be used.

O.C. 213-93, s. 318.

319. A sinking crosshead shall:

(1) have a safety device designed to hold back the bucket when the sinking crosshead is stuck;

(2) be designed to prevent the bucket connected to it from swinging;

(3) when it is used to raise or lower persons, be equipped with a protective roof made of sheet steel having a thickness of at least 4 mm (0.2 in) or a material having equivalent strength;

(4) designed so that the opening of its lower part is circular to enable the bucket to fit into it.

O.C. 213-93, s. 319.

320. In a compartment of a shaft where a sinking crosshead is used, a device causing the hoist to stop automatically shall be installed less than 50 m (164.0 ft) from the upper stopper. The device shall be adjusted so that it is operated by the safety arm of the sinking crosshead if it does not return to its interlocked position after leaving the upper chair.

In a compartment of a shaft where a sinking crosshead and a bucket are used, a device automatically causing the hoist to stop shall be installed in case the bucket leaves the upper chair level in the descending direction without being accompanied by the crosshead. This device shall be designed to cause the hoist to stop

automatically when the bucket descends to less than 3 m (9.8 ft) from the chair engaging position and the dump door does not protrude into the hoisting compartment.

O.C. 213-93, s. 320.

321. A luminous signal shall be installed to indicate to the hoistman whether the upper chair is in chairing position or not.

O.C. 213-93, s. 321.

322. A sinking crosshead shall be held by a least 2 chairs on the lower section of the timbering.

O.C. 213-93, s. 322.

323. It is prohibited to transport a person in a cage or a skip travelling in a vertical shaft or one inclined more than 60° from the horizontal unless the cage or the skip:

(1) moves on guides;

(2) is equipped with safety catches designed to immobilize the cage or the skip operating at the maximum load permitted for the transport of persons, in case of the breaking of the hoisting rope;

(3) is equipped with a protective roof made of sheet steel having a thickness of at least 4 mm (0.2 in) or a material of equivalent strength.

Notwithstanding the foregoing, subparagraph 2 of the first paragraph does not apply to a skip when it is used for inspections and maintenance work in a shaft or of a skip or cage of a friction hoist.

O.C. 213-93, s. 323.

324. The doors of a cage shall be:

(1) closed during the transport of workers;

(2) equipped with a device preventing them from opening accidentally;

(3) designed so that the cage is completely closed when the doors are shut.

O.C. 213-93, s. 324.

325. The doors of a cage shall be installed so that no part of them can protrude into the shaft.

O.C. 213-93, s. 325.

326. Before using a newly installed cage, a skip or a skip-cage combination intended for transport of persons or one whose safety catches or mass has been altered, a free-fall test shall be carried out. The following data concerning the test shall be noted and kept on the mine site:

(1) the maximum speed at which the conveyance travelled during the test;

(2) the mass of the conveyance;

(3) the load contained in the conveyance;

(4) the total distance of the conveyance's fall;

(5) the distance travelled by the conveyance after the safety catches engage.

Where the cage, skip or cage-skip assembly that the employer wishes to use is similar to a cage, a skip or a cage-skip assembly already tested in accordance with the first paragraph, a quick release test is sufficient.

O.C. 213-93, s. 326.

327. Where the equipment mentioned in section 326 is used daily, the safety catches and the devices operating them shall be examined at least once every 24 hours to ensure that the catches are clean and sharp and that the devices are correctly adjusted and operate freely.

If the equipment is not used every 24 hours, the examinations shall be made before it is used for the transport of persons.

The results of the examinations shall be noted in the register of the work station concerning the hoisting equipment prescribed in section 344.

O.C. 213-93, s. 327.

328. At least once every 3 months, the safety catches shall undergo a quick release test.

O.C. 213-93, s. 328.

329. The data relating to the quick release test, including data relating to the total distance of the conveyance's fall and the distance travelled by the conveyance after the safety catches engage shall be collected in accordance with a recognized computation method.

The data and the reference source for the computation method shall be entered in the work station register referred to in section 344 for hoisting equipment.

O.C. 213-93, s. 329; O.C. 221-2009, s. 25.

330. Where a skip equipped with a tipper tub or a door protruding out of the shaft compartment leaves its dumping point while the locking mechanism of its unloading device is not locked, a switch installed under the dumping point of the skip shall suppress the driving power of the hoist and cause it to brake.

O.C. 213-93, s. 330.

331. The number of persons permitted in a conveyance may not exceed the smaller of the following whole numbers:

(1) the number obtained by multiplying the area in square metres of the floor of the conveyance by;

(a) 5.25, where the surface of the floor is 1.86 m^2 (20 ft^2) or less;

(b) 6.25, where the surface of the floor is greater than 1.86 m^2 (20 ft^2) but less than 4.64 m^2 (50 ft^2);

(c) 7.1, where the surface of the floor is 4.64 m^2 (50 ft^2) or more; and

(2) the number obtained by dividing by 80 the number corresponding to 85% of the maximum load in kilograms that could be suspended from the hoisting rope when materials are being transported.

O.C. 213-93, s. 331; O.C. 1326-95, s. 60; O.C. 119-2006, s. 24.

332. A notice indicating the maximum number of persons it is permitted to transport and the maximum mass of material to be loaded into a conveyance shall be posted on the gate of each hoisting compartment at the top station.

O.C. 213-93, s. 332; O.C. 1326-95, s. 61.

333. It is prohibited to transport a person simultaneously with rails, drill steel, pipes, scaling bars, rock bolts, or other objects of that nature in a skip or bucket, except where such objects are transported by means of a cage, in which case a maximum of 2 workers may be transported simultaneously with these objects if the cage is completely closed and the objects are fixed.

O.C. 213-93, s. 333.

334. A worker may carry with him portable tools or manually transportable materials in a conveyance provided that the dangerous parts of such articles are fitted with sheaths, protectors or other items of the same kind.

O.C. 213-93, s. 334.

335. Rails, drills, pipes, scaling bars, rock bolts or other objects of the same kind shall be fixed in place by a chain, rope, sling or belt when they are transported in a conveyance.

O.C. 213-93, s. 335.

336. Subject to sections 333, 334 and 432, the simultaneous transport of persons and equipment or persons and materials in the same hoist is prohibited.

O.C. 213-93, s. 336; O.C. 221-2009, s. 26.

337. It is prohibited to give the signal to raise or lower a bucket in a shaft without making sure that the bucket has ceased swinging.

O.C. 213-93, s. 337.

338. A person transported by means of a bucket shall remain inside it.

O.C. 213-93, s. 338.

339. During shaft sinking work, the conveyance used for the transport of persons to the site where blasting took place shall be immobilized 25 m (82.0 ft) above the site of the blasting.

From this level, a descent of such a conveyance may be made only following signals sent from the conveyance and at a speed not exceeding 2 m per second (380 ft per minute).

After blasting, only those persons required for examining the shaft may be transported in the conveyance.

O.C. 213-93, s. 339.

340. During shaft sinking work, the conveyance may not be lowered directly to the bottom of the shaft but shall be held at least 5 m (16.4 ft) above the bottom until the signal for descent is given.

O.C. 213-93, s. 340.

341. Where hoisting has been interrupted in a shaft for longer than 2 hours or repairs have been carried out on the hoist or in the hoisting compartments, no person may be lowered or raised before the conveyance has made a complete lowering and raising cycle in the part of the shaft served by this hoist and the lowering and raising cycles so completed shall be noted in the register of the work station concerning each hoist prescribed in section 347.

O.C. 213-93, s. 341.

342. Subject to section 250, no person may remain inside or on a conveyance or maintain, repair or alter a conveyance in a shaft or its headframe, unless the drum or the friction pulley of the hoist is retained by at least 2 separate methods of braking or the conveyance is supported by means independent of the hoist.

O.C. 213-93, s. 342.

343. *(Revoked).*

O.C. 213-93, s. 343; O.C. 755-2017, s. 6.

§ 13. — *Registers*

344. The register for the work station concerning each hoisting equipment used in a mine shall contain the following entries:

(1) the report of each inspection or maintenance prescribed by sections 54, 221, 222, 305 and 327 to 329;

(2) the report of any breakdown or accident to the hoist, the ropes, a conveyance or any other part of the hoisting plant and the corrective measures taken;

(3) the dates on which the ropes were greased;

(4) the signatures of the workers who made the entries prescribed in paragraphs 1 to 3 as well as that of the employer or his representative.

O.C. 213-93, s. 344; O.C. 1326-95, s. 62.

345. For each hoisting rope or tail rope used in a mine, the data required by sections 284 and 285, with the following additional particulars, shall be entered in the register of the work station concerning ropes:

(1) date of purchase;

(2) date of installation in its present place;

(3) identification of the shaft and the compartment in which it is in service;

(4) the mass of the conveyance or the counterweight intended to be suspended from it;

(5) the maximum mass intended to be transported in the conveyance;

(6) the mass of the maximum length of rope in service below the headsheave;

(7) its static safety factor.

O.C. 213-93, s. 345; O.C. 1326-95, s. 63.

346. In addition to the entries required under section 345, a record of the hoisting rope or tail rope mentioning the following information shall be entered in the register prescribed by that section:

(1) the date on which it was first installed;

(2) the dates of any cuttings and the results of the checks prescribed in section 302;

(3) the dates and a summary of all the breaking tests or non-destructive tests of the rope or of its wires taken separately;

(4) the date and reason for its withdrawal from service;

(5) the manner in which it was disposed of when withdrawn from service;

(6) the nature and date of any rope accident occurring while it was in service.

O.C. 213-93, s. 346.

347. The register of the work station of the operator of a hoist used in a mine shall contain the following entries for each hoist:

(1) the report on the operation of the hoist, including the brakes, the clutches, the interlocking devices between the brakes and the clutches, the position indicators and the other devices related to safe operation of the hoist;

(2) a report on the operation of the signal system, with a record of all the signals received by the hoistman whose correctness he questioned;

(3) any special instructions received concerning the safety of persons; these instructions shall be signed by the operator and by the person who gave such instructions;

(4) the report on the operation of the overwind, auxiliary overwind and the upper and lower limits of travel devices; if the daily tests required for such devices are performed by the hoistman on the preceding shift, the hoistman coming on duty shall certify by his signature that he has examined the entries of the hoistman who performed the tests;

(5) the report on any failure related to the functioning or operation of the hoist or its devices;

(6) the report on all the lowering and raising cycles required under sections 260, 302 and 341;

(7) the notices given to the hoistman on duty in the next shift relating to the operation of the hoist.

O.C. 213-93, s. 347; O.C. 1326-95, s. 64.

348. All the entries prescribed by section 347 shall be read and countersigned by the hoist operation on the next shift.

O.C. 213-93, s. 348.

349. The entries prescribed by section 347 shall be noted and signed by all the hoistmen for the duration of their shift on each hoist. The time and duration of their shifts shall be noted and the entries noted during the preceding 24 hours shall be read and countersigned each day by the employer or his representative.

O.C. 213-93, s. 349.

DIVISION VIII

VARIOUS INSTALLATIONS

§ 1. — *General*

350. Each frog of a track shall be closed by a wedge of wood or metal.

O.C. 213-93, s. 350.

350.1. Where the boom of an excavator used to sink a shaft is left in the raised position, it shall be locked by means of at least 2 separate devices that are not part of the hydraulic or pneumatic system.

O.C. 1326-95, s. 65.

351. The path of a counterweight shall be surrounded by a casing or otherwise isolated so as to avoid any possible contact of the counterweight with a worker.

O.C. 213-93, s. 351.

§ 2. — *Hoisting plant*

352. An overhead travelling crane on rails for general use, except a single beam travelling crane, shall comply with CSA B167-1964 Standard General Purpose Electric Overhead Travelling Cranes.

O.C. 213-93, s. 352.

353. It is prohibited to step onto the track of a travelling crane or carry out work thereon unless one of the following conditions is met:

(1) the main switch of the travelling crane is padlocked in the open position by the person who is to go onto the track, in order to avoid any accidental start-up of the travelling crane;

(2) the operator of the travelling crane is informed of the presence of a worker and the travelling crane cannot approach closer to him than 3 m (9.8 ft).

O.C. 213-93, s. 353; O.C. 1326-95, s. 66.

354. A travelling crane shall have a sound warning device that shall be used by the operator to warn workers to distance themselves from suspended loads.

O.C. 213-93, s. 354.

355. A travelling crane and its related equipment shall be inspected at least once each month.

A report of the inspection signed by the worker who made it shall be kept in the register of the work station concerning travelling cranes on the mine site.

O.C. 213-93, s. 355.

356. Any raise climber shall be equipped with:

(1) at least 2 independent braking systems, each one capable of stopping and holding the lift with the rated load;

(2) bumpers at each end of the track;

(3) a voice communication system connecting the raise climber cab with its access level;

(4) the tools required for putting it back on the rails if derailed;

(5) lanyards for each worker on it;

(6) *(paragraph revoked);*

(7) a wooden chest or a cloth bag used exclusively for transporting detonators and microconnectors;

(8) an automatic speed governor that can keep the lift at a constant speed of descent;

(9) a rating plate;

(10) a protective roof complying with the manufacturer’s specifications or offering equivalent or greater safety; the roof shall be installed so that it protects workers against falling rocks likely to become detached

from the working face and the walls of the raise, except during drilling and loading of explosives into the work face.

O.C. 213-93, s. 356; O.C. 460-2000, s. 24.

