CODES AND REGULATIONS: CONTENTS

Building Code

Extracts from the National Building Code of Canada 2020

3.2.6. ADDITIONAL REQUIREMENTS FOR HIGH BUILDINGS (SEE NOTE A-3.2.6.)

3.2.6.1. APPLICATION

1. Except as provided in Sentence (2), this Subsection applies to a building
   a) of Group A, D, E or F major occupancy classification that is more than
      i) 36 m high, measured between grade and the floor level of the top storey, or
      ii) 18 m high, measured between grade and the floor level of the top storey, and in which the cumulative or total occupant load on or above any storey above grade, other than the first storey, divided by 1.8 times the width in metres of all exit stairs at that storey, exceeds 300,
   b) containing a Group B major occupancy in which the floor level of the highest storey of that major occupancy is more than 18 m above grade,
   c) containing a floor area or part of a floor area located above the third storey designed or intended as a Group B, Division 2 or 3 occupancy, or
   d) containing a Group C major occupancy whose floor level is more than 18 m above grade.
2. This Subsection applies to a building or part of a building constructed in conformance with Article 3.2.2.57. in which the floor level of the highest storey is more than 18 m above grade.

3.2.7. LIGHTING AND EMERGENCY POWER SYSTEMS

3.2.7.3. EMERGENCY LIGHTING

1.Emergency lighting shall be provided to an average level of illumination not less than 10 lx at floor or tread level in
   a) exits
   b) principal routes providing access to exit in open floor areas and in service rooms,
   c) corridors used by the public,
   d) corridors serving sleeping rooms in a treatment occupancy,
   e) corridors serving sleeping rooms in a care occupancy, except corridors serving sleeping rooms within individual suites of care occupancy,
   f) corridors serving classrooms,
   g) underground walkways,
   h) public corridors,
   i) floor areas or parts thereof where the public may congregate
      i) in Group A, Division 1 occupancies, or
      ii) in Group A, Division 2 and 3 occupancies having an occupant load of 60 or more,
   j) floor areas or parts thereof of daycare centreswhere persons are cared for, and
   k) food preparation areas in commercial kitchens.
   l) public washrooms that are equipped to servemore than one person at a time,
   m) locations where doors are equipped with an electromagnetic lock as described in Clauses 3.4.6.16.(5)(k) and (6)(g), and
   n) universal washrooms, universal shower rooms and accessible change spaces required by Article 3.8.2.8.
2. Emergency lighting to provide an average level of illumination of not less than 10 lx at floor or catwalk level shall be included in a service space referred to in Sentence 3.2.1.1.(8).
3. The minimum value of the illumination required by Sentences (1) and (2) shall be not less than 1 lx.
4. In addition to the requirements of Sentences (1) to (3), the installation of battery-operated emergency lighting in buildings or part thereof where treatment is provided shall conform to the appropriate requirements of CSA Z32, “Electrical Safety and Essential Electrical Systems in Health Care Facilities”.

3.2.7.4. EMERGENCY POWER FOR LIGHTING

1. An emergency power supply shall be
   a) provided to maintain the emergency lighting required by this Subsection from a power source such as batteries or generators that will continue to supply power in the event that the regular power supply to the building is interrupted, and
   b) so designed and installed that upon failure of the regular power it will assume the electrical load automatically for a period of
      i) 2hfora building within the scope of Subsection 3.2.6.,
      ii) 1hfora building of Group