357. The braking systems and the control devices of a raise climber shall be tested at the beginning of each shift before the climber travels in the raise.

O.C. 213-93, s. 357.

358. The drive shafts of a raise climber shall receive an ultrasound examination and fluorescent magnetic particle testing before being put into service and subsequently at intervals not exceeding 4,000 hours of use. When one of these examinations detects a crack in a drive shaft, the shaft shall be replaced.

O.C. 213-93, s. 358; O.C. 1190-2010, s. 13.

359. A raise climber shall be inspected at least once a week.

O.C. 213-93, s. 359.

360. A report of the weekly inspections, maintenance and repairs of a raise climber signed by the worker who performed them and countersigned by the employer shall be kept in a register concerning the raise climbers on the mine site.

O.C. 213-93, s. 360.

361. A motorized device making it possible to reach a raise climber in an emergency shall be operational in the raise within 4 hours.

O.C. 213-93, s. 361; O.C. 1236-98, s. 17; O.C. 460-2000, s. 25.

362. It is prohibited to transport any person outside the cage of a raise climber except to inspect the walls of the raise and the dismantling of the installation, in which case a roof complying with section 393 shall be installed.

O.C. 213-93, s. 362.

363. It is prohibited to do any work with a raise climber unless at least 2 workers are present.

O.C. 213-93, s. 363.

364. The platform of a raise climber shall be designed so that the space between it and the walls surrounding it does not exceed 150 mm (5.9 in).

O.C. 213-93, s. 364.

365. It is prohibited to leave a raise climber by any means other than a motorized device when the distance between the climber and the place of access to the raise exceeds 90 m (295.3 ft).

O.C. 213-93, s. 365.

366. In a raise excavated using a raise climber, weekly boring and scaling work on the walls shall be done on its whole length.

The results of this work, the date on which it was done and the names of the workers designated to do it shall be noted in the register of the work station concerning raise climbers.

O.C. 213-93, s. 366.

367. Any passenger elevator, freight elevator, dumbwaiter and platform hoisting tower shall comply with the Regulation respecting elevators, escalators, dumbwaiters, moving walks, freight platform lifts and elevating devices for handicapped persons (O.C. 1009-88, 88-06-22).

O.C. 213-93, s. 367.

368. When a load shall be moved by means of a hoisting apparatus, the operator of the equipment shall act only in accordance with the signals received from the loading and unloading area. These signals shall be transmitted by gestures or a telecommunications system when the signaller is out of sight of the operator.

O.C. 213-93, s. 368.

369. The operator of a hoisting apparatus may not transport loads above a person and may not leave his equipment unsupervised when a load is suspended from it.

O.C. 213-93, s. 369.

370. A crane and its related equipment shall be inspected at least once a month.

A report of the inspection signed by the worker who made it shall be kept in the register of the work station concerning cranes on the mine site.

O.C. 213-93, s. 370.

§ 3. — *Conveyors*

371. It is prohibited to climb on a conveyor or to hold oneself on the structure supporting it unless the controls of the motor are padlocked in the open position.

O.C. 213-93, s. 371.

372. It is prohibited to clean or inspect a component of a moving conveyor unless the process used does not require any handling that may cause a worker to come into contact with a moving element.

O.C. 213-93, s. 372; O.C. 460-2000, s. 26.

373. Every conveyor shall:

(1) have head, return, drive and tension rollers that are protected by a device extending at least 0.9 m (3 ft) beyond each recessed point;

(2) be equipped with a device that prevents any object or materials from falling, where the conveyor is installed above a place where workers move about;

(3) be equipped with a footwalk and guardrail where it is installed more than 2 m (6.5 ft) above ground level or floor level, except where the conveyor can be accessed by means of an elevating platform or other mechanical means that complies with section 401;

(4) be equipped with a protective rail on the sides alongside which the workers move about;

(5) be equipped, where the workers may access the conveyor while it is in operation, with an emergency shut-down device along its full length between the head pulley and the return pulley; release of the shut-down device shall not restart the conveyor;

(6) be equipped, where it is self-starting or remote starting or is partially invisible from the operator's controls and has accessible movable parts, with a lighting device or an auditory device that signals the conveyor's start-up to the workers;

(7) in the case of a bucket conveyor, be surrounded by an unbroken protective barrier reaching the full height of the conveyor and have doors or panels for maintenance work, inspections or repairs; the opening of one of those doors or panels shall automatically stop the conveyor.

O.C. 213-93, s. 373; O.C. 1326-95, s. 67; O.C. 119-2006, s. 25; O.C. 33-2024, s. 10.

374. In addition to the standards prescribed in sections 371 to 373, any conveyor used in a mine shall:

(1) be equipped with a device such as a differential movement detector causing the motor to stop when there is a slippage between the conveyor belt and the traction pulley;

(2) be equipped with guide rollers to maintain the alignment of the conveyor belt or a switch causing the motor to stop if the belt is misaligned;

(3) if it is less than 30 m (98.4 ft) long, be provided with a firefighting sprinkler system complying with NFPA Standard 15-1985 Water Spray Fixed Systems for Fire Protection;

(4) if it is 30 m (98.4 ft) long or longer, be provided with a firefighting sprinkler system in accordance with the standard cited in subparagraph 3:

(a) for a distance of 15 m (49.2 ft) from each of the ends if the conveyor belt complies with CSA Standard CAN-M422-M87 Fire Performance and Antistatic Requirements for Conveyor Belting and also for a distance of 15 m (49.2 ft) on each side of the drive pulley, if the drive pulley is not located at one end of the conveyor;

(b) for its entire length if contrary to subparagraph *a*; in such case, the conveyor shall be under the supervision of a worker while it is in operation.

The conveyors used in mines containing soluble minerals may be equipped with a firefighting sprinkler system as prescribed in subparagraphs 3 and 4 of the first paragraph or with a foam or powder extinguishing system.

O.C. 213-93, s. 374; O.C. 782-97, s. 24; O.C. 1236-98, s. 18.

§ 4. — *Pressure vessels*

375. The intercoolers and discharge coolers and the intake and relief valves of an air compressor shall be examined and cleaned at least once during every 12 months of use, and a report on the examination and cleaning shall be prepared and kept at the mine site.

O.C. 213-93, s. 375.

376. A compressor shall be equipped with a thermometer with a visual indicator located on the high pressure vent side. The normal operating temperature shall be indicated by a red mark on the thermometer scale. A thermometer reading shall be made at least every 4 hours of compressor operation and shall be noted in the register of the work station concerning the compressors.

O.C. 213-93, s. 376.

377. Sections 375 and 376 do not apply to the following compressors:

(1) a compressor that operates individually whose flow does not exceed 8 m^3 (282.5 ft^3) of air per minute;

(2) a compressor using a lubricant other than oil in its cylinders;

(3) a portable compressor.

O.C. 213-93, s. 377.

378. An air compressor shall be protected by at least one safety valve placed so that it cannot be isolated from the compressor by a shut-off.

O.C. 213-93, s. 378; O.C. 1326-95, s. 68.

379. Every safety valve on a compressor whose air flow exceeds 8 m^3 (282.5 ft^3) per minute and every safety valve on a compressed air tank fed by a compressor whose air flow exceeds 8 m^3 (282.5 ft^3) per minute shall be tested at least once per 5 days of use.

Valves located outside a building shall be tested at least once per day of use between 1 December and 31 March and at least once per 5 days of use between 1 April and 30 November.

Non-functioning valves shall be repaired or replaced.

O.C. 213-93, s. 379; O.C. 1326-95, s. 69.

380. The safety valve of a compressor or a compressed air tank shall be calibrated and sealed with lead. The pressure setting and rated capacity shall be stamped on it.

O.C. 213-93, s. 380; O.C. 1326-95, s. 70.

381. A compressed air tank shall be equipped with a relief valve at its lowest point.

Where the volume of the compressed air tank is greater than 1.5 m^3 (53 ft^3), the tank shall be drained at least once every 24 hours of use.

O.C. 213-93, s. 381; O.C. 1326-95, s. 71.

382. A compressed air tank having a volume greater than 1.5 m^3 (53 ft^3) shall be cleaned of any accumulation of oil or other combustible substances at least once every 12 months of use.

O.C. 213-93, s. 382; O.C. 1326-95, s. 72.

383. A compressed air tank installed on or after 1 April 1993 shall be equipped with a safety fuse when the safety valve is placed on a connecting pipe equipped with a nonreturn valve between the safety valve and the tank.

O.C. 213-93, s. 383; Erratum, 1993 G.O. 2, 2603.

384. Before disconnecting a valve or a section of lines on pressure vessels, the feedline shall be shut off and the pressure reduced to zero.

O.C. 213-93, s. 384.

385. Any compressed air line or hydraulic line operating under pressure of more than 200 kPa (29.0 lb/in^2) shall:

(1) if it is metallic, be placed so that it is sheltered from any shock that might be caused by the equipment or by motorized vehicles;

(2) if it is flexible and has an interior diameter of more than 30 mm (1.2 in), be equipped with collars connected by a steel cable 5 mm (0.2 in) in diameter or an equivalent safety chain or a self-locking device to prevent whiplash.

O.C. 213-93, s. 385.

386. Where an operator works less than 3 m (9.8 ft) from a coupler and from lines having a fluid pressure in excess of 10,000 kPa (1,450.3 lb/in^2), they shall be equipped with a non-drilled guard to prevent whiplash and squirting.

O.C. 213-93, s. 386.

DIVISION IX

SPECIAL PROVISIONS FOR CERTAIN TYPES OF WORK

§ 1. — *Arrangement of shafts and protection of workers*

386.1. Every shaft shall be timbered and, during shaft sinking work, the timbering shall be maintained to within 15 m (49.2 ft) of the bottom of the shaft.

However, where a multi-deck work platform is used, a distance of less than

(1) 15 m (49.2 ft) shall be maintained between the base of the platform and the bottom of the shaft, when there are workers at the bottom, except for inspection reasons related to blasting;

(2) 50 m (164.0 ft) shall be maintained between the top of the platform and the lower chair.

O.C. 1326-95, s. 73; O.C. 916-2011, s. 6.

387. Except during the sinking of a shaft, any hoist compartment used for transportation of materials or equipment shall be partitioned off at the entrance to the shaft and at each shaft station in service, except the side where the materials or equipment are loaded or unloaded. The partition shall:

(1) have a height above the floor of the shaft station at least equal to the height of the conveyance plus 2 m (6.6 ft);

(2) extend at least 2 m (6.6 ft) below the floor.

However, a partition built on or after 1 April 1993 shall:

(1) be in wood at least 35 mm (1.4 in) thick or a metal lattice made of No. 9 AWG galvanized steel wire mesh and forming links a maximum of 40 mm (1.6 in) on a side;

(2) have a height above the floor at least equal to the lower of the following heights:

(a) the height of the conveyance plus 2 m (6.6 ft);

(b) 7 m (23.0 ft);

(3) extend at least 2 m (6.6 ft) below the floor.

O.C. 213-93, s. 387; Erratum, 1993 G.O. 2, 2603; O.C. 1236-98, s. 19; O.C. 119-2006, s. 26.

388. The hoistman shall be alerted when a door or a loading chute:

(1) is not obstructing the free passage of a conveyance in a shaft, by means of 2 identical green lights connected in parallel or by a permanent visual signal on a screen;

(2) is obstructing the free passage of a conveyance in a shaft by means of 2 identical red lights connected in parallel or by a permanent visual signal on a screen.

A device shall automatically stop the hoist before the conveyance can come into contact with a door or a loading chute obstructing the shaft.

O.C. 213-93, s. 388; O.C. 465-2002, s. 26.

389. Where a hoisting plant in addition to that used for sinking is operated in a shaft, the workers assigned to shaft sinking shall be protected by:

(1) a partition dividing the parts of the shaft used for hoisting so as to prevent any object falling from one part to another;

(2) a partition resistant to the impact of the heaviest piece of material likely to be hoisted or transported falling from the upper limit of travel of the piece.

O.C. 213-93, s. 389.

390. During shaft sinking work:

(1) the dump door into which the contents of the conveyance are discharged shall be designed so as to prevent any fall of rock or other objects into the shaft during the unloading operation;

(2) at least one safety door shall be installed in a vertical shaft or one inclined at more than 80º from the horizontal; the door shall:

(a) be located below the level of the floor in each station where material and equipment necessary for sinking the shaft is loaded or unloaded;

(b) remain closed and cover the shaft when objects are loaded or unloaded from a conveyance, except when the conveyance is unloaded in accordance with paragraph 1;

(c) be held, when it is open, so that it cannot accidentally project into a hoisting compartment of a shaft;

(d) be controlled by lever that cannot be operated by gravity;

(3) it is prohibited to suspend a load from a hook not equipped with a safety latch.

O.C. 213-93, s. 390.

391. Where a chain is used in a shaft to suspend a conveyance or a work platform, the chain shall:

(1) be of alloyed heat-treated steel and bear the letter “A” on each link to so indicate;

(2) have a safety factor of at least 10 after taking into consideration its possible inclination;

(3) be checked at least once a month and be discarded if:

(a) the chain or any part thereof has stretched by 3% or more of its length;

(b) a link is worn in one place through 10% or more of its diameter;

(c) a link is cracked, misshapen or damaged.

O.C. 213-93, s. 391.

392. Where work is carried out in a compartment of a shaft or a headframe:

(1) the hoistman shall be previously informed and shall cease all hoisting and transport operations non-essential to the work in that compartment;

(2) the non-essential extraction and transport operations shall cease in the portion of the shaft located above the workers unless the compartment in which the work is carried out is separated by a partition from the other compartments of the shaft or the headframe, in which case the hoisting and the transport may be continued in these other compartments.

O.C. 213-93, s. 392.

393. A steel roof at least 4 mm (0.2 in) in thickness or one providing equivalent strength shall protect any worker on the top of a conveyance. In the case of a sinking crosshead, the roof shall be supported by the crosshead and not by the hoisting rope.

O.C. 213-93, s. 393; O.C. 782-97, s. 25.

394. The wearing of a full body harness complying with CAN/CSA Standard Z259.10, Full body harnesses, and the use of a lanyard connected to the hoisting rope complying with CSA Standard Z259.11, Personal energy absorbers and lanyards, are compulsory for any worker on the roof of a moving conveyance.

Notwithstanding the foregoing, where the conveyance is a sinking crosshead, the lanyard shall be attached to an element that is part of the crosshead and not to the hoisting rope.

In addition, the fastening point of the lanyard shall comply with section 7.

O.C. 213-93, s. 394; O.C. 782-97, s. 26; O.C. 460-2000, s. 27; O.C. 80-2023, s. 18; O.C. 33-2024, s. 11.

395. In each shaft in which a hoist is used, a weekly check of the hoist compartments and a detailed monthly inspection of the guides and their mountings, the timbering and the walls of the shaft shall be made.

In each shaft in which a compartment with ladderways or stairways is used as provided for in section 53, a monthly inspection shall be made of the compartment, ladderways and stairways.

O.C. 213-93, s. 395; O.C. 1326-95, s. 74.

396. When an object falls into a shaft:

(1) hoisting operations shall cease immediately;

(2) the parts of the shaft and hoisting rope that could be damaged by the fall of an object shall be inspected;

(3) any breakage that might endanger the safety of workers shall be repaired before hoisting operations resume.

O.C. 213-93, s. 396.

397. The results of the checks or inspections prescribed by sections 395 and 396 shall be entered in the register of the work station concerning the shafts.

O.C. 213-93, s. 397.

§ 2. — *Work in a raise*

398. Except where a mechanical device eliminating the need for ladders is used, any raise inclined at more than 50° from the horizontal and driven for a distance of more than 10 m (32.8 ft) shall be divided into at least 2 compartments, one of which shall be used for a travelway, be equipped with ladders in accordance with sections 67 and 68 and be separated from the other compartments by a partition, a protective grate or by another similar protective separation in order to prevent workers moving in the compartment from being hit by rocks or other matter coming from another compartment.

The timbering may never be more than 5 m (16.4 ft) from the active heading and before each blast, the upper opening of the compartment containing the ladders shall be closed and covered to prevent any rocks from falling into that compartment during the blast.

O.C. 213-93, s. 398; O.C. 782-97, s. 27; O.C. 460-2000, s. 28.

§ 3. — *Work on the accumulation of broken rock*

399. No worker shall stand on broken rock likely to be drawn unless measures to prevent workers being caught by the drawing of ore have been taken.

O.C. 213-93, s. 399.

400. In stopes developed by the shrinkage method:

(1) the workers in the stope shall be informed before each drawing;

(2) no person shall be in the area affected by the drawing;

(3) any hang up shall be detected before the end of the shift and be eliminated before access to the affected area is again permitted.

O.C. 213-93, s. 400.

§ 4. — *Work in an open pit mine*

401. It is forbidden to cause a person to work at a face or at a wall of an open pit mine unless the work is carried out from one of the following places:

(1) a berm;

(2) fixed or mobile scaffolding complying with Subdivision 3.9 of the Safety Code for the construction industry (chapter S-2.1, r. 4):

(3) a hoisting apparatus and a platform that comply with section 3.10.7 of the Safety Code for the construction industry;

(4) an aerial basket that complies with section 2.15.13 of the Safety Code for the construction industry. A worker situated in an aerial basket must wear a safety harness secured by a fall arrest connecting device in the circumstances and on the conditions set out in subparagraph 6 of section 2.15.12 of the Code;

(5) an elevating work platform complying with one of the following standards:

(a) Elevating Rolling Work Platforms, CSA CAN 3-B354.1-M-82;

(b) Self-Propelled Elevating Work Platforms for Use on Paved/Slab Surfaces, CSA CAN 3-B354-2-M-82;

(c) Self-Propelled Elevating Work Platforms for Use, as “Off-Slab Units” CSA CAN 3-B354 3-M-82;

(d) Boom-Type Elevating Work Platforms, CSA CAN 3-B354.4-M-82.

O.C. 213-93, s. 401; O.C. 1326-95, s. 75; O.C. 1393-2024, s. 20.

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 complying with CAN/CSA Standard Z259.2.2, Self-retracting devices, or fall arrester and comply with CSA Standard Z259.2.5, Fall-arresting devices and vertical lifelines, or CSA Standard Z259.2.4, Fall arresters and vertical rigid rails;

(c) be connected to the fall arrest attachment ring which identified for fall arrest on the safety harness;

(2) the life line shall:

(a) comply with CSA Standard Z259.2.5, Fall-arresting devices and vertical lifelines, or CSA Standard Z259.2.4, Fall arresters and vertical rigid rails;

(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 m (300 ft) 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 kN (9,000 lb);

(c) be long enough to reach a safe landing;

(d) not be extended by attaching other ropes;

(e) be less than 90 m (300 ft) 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 kN (4,000 lb). 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 kN (5,000 lb);

(7) a worker shall use a safety harness complying with the CAN/CSA Standard Z259.10, Full body harnesses;

(8) no person shall descend a working face or wall where wind velocity is greater than 50 km/h (31 mph);

(9) no person shall be at the working face or wall during a thunderstorm or heavy rain;

(10) following a thunderstorm 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 (chapter S-2.1).

O.C. 1326-95, s. 76; O.C. 80-2023, s. 19.

DIVISION X

HANDLING AND USE OF EXPLOSIVES

§ 1. — *General*

402. The employer having authority over an establishment shall adopt an explosives management program adapted to the particularities of the mine site and ensure it is applied. The program shall, in particular, cover the following elements:

(1) the storage of explosives;

(2) the transportation of explosives;

(3) the loading of explosives;

(4) initiation systems;

(5) the keeping of registers for the use of explosives;

(6) the destruction of packaging from explosives;

(7) the destruction of deteriorated or expired explosives;

(8) purchases of explosives and equipment;

(9) information on the equipment used for explosives;

(10) relevant training on explosives.

The employer shall also ensure that every employer or self-employed worker storing, transporting, loading or firing explosives on the mine site complies with the explosives management program.

The explosives management program shall be updated every 3 years.

O.C. 213-93, s. 402; O.C. 1236-98, s. 21; O.C. 42-2004, s. 17; O.C. 33-2024, s. 13.

402.1. Blasting and any work requiring the use of explosives must be carried out by a blaster who has received the training referred to in section 27.8 or who holds a shot-firer's certificate issued by the Commission des normes, de l'équité, de la santé et de la sécurité du travail or by an agency recognized by the

Commission in accordance with section 292 of the Regulation respecting occupational health and safety (chapter S-2.1, r. 13), or by an assistant under the supervision and coordination of such a blaster.

The blaster may not be assisted in such work by more than 2 assistants.

O.C. 33-2024, s. 13.

403. Only explosives or a set of explosives producing Class I fumes, in accordance with the classification of the Department of Energy, Mines and Resources of Canada, published in the Supplement to the Canada Gazette, Part I dated 30 March 1991, and entitled Explosives and Blasting Accessories and Associated Products, may be used in an underground mine unless:

(1) the mine is evacuated before the blast;

(2) the air quality of the mine satisfies the standards of section 41 of the Regulation respecting occupational health and safety (chapter S-2.1, r. 13) before allowing workers access to it.

Likewise, explosives of a type other than that producing Class I fumes may be used during work to control the overbreak of the walls of underground openings.

Notwithstanding the foregoing, it is prohibited to use dynamite when its temperature is equal to or below its freezing point.

O.C. 213-93, s. 403; O.C. 885-2001, s. 382.

404. No explosive shall be used if its original wrapping or container does not bear, legibly printed or marked, the following information:

(1) the word “EXPLOSIFS”;

(2) the familiar name of the explosive;

(3) the date of manufacture;

(4) for dynamite, its freezing point;

(5) for underground mines, the class of the blasting fumes.

O.C. 213-93, s. 404; O.C. 221-2009, s. 27.

404.1. Portable tanks used to transport, store or load water-based bulk explosives must

(1) be constructed in such manner that the surfaces in contact with the explosives are of a material that will not react with the explosives;

(2) be used only to transport the explosives;

(3) be identified on all sides by the word “EXPLOSIFS” in letters at least 102 mm (4 in) high;

(4) except while loading, have hatches and valves closed and locked or sealed at all times; and

(5) have a maximum capacity of 1,500 kg (3,307 lb) of explosives.

O.C. 119-2006, s. 28; O.C. 621-2013, s. 4.

405. It is prohibited to use a safety fuse.

O.C. 213-93, s. 405.

406. The explosives with the oldest manufacturing date shall be used first.

O.C. 213-93, s. 406.

407. Explosives showing signs of deterioration may not be used but shall be destroyed immediately, using the method prescribed by the manufacturer.

O.C. 213-93, s. 407.

408. No one may smoke or bring a flame or any other substance or material that would increase the risks of explosion or fire:

(1) in an explosives magazine;

(2) within 8 m (26.2 ft) of an explosive.

O.C. 213-93, s. 408.

408.1. Except for the loading of mine holes, detonators and micro-connectors may not be placed near other types of explosives nor in the same container.

O.C. 1236-98, s. 22.

409. For opening explosives packaging, only tools not causing sparks may be used.

O.C. 213-93, s. 409; O.C. 465-2002, s. 27.

410. The wrappings of empty explosives packaging shall be destroyed, except reusable wrappings considered to contain explosives; the wrappings must be returned to an explosives magazine or in a box on the surface, reserved for that purpose and identified to that effect, located at a distance of at least 23 m (75.5 ft.) from any building.

O.C. 213-93, s. 410; O.C. 119-2006, s. 29; O.C. 621-2013, s. 5.

411. Where it is foreseen that the blasting work will be stopped or interrupted for longer than 6 months, all explosives shall be destroyed according to the specifications of the manufacturer or be returned to the supplier.

O.C. 213-93, s. 411; O.C. 963-2014, s. 11.

412. For any open-pit mine, each primary blast shall be entered in a register of the work station concerning primary blasting under the signature of the blaster in charge of the blast. This register shall contain the following entries:

(1) the date, time and place of the blast;

(2) the location, depth and number of holes blasted;

(3) the mass of explosives, the depth of the stemming used and the ignition delay used, for each hole;

(4) an evaluation of the mass of the explosives used per ton of rock broken;

(5) dangerous situations such as misfires and the damage caused by fly-rocks.

O.C. 213-93, s. 412.

413. When blasting is carried out in contiguous operations and there is danger for workers, the employers shall agree on a blasting timetable.

O.C. 213-93, s. 413.

§ 2. — *Storage of explosives*

414. Inside an explosives magazine, explosives shall be kept in their original packaging.

Detonators and microconnectors may be kept in cases installed for that purpose, provided that the cases are identified by means of the name and characteristic of the product they contain.

O.C. 213-93, s. 414; O.C. 1326-95, s. 77.

415. Explosives located underground or on the surface shall be under the supervision of a worker designated for that purpose or stored, subject to section 416.1, the second paragraph of section 418 and section 423, in magazines that

(1) are used solely for that purpose;

(2) have inside surfaces covered so that no iron or steel is exposed and that no particle of a rough body of iron, steel or a similar substance can become detached or come into contact with the explosives contained in the magazine; however, in underground explosives magazines, the metal parts required for support of the walls of an excavation may be left exposed;

(3) have a smooth and easy-to-clean floor;

(4) should there be any nitroglycerine present, have their shelves and floor treated with a neutralizing product when contaminated by explosive substances, according to the method prescribed by the manufacturer;

(5) are clearly identified by notices bearing the word “EXPLOSIFS” in letters 102 mm (4.0 in) high, placed on the 4 walls of the magazine, on the surface; underground, similar notices shall be placed approximately 20 m (65.6 ft) from both sides of the magazine;

(6) permit, where applicable, the use of forklifts and ES type transpallet trucks as defined in UL 583-1991, Standard for Electric-Battery-Powered Industrial Trucks for the handling of explosives in the magazine.

The motorized vehicles referred to in subparagraph 6 of the first paragraph

(1) must not be left unattended; and

(2) must be parked outside the magazine when they are not in use.

O.C. 213-93, s. 415; O.C. 465-2002, s. 28; O.C. 221-2009, s. 28; O.C. 1431-2021, s. 8.

415.1. Underground, vehicles or pumping equipment used to load bulk explosives must be parked in a storage site that must

(1) be used solely for that purpose;

(2) be located at least 60 m (196.9 ft) from the places referred to in paragraph 2 of section 423;

(3) be identified as provided in subparagraph 5 of the first paragraph of section 415; and

(4) be laid out so that no other vehicle may collide with the vehicles or equipment.

In addition, where the vehicles and equipment referred to in the first paragraph are motorized, they may contain only explosives residues.

For the purposes of this section, "explosives residues" means a quantity of 25 kg (55 lb) or less.

O.C. 119-2006, s. 30; O.C. 1190-2010, s. 14.

415.2. Despite the second paragraph of section 415.1 and section 418, a storage site must be provided with an automatic extinguishing system when motorized vehicles or pumping equipment that could not be completely emptied of their explosives content are parked on the site.

O.C. 221-2009, s. 29.

415.3. An explosives magazine may be used to store water-based bulk explosive tanks.

However, if the tanks are made of sparking components, they shall be stored only in chambers used to store portable tanks of water-based bulk explosives.

O.C. 221-2009, s. 29; O.C. 621-2013, s. 6.

416. An explosives magazine on the surface shall:

(1) be located in accordance with the table of distances in Schedule IV;

(2) be placed farther from an overhead electric power line than the distance between the supports of the line located near the magazine; however, where the distance between the supports of the line is greater than 55 m (180.4 ft), the magazine shall be placed from that line at the greater of the following distances:

(a) 55 m (180.4 ft);

(b) the vertical distance between the magazine and the top of the support closest to the magazine;

(3) be grounded if it is built of metal;

(4) be protected by a lightning rod if it is not built of metal;

(5) be located in an area cleared of wood or other combustible material within a radius of at least 15 m (49.2 ft) around the magazine.

O.C. 213-93, s. 416; O.C. 1326-95, s. 78.

416.1. If emulsion-type bulk explosives are stored in a tank or portable tank on the surface, away from explosives manufacturing sites, the following conditions must be complied with:

(1) the storage area must

(a) be fenced in accordance with section 47 and its access locked;

(b) be clearly identified by red signs posted on the fence on which the word "EXPLOSIFS" is to be printed in white letters at least 102 mm (4 in) high;

(c) comply with paragraphs 1, 2 and 5 of section 416; and

(d) be inspected on a weekly basis and a written report on the inspection must be made immediately and kept on the mine site;

(2) a container made of non-sparking material and having a rigid cover must

(a) be available in the storage area;

(b) be used exclusively to store explosives that were accidentally spilled and contaminated wastes such as gloves and paper; and

(c) be clearly identified by the word “EXPLOSIFS” written on a contrasting background in letters at least 102 mm (4 in) high; and

(3) the explosives accidentally spilled and the contaminated wastes must

(a) be collected with non-sparking tools; and

(b) be destroyed using the method indicated by the manufacturer.

O.C. 221-2009, s. 30.

417. Notwithstanding section 415, a box may be used to store explosives on the surface on the following conditions:

(1) the quantity of explosives stored shall not exceed 75 kg (165.3 lb);

(2) the box shall be red and the word “EXPLOSIFS” shall be printed on all 4 sides and on the cover, in white letters at least 102 mm (4 in) high.

O.C. 213-93, s. 417; O.C. 1326-95, s. 79; O.C. 1236-98, s. 23; O.C. 465-2002, s. 29.

418. Where explosives are kept underground, they must be stored in a magazine

(1) constituted of at least one chamber;

(2) having a steel door at least 6 mm (0.23 in.) thick and opening only outwards where the magazine is built on or after 1 April 1993;

(3) mechanically or naturally ventilated by air intakes at least 0.06 m^2 (93 sq. in.) in area located at the top and bottom of the wall of the magazine; the intakes must be capable of providing at least one change of air per hour and be equipped with a spark arrester;

(4) whose openings, other than those referred to in subparagraphs 2 and 3, must be closed by a shotcrete and reinforced concrete wall at least 152 mm (6 in.) thick or by a concrete wall or concrete block wall at least 300 mm (11.8 in.) thick;

(5) whose walls must be lined so as to prevent any rock from coming loose.

However, explosives used underground may be stored in a recess:

(1) excavated in a rocky wall whose floor is located at least 1 m (3.3 ft) from the floor and roof at the most 2.5 m (8.2 ft) of the floor of the travelway;

(2) with a wooden floor;

(3) with at least one wooden door;

(4) where the quantity of explosives is not more than 250 kg (551.1 lb)

(5) located in accordance with section 424, with the exception of subparagraph *c* of subparagraph 1 of that section; in that case, the distance between the recess and a working face shall be:

(a) at least 60 m (196.8 ft) measured in a straight line from the recess to the working face; or

(b) at least 60 m (196.8 ft) according to the opening the distance between the recess and the working face of which is the shortest, on condition that the thickness of the rock between those 2 points is at least 15 m (49.2 ft);

(6) identifiable in accordance with subparagraph 5 of the first paragraph of section 415 in respect of underground storage.

Explosives used underground may also be stored in a box made of non-sparking material placed in a recess. In such a case, subparagraphs 2 and 3 of the second paragraph do not apply to the recess.

O.C. 213-93, s. 418; Erratum, 1993 G.O. 2, 2603; O.C. 1326-95, s. 80; O.C. 1236-98, s. 24; O.C. 42-2004, s. 18; O.C. 221-2009, s. 31; O.C. 621-2013, s. 7.

418.1. Notwithstanding subparagraph 5 of the second paragraph of section 418, during the sinking of a shaft and the ensuing development work, the recess may be at a minimum distance of 10 m (32.8 ft) from the shaft and the working face until the progress of the work allows compliance with the requirements of subparagraph 5 of the second paragraph of section 418, in which case the quantity of explosives stored in the recess may never exceed the quantity required for one shift.

O.C. 460-2000, s. 29.

418.2. Despite subparagraph 4 of the second paragraph of section 418, when crushing work is carried out with a stationary crusher, the explosives required for the work may be stored in a recess if the quantity of explosives does not exceed 25 kg (55.1 lb); the provisions of subparagraph 6 of the second paragraph of section 418 do not apply to those explosives.

O.C. 42-2004, s. 19.

418.3. Despite section 415 and the second paragraph of section 418, explosives used for a raise carried out by a raise climber may be temporarily stored in a container secured to the basket of the climber under the following conditions:

(1) the raise exceeds 100 m (328.1 ft) from its opening;

(2) the quantity of explosives never exceeds the quantity required for one shift; however, this quantity must never exceed 100 kg (220.5 lb);

(3) the explosives used do not contain nitroglycerine;

(4) the container used is designed and constructed according to the plans and specifications of an engineer and it must be designed for a fire resistance rating of at least 30 minutes; and

(5) the electric squibs or detonators are placed in a separate closed container lined with an electric insulation material.

O.C. 42-2004, s. 19.

419. Where an explosives magazine is constituted of several chambers, they shall be separated from each other by solid rock at least 6 m (19.7 ft) thick.

O.C. 213-93, s. 419.

420. The entire length of a borehole opening into an explosives magazine shall be sealed with cement.

O.C. 213-93, s. 420; O.C. 621-2013, s. 8.

421. *(Revoked).*

O.C. 213-93, s. 421; Erratum, 1993 G.O. 2, 2603; O.C. 621-2013, s. 9.

422. An explosives magazine on the surface shall be closed by a door kept locked.

O.C. 213-93, s. 422.

423. Notwithstanding section 418, when blasting work requires that the explosives be loaded without interruption during a work shift or during more than one shift, the explosives may be stored outside of the explosives magazine or recess and near the place of loading of the explosives provided that:

(1) the quantity of explosives so stored does not exceed the quantity required for the loading or the quantity that can be loaded for a 24-hours period;

(2) the storage site is located at least 60 m (196.9 ft) from a shaft, a hoistroom, a safety station, an explosives or inflammable substances magazine or a room of transformers using an inflammable liquid insulator; the minimum distance is 15 m (49.2 ft) for other types of transformers;

(3) the place of loading is identified by notices bearing the word “LOADING” in light-reflecting paint on both sides in letters at least 102 mm (4.0 in) high and by at least one flashing red light installed at no less than 8 m (26.2 ft) from the site where explosives are stored;

(4) access to the place of loading is closed in the absence of attendants assigned to that task by safety devices such as a barrier or a guardrail, so as to prevent any contact between explosives and a motorized vehicle; and

(5) only authorized workers have access to the place of loading.

O.C. 213-93, s. 423; O.C. 465-2002, s. 30; O.C. 1190-2010, s. 15; O.C. 1431-2021, s. 9.

424. An explosives magazine in an underground mine shall be located:

(1) at least 60 m (196.9 ft) from:

(a) a shaft;

(b) a hoistroom;

(c) a working face;

(d) a refuge station;

(e) a transformer room using an inflammable liquid insulator; the minimum distance shall be 15 m (49.2 ft) for other types of transformers;

(f) another explosives magazine;

(g) an combustible liquids and grease depot set up on or after 12 February 2004 containing over 1,000 litres (220 gallons) of combustible liquids and grease; the minimum distance must be 30 m (98.4 ft) for a depot containing between 101 and 1,000 litres (22.2 and 220 gallons) of combustible liquids and grease;

(2) at least 15 m (49.2 ft) from a main travelway for off-track motorized vehicles in the case of a magazine installed on or after 23 March 2006;

(3) such that it is impossible for a vehicle to collide with the explosives; and

(4) subject to subparagraphs 1 and 2, according to the plans and specifications of an engineer in the case of a magazine installed on or after 23 March 2006.

No person may park a motorized vehicle in front of an explosives magazine, except to allow explosives to be transferred without interruption.

O.C. 213-93, s. 424; O.C. 460-2000, s. 30; O.C. 42-2004, s. 20; O.C. 119-2006, s. 31.

425. The distribution of electricity in explosives magazines shall comply with the following standards:

(1) the maximum voltage of lighting circuits may not exceed 150 V to the ground;

(2) the conductors shall be installed in a rigid conduit with screwed and watertight joints or in an armoured moisture-proof cable;

(3) the lighting fixtures shall be dustproof;

(4) the protective devices and control devices shall be installed in a cabinet placed outside the magazine;

(5) the lighting circuit overload protection shall not exceed 10 A;

(6) the circuits shall be open before the fixtures are opened to change the bulbs;

(7) the metal parts shall be interconnected and permanently grounded.

O.C. 213-93, s. 425.

426. Subject to section 418.3, detonators and microconnectors shall not be stored or kept within 8 m (26.2 ft) of other types of explosives despite subparagraph *f* of subparagraph 1 of the first paragraph of section 424 or brought into a magazine or place where such explosives are stored.

The distance of 8 m (26.2 ft.) must be measured along the longitudinal axis of the drift. That requirement only applies to magazines built on or after 11 July 2013.

O.C. 213-93, s. 426; O.C. 42-2004, s. 21; O.C. 621-2013, s. 10.

427. An explosives magazine shall be heated only by hot air. The capacity of the fan shall allow at least one change of air per hour. The heating element shall be located outside the magazine and the temperature of the hot air at its point of entry into the magazine shall be below 50º C (122º F).

O.C. 213-93, s. 427.

428. A weekly inspection of all explosives magazines, boxes and recesses shall be made to check their conformity with this Division. A written report of the check shall be made and kept on the mine site.

O.C. 213-93, s. 428.

§ 3. — *Transportation of explosives*

429. During transportation of explosives on the surface:

(1) every motorized vehicle used for such transportation shall:

(a) bear the word “EXPLOSIFS” in reflective paint, in letters at least 150 mm (5.9 in) high on a contrasting background, in the front, in the rear and on both sides of the vehicle, or be equipped with a flashing red light visible from all sides of the vehicle; the markings shall be removed or covered and the flashing light extinguished when the vehicle is not transporting explosives;

(b) have all the metal parts that could come into contact with the packaging of the explosives covered with wood, cloth or leather;

(2) no object or material may be transported in or on a vehicle transporting explosives except tools used for blasting on condition that they are in a compartment separated from the explosives;

(3) no motorized vehicle may be loaded to more than 80% capacity, or in the case of a motorized vehicle which transports solely blasting agents, 100% of the lesser of:

(a) its maximum load; and

(b) the vehicle's tire rating;

(4) the part of the motorized vehicle in which the explosives are transported shall be enclosed with side walls and explosives may not be stacked higher than those walls;

(5) it is prohibited to transport detonators and detonating relays in the same vehicle with other explosives unless:

(a) the number of detonators, added to the number of microconnectors, does not exceed 5,000;

(b) the detonators and detonating relays are in a closed compartment, separated from the other explosives by a wooden partition having a thickness of at least 150 mm (5.9 in) or the equivalent; the partition shall be at least 150 mm (5.9 in) above the highest level reached by the stacking of explosives;

(6) a motorized vehicle containing explosives may not be left unattended;

(7) the engine of a motorized vehicle may not be left running during the loading and unloading of explosives, except during the unloading of explosives in bulk;

(8) only workers assigned to the handling of explosives may travel in a motorized vehicle transporting explosives;

(9) it is prohibited to smoke in a vehicle transporting explosives;

(10) it is prohibited to refuel a vehicle loaded with explosives except where the distance to be travelled with the explosives is greater than the range allowed by the capacity of the vehicle's fuel tank; in such case, the vehicle shall nevertheless be refuelled before the explosives are loaded.

O.C. 213-93, s. 429.

430. Before loading explosives into a shaft conveyance, the person in charge of transportation shall inform the hoistman and the deckman, if any, of that intention, except if a video-surveillance camera allows the hoistman to follow the loading.

O.C. 213-93, s. 430; O.C. 465-2002, s. 31.

431. Explosives may not be transported in a shaft conveyance with other materials.

O.C. 213-93, s. 431.

432. Only workers assigned to the handling of explosives in a shaft conveyance may ride in a shaft conveyance with explosives; the explosives load must be secured so that it will not hit the workers or fall on them.

O.C. 213-93, s. 432; O.C. 42-2004, s. 22.

433. In a shaft conveyance, explosives and blasting accessories shall be placed in separate closed containers made of wood or other non-sparking material and used exclusively for that purpose.

The conveyance itself is considered to be a container for the purpose of transporting explosives if the inside surfaces are made of non-sparking material.

O.C. 213-93, s. 433; O.C. 42-2004, s. 23; O.C. 1190-2010, s. 16.

434. Where explosives are transported in a motorized vehicle underground, the provisions of section 429 apply, except subparagraph *a* of paragraph 1.

Moreover, the motorized vehicle shall be designed or adapted for the transportation of explosives, and transportation shall take place under the following conditions:

(1) the vehicle shall be equipped with a flashing red light, visible from all sides and not interfering with the driver's view;

(2) the speed of the vehicle shall be limited to half the speed normally used for the transportation of other materials;

(3) no more than 6,000 kg (13,228 lb.) of explosives may be transported. Despite the foregoing, if detonators or other blasting accessories are transported with explosives, the maximum load must be 3,000 kg (6,614 lb.);

(4) in the case of transportation of explosives in a motorized vehicle on rails:

(a) every car containing explosives shall be designed or adapted for the transportation of explosives and separated from the locomotive by an empty car or a spacing bar of equivalent length;

(b) where the locomotive is a trolley locomotive, every car transporting explosives shall be entirely closed;

(c) explosives may not be transported on a locomotive.

Paragraph 4 of section 429 does not apply when very insensitive substances with a mass explosion hazard, Class 1.5, referred to in paragraph *e* of section 2.10 of the Transportation of Dangerous Goods Regulations (SOR/2001-286), are transported underground. Such explosive substances shall, however, be secured to prevent their movement or spillage during transportation.

O.C. 213-93, s. 434; O.C. 42-2004, s. 24; O.C. 621-2013, s. 12; O.C. 33-2024, s. 14.

435. The transportation of explosives to their destination shall be made without delay and without detours.

O.C. 213-93, s. 435.

436. It is prohibited to transport detonators and detonating relays manually at the same time as other types of explosives unless they are in separate containers.

O.C. 213-93, s. 436.

§ 4. — *Drilling*

437. Before drilling on a working face of an underground mine, it shall be

(1) fully washed with water under a pressure of at least 200 kPa (29 lb/in^2), except in mines containing soluble minerals;

(2) examined to detect misfires, cut-off holes and remnants of drill holes;

(3) in the case of the floor of a site where drilling is carried out,

(a) washed in accordance with paragraph 1 or fully cleaned with compressed air; and

(b) examined in accordance with paragraph 2 and the observations must be recorded in a register.

The first paragraph does not apply where the drilling is carried out by a remote control device, under supervision, and the blasting area is evacuated.

O.C. 213-93, s. 437; O.C. 42-2004, s. 25; O.C. 80-2023, s. 20.

437.1. Before drilling on a working face of an open-pit mine, it must be examined to detect misfires, cut-off holes and remnants of drill holes.

The first paragraph does not apply when the drilling is carried out using a remote control device, under supervision, and when the blasting area is evacuated.

O.C. 33-2024, s. 15.

437.2. Notwithstanding section 437.1, drilling in an open-pit mine may be carried out on broken rock without an examination to detect misfires if the drilling pattern is staggered to ensure a distance of 1.5 m between the holes for the previous blasting and the holes drilled.

Drilling under the first paragraph shall be carried out in accordance with a written procedure drawn up by an engineer.

O.C. 33-2024, s. 15.

438. When the working face has been examined in accordance with sections 437 and 437.1, all remnants of drill holes, except those of a seismic excavation, shall be marked in one of the following ways:

(1) by a circle in paint or crayon of a colour contrasting with the rock;

(2) by inserting a stick into the holes;

(3) in any other way allowing the remnants of drill holes to be marked.

However, ground support may be installed on the roofs and walls of an underground mine up to the working face before the remnants of drill holes are marked.

O.C. 213-93, s. 438; O.C. 33-2024, s. 16.

439. It is forbidden to drill at a distance of less than:

(1) 150 mm (5.9 in) from the bottoms of drill holes that have been loaded and blasted;

(2) 1.5 m (4.9 ft) from a hole containing explosives following a misfire;

(3) 15 m (4.9 ft) from blasted rock that might conceal a misfire;

(4) 5 m (16.4 ft) from any loaded hole or any place where explosives are loaded; however, if the drilling and the loading are carried out alternately, the drilling of a drill hole may be carried out at a distance of less than 5 m (16.4 ft) if the specific conditions of an open-pit mine require it and the following conditions are met:

(a) only cartridged explosives may be used;

(b) drill holes may be drilled only in parallel and their alignment shall be checked so that the margin of error does not exceed 3°;

(c) the minimum distance shall be 1.2 m (3.9 ft) from any hole loaded with explosives or 20% of the depth of the holes, whichever is greater; no hole may be drilled to a depth of more than 12 m (39.4 ft), or more than 15 m (49.2 ft) for holes with a diameter of 102 mm (4 in) or more, except where an engineer certifies, before drilling begins, that deeper holes may be drilled without any danger; the engineer's certification shall be sent to the Commission des normes, de l'équité, de la santé et de la sécurité du travail;

(c.1) if the holes have a depth of 6 m (19.7 ft) or more, the first drilling rod shall be replaced by a guide tube;

(d) loaded holes shall be marked by stakes that are red or carry a red ribbon;

(5) the distance stipulated, in the case of a frozen cut, in any of the following situations:

(a) 300 mm (12 in) from the frozen cut, where it is 460 mm (18 in) deep or less;

(b) a distance equal to the depth of the frozen cut, where it is more than 460 mm (18 in) but less than 915 mm (36 in) deep;

(c) 915 mm (36 in) from the frozen cut, where it is more than 915 mm (36 in) deep.

For the purposes of subparagraphs *a*, *b* and *c* of subparagraph 5 of the first paragraph, the prescribed minimum distance for drilling holes shall be measured from a circle marking the outside edge of the frozen cut and the holes shall be drilled parallel to the cut. In the cases of subparagraphs *b* and *c* of subparagraph 5, the drill holes shall not be deeper than the frozen cut.

For the purposes of subparagraph 5 of the first paragraph, "frozen cut" means the first holes blasted in a round that did not break the rock as expected but rather fractured and compacted it and where explosives are not detected.

O.C. 213-93, s. 439; O.C. 1236-98, s. 25; O.C. 460-2000, s. 31; O.C. 945-2020, s. 4.

440. Notwithstanding section 439, holes may be drilled at distances less than those prescribed by that section provided that the drilling is carried out by a remote control device, under supervision, and that the blasting area is evacuated.

O.C. 213-93, s. 440; O.C. 80-2023, s. 21.

441. A drill hole to be loaded with explosives shall be of a diameter sufficiently large so that the load or the loading hose can pass freely to the bottom of the hole.

O.C. 213-93, s. 441.

442. Drilling and loading of explosives may not be carried out simultaneously within 8 m (26.2 ft) from each other.

O.C. 213-93, s. 442.

443. Before drilling the last round of a rock mass located between 2 underground workings, the working towards which the working face is moving shall be washed and examined and the bottoms of drill holes shall be marked in accordance with section 438.

If the provisions of subparagraph *b* of paragraph 3 of section 437 cannot apply and if the working towards which the working face is moving is inaccessible, drilling must be carried out by means of a remote control device under supervision and the blasting area must be evacuated.

O.C. 213-93, s. 443; O.C. 42-2004, s. 26; O.C. 80-2023, s. 22.

443.1. To drill a drill hole or a round in a cemented rock fill,

(1) the drill used must have an enclosed cab that complies with the plans and specifications of an engineer and the cab glass exposed to the risk of rock projection must be covered with metal mesh and of sufficient resistance to ensure worker safety or designed so as to provide safety equivalent to that combination;

(2) the operator must remain at the controls of the drill for the duration of the drilling.

O.C. 119-2006, s. 33; O.C. 33-2024, s. 17.

444. Diamond drill holes, unless they are intended for blasting, shall be indicated on the mine level plans.

O.C. 213-93, s. 444.

445. When a working face is moving towards a diamond drill hole, access to each point of intersection of the hole with another working shall be blocked off or protected when blasting is done within 5 m (16.4 ft) of the hole.

O.C. 213-93, s. 445.

446. As of 1 April 1993, each diamond drill hole and each point of intersection of such a hole with a working shall be installed in one of the following ways:

(1) they shall be cemented for a minimum length of 5 m (16.4 ft) after the intersection or after the drilling is completed;

(2) they shall be covered with a metal plate at least 12 mm (0.5 in) thick, anchored by 4 rock bolts at least 1.5 m (4.9 ft) long; the plate shall be identified by the letters T.F. and have a pulling resistance of at least 10 metric tons (22,045.9 lb); or

(3) they shall be blocked with a rock bolt having a pulling resistance of at least 10 metric tons (22,045.9 lb).

This section does not apply to a diamond drill hole intended for blasting or a hole used for draining a mine.

O.C. 213-93, s. 446; Erratum, 1993 G.O. 2, 2603.

§ 5. — *Loading of explosives*

447. Explosives may not be brought to the loading area before being ready to load them, and explosives not used when loading has been completed shall be returned to an explosives magazine or a recess for an underground mine or to a box for an open-pit mine.

O.C. 213-93, s. 447; O.C. 42-2004, s. 27.

448. Only the workers and equipment required for loading and blasting may be in a loading area while the explosives are being loaded in the holes until the blasting has been completed; during the loading operation, no other equipment may come into contact with the loaded portion of the drill holes.

O.C. 213-93, s. 448; O.C. 119-2006, s. 34.

448.1. During any interval between loading and blasting, the explosives used must retain their inherent properties until the blasting.

O.C. 119-2006, s. 35.

449. A motorized vehicle may not be driven, parked or stopped over loaded drill holes unless:

(1) the detonator wires and explosives are completely inserted under the collar of the holes;

(2) the collar of the holes is covered with sand or rock dust;

(3) a signaller supervises the movements of the vehicle to see that its wheels or tracks do not pass directly over the holes so protected.

O.C. 213-93, s. 449; O.C. 119-2006, s. 36.

449.1. Except where the conditions prescribed in paragraphs 1 and 2 of section 449 are complied with, when an electrical apparatus, such as a shovel or drill, is used near a loaded hole, the distance between the trailing cable and the hole loaded with explosives shall not be less than 3 m (9.8 ft).

O.C. 1236-98, s. 26.

449.2. No motorized vehicle may be driven, parked or stopped under loaded drill holes in the roof of an underground working unless

(1) the detonator wires and explosives are completely inserted in the holes; and

(2) the collar of the holes is capped.

O.C. 119-2006, s. 37.

450. In case of a storm or blizzard in the area where an electrically-fired blast is being prepared on the surface, within a shaft or an adit, and if electrical detonators and detonating relays have been placed in or connected to loaded or partially loaded holes, the blasting area shall be evacuated by all workers who might be exposed to the risk of an accident in case of a premature explosion caused by lightning or a blizzard. The unused detonators and detonating relays shall be returned to the explosives magazine, and access to the blasting area shall be guarded until there is no further risk of a storm or blizzard.

O.C. 213-93, s. 450.

451. A primer cartridge shall be prepared only at the time a drill hole is primed.

O.C. 213-93, s. 451.

452. It is forbidden to use iron or steel tools in a drill hole containing explosives or during the loading of explosives.

O.C. 213-93, s. 452.

453. Subject to section 454, the verification of a drill hole, the clearing of obstructions and any corrections shall take place before the hole is loaded.

O.C. 213-93, s. 453.

453.1. In the presence of sulphurous rock that may react with explosives placed in the drill hole, the following conditions shall be complied with to prevent predetonation:

(1) a rock characterization certified by an engineer must first be carried out to ascertain the reaction potential in the presence of the explosives used; and

(2) if the results indicate a reaction potential, the following measures must be taken:

(a) hole temperature measurements must be taken before loading the explosives;

(b) drill holes whose temperature may provoke a reaction of the explosives must not be loaded, unless the temperature is controlled; and

(c) a written procedure for loading and blasting must be developed and applied; the procedure must include

i. the loading sequence;

ii. the maximum delay between the beginning of the loading and the blasting;

iii. the measures to be taken in case of smoke release from a drill hole that is already loaded or being loaded; and

iv. the use of inhibitor explosives or other explosives compatible with existing conditions.

O.C. 221-2009, s. 33.

453.2. In the presence of sulphurous rock or sulphurous rock dust, the following events must be entered in a register:

(1) any reaction observed of an explosive in a drill hole;

(2) any predetonation; and

(3) any explosion or dust fire resulting from blasting.

O.C. 221-2009, s. 33.

454. Where loading of explosives is carried out progressively, the cleaning of obstructions from a blocked hole is permitted, provided that subparagraph *c* of subparagraph 4 of the first paragraph of section 439 is respected.

O.C. 213-93, s. 454.

455. Where detonating cord is used, the following conditions shall be satisfied:

(1) it is prohibited to place spliced cord ends in a drill hole;

(2) all drill holes must be loaded and workers and equipment not required must be evacuated from the blasting area before the primer detonators are connected to the main fuse or shock tubes.

O.C. 213-93, s. 455; O.C. 119-2006, s. 39.

456. When explosives in bulk and in cartridge form are loaded pneumatically:

(1) only semiconductor hoses manufactured for that purpose may be used;

(2) the loading equipment may not be grounded by connecting it to piping, a rail or other continuous conductors;

(3) the grounding shall be performed according to the manufacturer’s specifications;

(4) if electric primers are used:

(a) no plastic or other non-conducting liner may be used in the hole;

(b) the loading equipment shall be grounded if the primer is placed in the drill hole before or during loading.

O.C. 213-93, s. 456.

456.1. If a pumping unit is used to load water-based explosives, it must

(1) be used in compliance with the safety rules set out in the Guidelines for the Pumping of Water-Based Explosives, published by the Department of Natural Resources of Canada, Explosives Regulatory Division, 30 November 1998 Edition;

(2) be clearly identified by red signs posted on all 4 sides of the unit with the word "EXPLOSIFS" written in white letters at least 102 mm (4.0 in) high; and

(3) be brought to the loading site at the required time for the loading operation and returned to the storage site or magazine in compliance with the provisions of sections 415.1 and 415.2 as soon as the loading is completed.

O.C. 221-2009, s. 34.

457. Where electrical blasting takes place:

(1) no bare junctions in the detonator lead wires and blasting lines may come into contact with each other or with anything else;

(2) where balanced circuits are necessary, each circuit shall be checked before blasting, using a blasting galvanometer;

(3) the entire circuit shall be checked in accordance with paragraph 2 before connecting the detonator circuits to the blasting line;

(4) the blasting line shall be short-circuited when the detonator wires are interconnected and connected to the conductors of the blasting line;

(5) the short circuit prescribed by paragraph 4 may not be opened until the workmen have reached shelter;

(6) the worker who interrupts the short circuit prescribed by paragraph 4 shall be sheltered from any projection of a premature explosion;

(7) the blasting line shall be disconnected from the blasting machine and short-circuited immediately after firing, and where a blasting switch is used, it shall be locked immediately after firing;

(8) where electrical detonators are used:

(a) the detonator wires may not be shortened;

(b) the detonator wires may not be thrown to untangle them;

(c) radio transmitters and cellular telephones shall be turned off within 20 m (65.6 ft) of the blasting site; at least one sign in letters at least 102 mm (4.0 in) high must be posted near the site directing that radio transmitters and cellular telephones be turned off.

O.C. 213-93, s. 457; O.C. 460-2000, s. 32; O.C. 221-2009, s. 35.

458. The blasting line shall be connected to the power source only after evacuation of the blasting area and immediately before blasting. The blasting line shall be disconnected and short-circuited immediately after blasting.

O.C. 213-93, s. 458.

459. A blasting machine shall:

(1) be tested to check its capacity before each blast requiring the blasting machine to operate at full capacity;

(2) bear an inscription clearly indicating its capacity;

(3) be used strictly within the limits of its capacity.

O.C. 213-93, s. 459.

460. A blasting line shall:

(1) be distinguished from other cables and wires by its color or the presence of a rib on the outer sheath;

(2) be used only for blasting;

(3) be constituted for its entire length of 2 conductors isolated from each other and from the ground;

(4) be arranged so as not to come into contact with:

(a) an electrical power line or communication line;

(b) a metal pipe, rail or other conductive equipment;

(5) be disconnected from the main circuit when it enters a location such as a tunnel, a sub-level or an abandoned sector of the mine;

(6) be checked to ensure its conductivity and for that purpose, the use of an electric detonator is prohibited.

O.C. 213-93, s. 460; O.C. 42-2004, s. 28; O.C. 1190-2010, s. 17.

461. Where a common source of electric power is used to set off explosive charges at more than one work site, the following standards shall be respected:

(1) the short circuit of the main blasting line may not be interrupted before blasting;

(2) a 3-position switch shall be provided for each firing circuit; the switch shall be locked either in the short-circuit position or in the closed position, making it possible to:

(a) short-circuit the circuit;

(b) power the circuit;

(c) test the circuit;

(3) the blasting lines and blasting switches shall be identified with a tag and the switches shall bear an inscription allowing them to be identified.

O.C. 213-93, s. 461.

462. Where explosive charges are fired by means of an electric power system:

(1) the electrical circuit shall be:

(a) isolated and not grounded;

(b) used only for blasting;

(2) the blasting switch shall be designed so that:

(a) the switch mechanism automatically returns to the open position by gravity;

(b) the conductors leading to the charges are automatically short-circuited when the switch is in the open position;

(c) the energized switch terminals are enclosed in a fixed metal box;

(d) the box in which the firing conductors and the short-circuiting device are placed is provided with a door and a closing device designed so that the door can be closed only when the switch is in the open position; this door shall be kept locked except at firing time; the key shall be accessible only to the person in charge of blasting;

(3) a disconnecting device with overcurrent protection shall be installed between the source of power and the blasting switch; a horizontal protective gap against lightning of at least 1.5 m (4.9 ft) shall be provided between the disconnecting device and the blasting switch, and the gap may be closed only at the time of firing;

(4) the voltage of the firing device shall not exceed 220 V.

O.C. 213-93, s. 462; O.C. 1326-95, s. 81.

§ 6. — *Firing*

463. When blasting on the surface:

(1) a warning before a primary blast shall be given by means of a siren between 3 and 5 minutes before blasting and a second warning given 1 minute before blasting;

(2) following the blast, a sound signal giving workers permission to return to their places of work shall be given;

(3) where a worker must remain in the blasting area, the worker must be provided with a shelter that protects against fly-rock; the location, design or construction of the shelter must be certified by a certificate signed and sealed by an engineer;

(4) when blasting is carried out near a building, a railway line, a road or an electric power line, the blasting charge shall be controlled and a blasting mat placed on the blasting site; the mat must

(a) be constructed and maintained so that no metallic part comes into contact with the explosives;

(b) be deposited but not slid into place; and

(c) when made of tailings, contain no single or aggregate particles having a diameter larger than 5 mm (0.2 in).

O.C. 213-93, s. 463; O.C. 42-2004, s. 29; O.C. 221-2009, s. 36.

464. Before firing, all access routes and approaches to the blasting area must be closed using identified barricades or be guarded to prevent any unexpected arrival of persons in the blasting area.

O.C. 213-93, s. 464; O.C. 119-2006, s. 41.

465. Before firing underground,

(1) a warning must be given in the blasting area by an audible, visual or vocal signal and workers not assigned to the firing must be evacuated from that area; and

(2) when a worker must remain in the blasting area, the worker must be provided with a shelter that protects against fly-rock; the location, design or construction of the shelter must be certified by a certificate signed and sealed by an engineer.

O.C. 213-93, s. 465; O.C. 42-2004, s. 30.

466. The excavation toward which the working face is moving shall be considered as being in the blasting zone when the distance between the bottom of the deepest drill hole and the wall of this excavation is less than 5 m (16.4 ft) or when the thickness of the rock mass is less than twice the length of the deepest drill hole if that hole is more than 5 m (16.4 ft) deep. In such cases, sections 464 and 465 apply.

O.C. 213-93, s. 466.

466.1. If a blasting remote initiator is operated by wireless remote control, the control must

(1) meet the requirements of subparagraphs 5 to 7 of the first paragraph of section 211 and sections 213 to 214;

(2) be rendered inoperative if at least one of the malfunctions described in section 211.1 occurs; and

(3) answer to the frequency assigned to it, except for a digital remote control with a single encoding.

O.C. 221-2009, s. 37.

§ 7. — *Waiting period*

467. No person may leave a shelter to return to a blasting area before 10 minutes have elapsed since the closing of the firing circuit, where the firing has been done by electric detonators and the explosion has been heard.

Where no explosion has been heard following the firing and a defect in the electrical circuit has been observed, the circuit shall be repaired after the blaster has seen personally that the blasting line wires are short-circuited and disconnected from the power source and, where a firing switch is used, it shall be in the open position and the door of the box shall be locked.

O.C. 213-93, s. 467.

§ 8. — *Misfires*

468. Work in a heading or in the sinking of a shaft may not be abandoned or stopped before:

(1) the material broken at the time of firing of the last shot have been removed from the heading and the bottom of the shaft;

(2) any working face or bottom of the shaft has been examined to detect the presence of explosives or blasting agents in the misfires or in cut-off holes.

O.C. 213-93, s. 468.

469. Any explosive charge that has misfired may not be extracted, but shall be fired again during the same shift. However, except for dynamite, other types of explosives may be withdrawn by washing them with water, or if they are loaded in holes under water, by blowing air into them. Packaged aqueous gelatins may be withdrawn by hooking them with an instrument in accordance with section 473.

O.C. 213-93, s. 469.

470. Subject to section 469, if a misfire has not been fired before the end of a shift, the employer shall be informed by the worker of the situation and of the location of the hole. The necessary steps shall then be taken to remedy the situation.

O.C. 213-93, s. 470.

471. A drill hole loaded with nitro-carbonitrate shall be entirely washed before repriming it with a new primer.

O.C. 213-93, s. 471.

472. The unstemming of a drill hole is prohibited where it was sealed by a self-tightening device.

O.C. 213-93, s. 472.

473. The components of the instruments used for unstemming and penetrating into a drill hole shall be of non-ferrous materials.

O.C. 213-93, s. 473.

474. During the unstemming, repriming and firing operations of a drill hole or misfire, workers who are not assigned to such operations shall be sent to a shelter.

O.C. 213-93, s. 474.

475. Where dynamite has been used:

(1) it is forbidden to unstem a drill hole unless a tamping plug having a thickness of 100 mm (3.9 in) is first placed between the explosive charge and the stemming at the time the drill hole is loaded;

(2) the tamping plug shall consist of paper or any other solid non-ferrous material, brightly-coloured and contrasting with the color of the packaging of the explosive and the stemming used;

(3) during unstemming of a drill hole, the tamping plug and the explosives shall not be subjected to stress or shock;

(4) the unstemming of a drill hole shall be stopped when the tamping plug is reached; a primer shall then be placed on the contact of the tamping plug, and the hole shall be restemmed.

O.C. 213-93, s. 475.

DIVISION XI

ELECTRICITY

§ 1. — *General*

476. Subject to paragraph 3 of section 109, paragraphs 4 and 5 of section 130, sections 131 and 132, paragraph 2 of section 172, section 217, sections 232 to 235, section 416, paragraph 2 of section 423, subparagraph *e* of subparagraph 1 of the first paragraph of section 424, section 425, and sections 457 to 462, the electrical equipment installed in a mine shall comply with the Canadian Electrical Code (Part I) made by Order in Council 141-87 dated 28 January 1987 and the Québec amendments thereto made by Minister's Order dated 11 March 1987, and any later provisions amending it, as well as with CSA Standard M421-11, Use of electricity in mines, as published in November 2011, with the exception of the definition of mine and of what is provided for in the following provisions:

— in open-pit mines and quarries:

(1) 5.4.7.2 related to the emergency stop for mobile electrical equipment.

— in underground mines:

(1) 6.2.1.6 *(a)* related to the protection of insulated phase conductors in mineshaft cables;

(2) 6.9.3.6 related to the activation of the protective circuit in a hoist drum;

(3) 6.9.12 *(b)* related to the emergency stop for a conveyance hoisting system.

O.C. 213-93, s. 476; O.C. 945-2020, s. 5.

476.1. Electrical equipment having a voltage of 440 V or more, such as stations, substations or control panels of motorized equipment, must be maintained under a preventive maintenance program specific to the establishment that includes periodic inspections in accordance with the manufacturer's instructions, if any.

The inspection results must be recorded in a register.

O.C. 119-2006, s. 43.

477. The control devices shall be padlocked in the open position to prevent the electrical equipment from being energized while work is being done on it. The padlocks shall be placed and removed only by the persons carrying out the work on the electrical equipment and each person working on it shall install his own personal padlock.

The tags warning that work is being done on the electrical equipment that could come into contact with energized equipment shall be made of insulating material.

O.C. 213-93, s. 477.

478. The surface of the walls where the control equipment cabinets are installed shall be covered with non-combustible materials and an air space of at least 10 mm (0.4 in) shall be left behind the cabinets.

O.C. 213-93, s. 478.

479. A warning sign shall be posted at the entrance of a transformer room conveying the following information:

(1) the words "DANGER… V", the highest voltage being written between the 2 words, all in characters at least 25 mm (1.0 in) in height;

(2) the measures to be taken in case of an electrical fire;

(3) the first aid to be given to persons suffering from an electric shock.

O.C. 213-93, s. 479.

480. Every uninsulated energized conductor less than 2.5 m (8.2 ft) above the floor or the ground shall be protected by a barrier or a shield. The floor or the ground shall be covered with a non-conductive material such as a rubber mat.

O.C. 213-93, s. 480.

§ 2. —

(Revoked)

O.C. 213-93, Sd. 2; O.C. 945-2020, s. 6.

481. *(Revoked).*

O.C. 213-93, s. 481; O.C. 945-2020, s. 6.

482. *(Revoked).*

O.C. 213-93, s. 482; O.C. 945-2020, s. 6.

483. *(Revoked).*

O.C. 213-93, s. 483; O.C. 945-2020, s. 6.

484. *(Revoked).*

O.C. 213-93, s. 484; O.C. 945-2020, s. 6.

§ 3. — *Transformer rooms*

485. All transformers shall be kept inside a room with a door that is to be kept locked, unless they are inside a locked box that prevents any contact with a live component.

A transformer room installed on or after 1 April 1993 in which there are exposed live components shall be separated from the control panel section by a non-combustible partition.

O.C. 213-93, s. 485; Erratum, 1993 G.O. 2, 2603; O.C. 1236-98, s. 27.

486. No transformer room in an underground mine may be less than 15 m (49.2 ft) from the timbering of a shaft measuring the distance along the longitudinal axis of the travelways. In addition, there shall be at least 4.5 m (14.8 ft) of rock between a transformer and a shaft.

O.C. 213-93, s. 486.

487. A transformer filled with inflammable liquid and located underground shall be installed in a chamber of fire resistant construction and located at least 15 m (49.2 ft) from a stope.

O.C. 213-93, s. 487.

488. A transformer room shall be equipped with a pan having sufficient capacity to hold any liquid that could escape from all the transformers located in the room.

O.C. 213-93, s. 488.

489. A transformer having Class B or C insulation or filled with non-inflammable dielectric liquid shall be separated from a stope by fencing or a room built entirely of non-combustible materials.

For the purposes of this section, “Class B insulation” means insulation that provides protection at least equal to that of mica, asbestos, fibreglass wool or any other similar inorganic material bonded by organic substances, and “Class C insulation” means insulation that provides protection at least equal to that of mica, porcelain, glass, quartz or any other similar inorganic material.

O.C. 213-93, s. 489.

490. A transformer of the dry type, naturally cooled and having Class A insulation, may not be installed underground.

For the purposes of this section, "Class A insulation" means insulation providing protection at least equal to that of one of the following materials:

(1) cotton, silk, paper or any other similar organic material impregnated in dielectric liquid or immersed in such liquid;

(2) moulded or laminated materials containing cellulose, phenol resins or other resin with similar properties;

(3) films and foils of cellulose acetate or any other by-product of cellulose with similar properties;

(4) varnishes and enamels applied to conductors.

O.C. 213-93, s. 490.

491. Where the ventilation of a transformer room is provided by air intakes, fire dampers controlled from outside the room and a fire door shall be installed.

O.C. 213-93, s. 491.

492. A transformer room or enclosure may not be used for storage, and only the equipment required for the operation or safety of the transformer installations may be located in a transformer room or enclosure.

O.C. 213-93, s. 492.

493. In a transformer room or enclosure, an electric motor, a transformer, starting apparatus or any other similar electrical apparatus shall be mounted on a non-combustible stand. Combustible or inflammable substances may not be stored inside or within 1 m (3.3 ft) of the room, enclosure or cabinet containing the electrical apparatus.

O.C. 213-93, s. 493.

§ 4. — *Switchboards*

494. A switchboard shall be built of non-combustible materials and fixed in the vertical position on a metal frame.

O.C. 213-93, s. 494.

495. The highest point of the control levers and the visible contacts of the disconnecting devices shall be located less than 2 m (6.6 ft) from a floor or a work platform.

O.C. 213-93, s. 495.

496. A switchboard installed underground shall be located in a location:

(1) separated from travelways;

(2) having its floor installed so that water cannot accumulate on it;

(3) at least 3.5 m (11.5 ft) from the timbering of a shaft.

O.C. 213-93, s. 496.

§ 5. — *Wiring*

497. Except for a flexible cord supplying portable apparatus, a cable supplying the signal system and a blasting cable, any conductor or cable shall satisfy the following requirements:

(1) a conductor or a cable suspended in a shaft or in a drill hole inclined more than 45º from the horizontal and carrying power at or over 150 V to ground shall be armoured with steel wire, or the cable shall be covered with interlocked or fixed armour made of metal or another material providing at least equal electrical protection and designed so that the inner sheath cannot slide in the armour;

(2) a conductor or a cable installed underground transmitting power at or over 150 V to ground shall be armoured or shall be in a rigid metal conduit, a flexible conduit or a metal electric tube;

(3) a conductor or a cable transmitting power at or not over 150 V to ground shall be in a metal conduit or a sheath of a material that is flameproof;

(4) conductors in a light conduit or an AC type cable may not be used;

(5) a conductor shall not be smaller than No. 12 AWG.

O.C. 213-93, s. 497; O.C. 1431-2021, s. 10.

498. The non-magnetic metal sheaths of single-wire cables shall be:

(1) electrically interconnected and grounded at intervals not exceeding 30 m (98.4 ft);

(2) grounded only at the supply point and thereafter isolated from ground and from each other.

O.C. 213-93, s. 498.

499. The lead sheath and the armour of a polyphase cable shall be:

(1) electrically interconnected throughout their length;

(2) electrically connected at both ends of the cable and to non-current-carrying parts of the electrical equipment or machines to which they are connected;

(3) grounded to the ground network by a connection having an electrical conductivity that is at least that of the metallic armour;

(4) protected against corrosion, if they are exposed to it.

O.C. 213-93, s. 499.

500. The ends of a cable having a lead sheath shall have watertight couplings to prevent infiltration of water into the cable.

O.C. 213-93, s. 500.

501. A junction box joining cables that carry energy at a voltage above 300 V may not be installed in a shaft or within 3.5 m (11.5 ft) of a shaft or on the timbering of a shaft station or a headframe.

Such a box shall be watertight when installed in a shaft for repairing or extending a cable.

O.C. 213-93, s. 501.

502. A junction box referred to in the first paragraph of section 501 shall be installed in a room separated from any shaft station.

O.C. 213-93, s. 502.

503. Conductors of different voltages may not be placed in the same raceway or armouring, unless each conductor is insulated for the highest voltage used by means of sheaths, or in the case of a raceway, by means of insulating partitions.

O.C. 213-93, s. 503.

504. Conducting cables supplying mobile electrical equipment at a voltage of more than 300 V, including grounding conductors, shall meet CSA Standard C-22.2 No. 96M1989 Portable Power Cables, and the following specifications:

(1) the cable-filling material shall be rubber or any other synthetic material with similar properties;

(2) each phase conductor shall be of a gauge equal to or larger than No. 8 AWG;

(3) the grounding conductors shall be uninsulated or shall be covered with a semi-conducting insulation or shall have a total conductance equal to or greater than 60% of that of the largest phase conductor; each grounding conductor shall be equal to or larger than No. 8 AWG;

(4) where the insulated monitoring conductor in a cable supplying energy to a single piece of equipment is supplied to it by a separate power source, the energy supplying the equipment shall be disconnected when the conductors of the separate energy source are cut or when a grounding conductor is broken.

O.C. 213-93, s. 504.

505. Each trailing cable shall be attached mechanically to mobile electrical equipment supplied by it in order to prevent any strain on the terminals or the disconnecting device of the trailing cable. Trailing cables shall be disconnected from their power source when the electrical energy is not being used.

O.C. 213-93, s. 505.

506. Cable couplers on circuits operating at voltages higher than 300 V shall be:

(1) of a type designed for the cables on which they are used;

(2) of a design and dimensions suitable for the worst conditions under which they are used;

(3) equipped with covering, hoods or seals to cover the unprotected ends when they are disconnected;

(4) equipped with cable clamps and gaskets on the joints to prevent any infiltration of water;

(5) designed so that they comply with one of the following requirements designed to prevent accidental disconnection when they are energized:

(a) special tools shall be used to separate the sections;

(b) the sections shall be held together by a padlock;

(c) a control circuit shall be included and shall trip the cable circuit breaker to de-energize the phase terminals before separating them.

O.C. 213-93, s. 506.

§ 6. — *Protection and control devices*

507. The protection and control devices shall:

(1) be placed, labelled or marked so as to identify the circuits or the electrical equipment protected or controlled by them;

(2) indicate their opening and closing positions, when manually operated;

(3) be installed so that they cannot be closed by gravity.

O.C. 213-93, s. 507.

508. The covers of the boxes of disconnecting devices shall:

(1) be designed so that they can be opened without using tools;

(2) have windows of a transparent shatterproof material that allow the contacts of the devices to be seen.

O.C. 213-93, s. 508.

509. Instruments indicating the presence of ground leaks shall be installed on an ungrounded distribution network whose voltage exceeds 300 V.

O.C. 213-93, s. 509.

510. Ground leak protection devices to automatically isolate a defective circuit shall be installed on a neutral grounded distribution network whose voltage exceeds 300 V.

O.C. 213-93, s. 510.

511. A switch or an outlet shall be placed at the connection points of temporary wiring or of a flexible cord with a permanent circuit.

O.C. 213-93, s. 511.

512. A disconnecting device shall be installed on the surface on each electrical energy supply circuit going underground.

O.C. 213-93, s. 512.

513. Non-conductive partitions shall be installed between circuits where more than one set of single-pole disconnecting devices are mounted side by side.

O.C. 213-93, s. 513.

514. The blades of a knife switch shall be maintained so that they remain aligned with the fixed part of the contact in order to ensure their closing with a single continuous motion.

O.C. 213-93, s. 514.

515. In a circuit whose voltage exceeds 300 V to ground, a disconnecting switch with visible air-break contacts shall be connected between a control device and the source of electric power, unless the control device makes a visible air-break on each phase of the circuit.

For the purposes of this section, “visible break” means that the separation between the fixed and mobile current-carrying parts of a switch or a disconnecting break than can be visually checked.

O.C. 213-93, s. 515.

516. Each box of drawout type equipment that is supplied by a voltage exceeding 300 V to ground shall bear a notice indicating that the equipment must be drawn out before working on its associated electric circuit.

O.C. 213-93, s. 516.

517. Where sequence interlocking systems are used, double voltage relays with partitions or the equivalent shall be installed to eliminate contacts that could still be energized in a contactor in the open position, unless the relays are grouped in a separate box.

O.C. 213-93, s. 517.

518. The circuit of a motor shall be equipped with a disconnecting device for disconnecting all the conductors that are not grounded and that are connected to protective and control devices, except if several motors are operating together and depend upon a single disconnecting device.

O.C. 213-93, s. 518.

519. A switch or an equivalent disconnecting device and an overload protection device shall be installed at the supply point of each trailing cable supplying a piece of mobile electrical equipment.

O.C. 213-93, s. 519.

520. A disconnecting device shall be installed on the end of each trailing cable connected to a piece of mobile electrical equipment.

O.C. 213-93, s. 520.

521. Each plug receptacle operating at over 300 V shall have a disconnecting device placed less than 1 m (3.3 ft) from the receptacle. This device shall be used to de-energize the receptacle before a plug is connected or disconnected.

O.C. 213-93, s. 521.

522. Overcurrent protection devices such as fuses and circuit breakers shall be installed on both ends of the cables of a battery charger.

O.C. 213-93, s. 522.

§ 7. — *Grounding*

523. The link between electrical equipment installed underground and the surface grounding network shall be completed or replaced by a copper conductor when the cabling is not made with cables containing one or more grounding conductors.

O.C. 213-93, s. 523.

524. The resistance of a grounding network may not exceed 6 ohms.

O.C. 213-93, s. 524.

525. A grounding conductor shall be protected by means of a non-metallic covering when it is exposed to mechanical damage. This covering may be metallic if the conductor is connected electrically to both ends of the protective covering.

O.C. 213-93, s. 525.

526. A grounding conductor may not be connected to the grounding network before the contact has been cleaned of rust, scale and paint.

This contact shall be made by means of welded, screwed, bolted or pressure terminals, clamps or grounding straps protected against any deterioration.

O.C. 213-93, s. 526.

527. The ground of a network supplying mobile electrical equipment on the surface shall be separate and placed at least 20 m (65.6 ft) from any other ground.

The conductor linking this ground to the network supplying the mobile electrical equipment shall be insulated.

O.C. 213-93, s. 527.

§ 8. — *Telephone and signalling apparatus*

528. Telephone or signalling apparatus used underground or in a headframe shall be of a type designed to operate in a damp site and shall be resistant to mechanical damage, and when placed in a box, the box shall be non-combustible.

O.C. 213-93, s. 528.

529. Except for boxes with a pull cord used by the conveyance attendant to send signals, no telephone or signalling apparatus may be fixed to the timbering of a shaft.

O.C. 213-93, s. 529.

530. Contacts in signal boxes shall be mounted horizontally or so as to prevent accidental closing of a circuit by gravity.

O.C. 213-93, s. 530.

531. Telephone cables and signalling cables may not come into contact with each other or with other conductors or electrical equipment. Separate armoured cables shall be used in the shafts for telephone and signal systems.

O.C. 213-93, s. 531.

§ 9. — *Trolleys*

532. The breaking strength of a trolley wire may not be less than that of a hard-drawn No. O AWG copper conductor.

O.C. 213-93, s. 532.

533. A trolley wire shall be supported by insulated hangers, solidly attached to the roof or ceiling and may not zigzag. In travelways the clearance between a trolley wire and the roof or ceiling shall be at least 75 mm (3.0 in) when the trolley passes through.

O.C. 213-93, s. 533.

534. A trolley wire shall be located at least 2.5 m (8.2 ft) above the track, or the rated voltage may not exceed 300 V, and it shall be protected in accordance with section 535.

O.C. 213-93, s. 534.

535. The protective device for a trolley wire shall be made of insulating material. The device shall extend at least 75 mm (3.0 in) beyond the lowest point of the trolley wire and may not be further than 225 mm (8.9 in) from it.

O.C. 213-93, s. 535.

536. The tracks, in a trolley transport system, are used for current return shall be electrically bonded by linkages at the switches, the frogs and other openings in order to provide electrical continuity for the rails. In addition, cross bonding shall be installed between the 2 rails at not more than 60 m (196.9 ft) intervals.

O.C. 213-93, s. 536.

§ 10. — *Plan of electrical network*

537. Diagrams to scale, updated at intervals not exceeding 12 months shall contain the following information:

(1) the location of any fixed electrical equipment;

(2) the paths of the fixed supply conductors and the grounding networks;

(3) the power of the electrical conductors and of the electrical equipment on a single-line diagram.

The diagrams shall be kept on the mine site.

O.C. 213-93, s. 537.

DIVISION XII

FINAL

538. The provisions of regulations made under the Act respecting occupational health and safety (chapter S-2.1), and regulations maintained in force under sections 286, 294, 300 and 310 of that Act which apply to an establishment and any subsequent provisions amending them apply to a mine except to the extent they are inconsistent with this Regulation.

O.C. 213-93, s. 538; O.C. 1326-95, s. 82; O.C. 782-97, s. 28; O.C. 966-2015, s. 6.

539. *(Omitted).*

O.C. 213-93, s. 539.

540. *(Amendment integrated into c. S-2.1, r. 6, s. 8.6.2).*

O.C. 213-93, s. 540.

541. *(Amendment integrated into c. S-2.1, r. 13, s. 3).*

O.C. 213-93, s. 541.

542. *(Amendment integrated into c. S-2.1, r. 15, s. 23).*

O.C. 213-93, s. 542.

543. *(Amendment integrated into c. S-2.1, r. 15, s. 24).*

O.C. 213-93, s. 543.

544. *(Amendment integrated into c. S-2.1, r. 15, s. 25).*

O.C. 213-93, s. 544.

545. *(Amendment integrated into c. S-2.1, r. 15, s. 26).*

O.C. 213-93, s. 545.

546. *(Amendment integrated into c. S-2.1, r. 15, s. 28).*

O.C. 213-93, s. 546.

547. *(Amendment integrated into c. S-2.1, r. 15, s. 63).*

O.C. 213-93, s. 547.

548. *(Amendment integrated into c. S-2.1, r. 15, s. 65).*

O.C. 213-93, s. 548.

549. *(Amendment integrated into c. S-2.1, r. 15, s. 71).*

O.C. 213-93, s. 549.

550. *(Omitted).*

O.C. 213-93, s. 550; Erratum, 1993 G.O. 2, 2603 and 2769.

SCHEDULE I

(s. 131)

Types of fire	Types of Extinguishers according to Class of Fire
- **Fire of ordinary combustible matter**	
(wood, garbage, paper, textile, other similar material)	A
- **Fire of inflammable liquids**	
(solvent, gasoline, grease, oil, paint and other similar inflammable liquids)	B
- **Fire in electrical equipment**	
(electrical apparatus, switch, conductor, board, outlet and other similar electrical equipment)	C
- **Fire of combustible metal**	
(magnesium, potassium, sodium, titanium).	D

O.C. 213-93, Sch. I.

SCHEDULE II

(s. 269)

SIGNALS CODE

Signal	Meaning	Type of signal
1 bell	Stop immediately if the hoist is in motion	Executive
1 bell following a destination signal	Hoist	Executive
3 bells - pause - 3 bells - pause - 1 bell	Hoist slowly	Executive
2 bells following a destination signal	Lower	Executive
3 bells - pause - 3 bells - pause - 2 bells	Lower slowly	Executive
1 bell - pause - 2 bells	Chairing and Unchairing	Executive
3 bells	Men about to ascend or descend hoisting conveyance	Cautionary
5 bells	Release signal	Cautionary
9 bells	Danger signal	Cautionary
SHAFT SINKING/BUCKET		
3 bells - pause - 1 bell	Hoist	Executive, between the bottom of the shaft and the lower chair
3 bells - pause - 2 bells	Lower	Executive, between the lower chair and the bottom of the shaft.

O.C. 213-93, Sch. II; O.C. 42-2004, s. 31.

SCHEDULE III

(s. 277)

DESTINATION SIGNALS

The following destination signals shall indicate the stations on the different levels of each shaft of an underground mine and they shall be used concurrently with the other signals required by the Regulation. In addition, the signals must also serve as destination signals for the lower chair level towards which the workers are descending during the sinking of a shaft:

Levels	**Signals**
Upper landing or skip unloading landing	2 bells - pause - 1 bell
Shaft opening	2 bells - pause - 2 bells
1st level	2 bells - pause - 3 bells
2nd level	2 bells - pause - 4 bells
3rd level	2 bells - pause - 5 bells
4th level	4 bells - pause - 1 bell
5th level	4 bells - pause - 2 bells
6th level	4 bells - pause - 3 bells
7th level	4 bells - pause - 4 bells
8th level	4 bells - pause - 5 bells
9th level	5 bells - pause - 1 bell
10th level	5 bells - pause - 2 bells
11th level	5 bells - pause - 3 bells
12th level	5 bells - pause - 4 bells
13th level	5 bells - pause - 5 bells
14th level	6 bells - pause - 1 bell
15th level	6 bells - pause - 2 bells
16th level	6 bells - pause - 3 bells
17th level	6 bells - pause - 4 bells
18th level	6 bells - pause - 5 bells

The signals for the lower levels shall follow this progression as the depth increases, unless there are 29 levels or more, in which case the series beginning with the number 9 shall not be used. Consequently, the signal for the 29th level is: 10 bells — pause — 1 bell, and the following signals shall continue in that progression.

O.C. 213-93, Sch. III; O.C. 42-2004, s. 32.

SCHEDULE IV

(s. 416)

TABLE OF DISTANCES IN TERMS OF QUANTITIES OF EXPLOSIVES CONTAINED IN THE MAGAZINE

Quantity of explosives in:	Distance separating the explosives magazine from:						Quantity of explosives in:
	(1)		(2)		(3)		
kilograms	(pounds)	metres	(feet)	metres	(feet)	metres	(feet)	kilograms	(pounds)
50	(110.2)	23	(75.5)	23	(75.5)	9	(29.5)	50	(110.2)
100	(220.5)	23	(75.5)	32	(105.0)	11	(36.1)	100	(220.5)
200	(440.9)	26	(85.3)	52	(170.6)	14	(45.9)	200	(440.9)
250	(551.1)	30	(98.4)	60	(196.9)	15	(49.2)	250	(551.1)
300	(661.4)	34	(111.5)	68	(223.1)	16	(52.5)	300	(661.4)
400	(881.8)	41	(134.5)	82	(269.0)	18	(59.1)	400	(881.8)
500	(1,102.3)	47	(154.2)	94	(308.4)	19	(62.3)	500	(1,102.3)
600	(1,322.8)	53	(173.9)	105	(344.5)	20	(65.6)	600	(1,322.8)
800	(1,763.7)	65	(213.3)	130	(426.5)	23	(75.5)	800	(1,763.7)
1,000	(2,204.6)	75	(246.1)	150	(492.1)	24	(78.7)	1,000	(2,204.6)
1,500	(3,306.9)	100	(328.1)	200	(656.2)	27	(88.6)	1,500	(3,306.9)
2,000	(4,409.2)	120	(393.7)	240	(787.4)	30	(98.4)	2,000	(4,409.2)
2,500	(5,511.5)	135	(442.9)	270	(885.8)	32	(105.0)	2,500	(5,511.5)
3,000	(6,613.8)	150	(492.1)	300	(984.3)	34	(111.5)	3,000	(6,613.8)
4,000	(8,818.3)	175	(574.1)	350	(1,148.3)	38	(124.7)	4,000	(8,818.3)
5,000	(11,022.9)	190	(623.4)	380	(1,246.7)	41	(134.5)	5,000	(11,022.9)
6,000	(13,227.5)	200	(656.2)	400	(1,312.3)	44	(144.4)	6,000	(13,227.5)
7,000	(15,432.1)	210	(689.0)	420	(1,378.0)	46	(150.9)	7,000	(15,432.1)
10,000	(22,045.9)	240	(787.4)	480	(1,574.8)	52	(170.6)	10,000	(22,045.9)
15,000	(33,068.8)	270	(885.8)	540	(1,771.7)	59	(193.6)	15,000	(33,068.8)
20,000	(44,091.7)	300	(984.3)	600	(1,968.5)	66	(216.5)	20,000	(44,091.7)
25,000	(55,114.6)	320	(1,049.9)	640	(2,099.7)	70	(229.7)	25,000	(55,114.6)
30,000	(66,137.6)	340	(1,115.5)	680	(2,231.0)	74	(242.8)	30,000	(66,137.6)
40,000	(88,183.4)	380	(1,246.7)	760	(2,493.4)	82	(269.0)	40,000	(88,183.4)
50,000	(110,229.3)	410	(1,345.1)	820	(2,690.3)	88	(288.7)	50,000	(110,229.3)
75,000	(165,343.9)	470	(1,542.0)	940	(3,084.0)	100	(328.1)	75,000	(165,343.9)
100,000	(220,458.6)	525	(1,722.4)	1,050	(3,444.9)	110	(360.9)	100,000	(220,458.6)
125,000	(275,573.2)	558	(1,830.7)	1,115	(3,658.1)	120	(393.7)	125,000	(275,573.2)

150,000	(330,687.8)	588	(1,911.0)	1,175	(3,855.0)	128	(419.9)	150,000	(330,687.8)

EXPLANATION OF DISTANCE COLUMNS

(1) Any outside assembly place or any water or land communications way, except a way leading to the explosives magazine;

(2) Any building or explosives magazine not referred to in paragraph 3;

(3) Any other explosives magazine separated by a mound of earth or equivalent substance that is as high as the edge of the roof of the explosives magazine and at least 1 m (3.3 ft) wide at the top so as to form a shield between each magazine. (Column 3 applies only to the distance between explosives magazines).

Note: For the purposes of calculating the distance, 1,300 detonators or 150 detonating relays are equivalent to 1 kg (2.2 lb) of explosives.

O.C. 213-93, Sch. IV; O.C. 460-2000, s. 33.

SCHEDULE V

(s. 299)

INSTALLATION OF WIRE CLAMP WITH U-BOLT AND BASE PLATE

Cable diameter	Number of clamps	Space between the clamps	Tightening torque (lb - ft)	Tightening torque (lb - ft)
			No. 1 clamp	No. 2 clamp +
3/4	7	5"	55	65
7/8"	7	6 1/2"	100	120
1"	7	7"	100	120
1 - 1/8"	8	9"	100	120
1 - 1/4"	8	10"	150	180
1 - 3/8"	8	10"	150	180
1 - 1/2"	9	10 1/2"	150	240
1 - 5/8"	9	10 1/2"	150	270
1 - 3/4"	9	10 1/2"	150	300
1 - 7/8"				
2"	9	12"	200	375
2 - 1/16"				
2 - 1/2"	10	12"	200	375

O.C. 213-93, Sch. V.

SCHEDULE VI

(Revoked)

O.C. 782-97, s. 29; O.C. 465-2002, s. 32; O.C. 445-2016, s. 6.

SCHEDULE VII

(ss. 100.1 and 102)

MINIMUM VENTILATION RATE (CANMET CERTIFICATION

The minimum ventilation rate of a diesel engine used in an underground mine shall be the higher of the values calculated in accordance with the following methods:

(a) the rate required to dilute contaminants in the exhaust gases in accordance with CAN/CSA Standard M424.2M90, Non-Rail-Bound Diesel-Powered Machines for Use in Non-Gassy Underground Mines or CAN/CSA Standard M424.1-88, Flameproof Non-Rail-Bound Diesel-Powered Machines for Use in Gassy Underground Coal Mines, as the case may be;

(b) the rate required to dilute the predominant contaminant to a concentration equal to the value of the denominator, which represents the contaminant, where the value calculated in accordance with paragraph a is insufficient to dilute the combustion emissions indicated in the equation below to concentrations lower than the respective individual value of the denominator in that equation for each of the contaminants.

Equation:

$$EQI = \frac{CO}{50} + \frac{NO}{25} + \frac{RCD}{2} + 1.5\left[\frac{SO_2}{3} + \frac{RCD}{2}\right] + 1.2\left[\frac{NO_2}{3} + \frac{RCD}{2}\right]$$

O.C. 460-2000, s. 34.

UPDATES
O.C. 213-93, 1993 G.O. 2, 1757, 2603 and 2769
O.C. 1326-95, 1995 G.O. 2, 2984
O.C. 374-97, 1997 G.O. 2, 1420
O.C. 782-97, 1997 G.O. 2, 2744
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O.C. 460-2000, 2000 G.O. 2, 2009
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O.C. 885-2001, 2001 G.O. 2, 3888
O.C. 465-2002, 2002 G.O. 2, 2283
O.C. 42-2004, 2004 G.O. 2, 821
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S.Q. 2007, c. 3, s. 72
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O.C. 150-2019, 2019 G.O. 2, 413
O.C. 945-2020, 2020 G.O. 2, 2675
O.C. 816-2021, 2021 G.O. 2, 2103
O.C. 1431-2021, 2021 G.O. 2, 4912
O.C. 80-2023, 2023 G.O. 2, 84
O.C. 33-2024, 2024 G.O. 2, 286
O.C. 1393-2024, 2024 G.O. 2, 3562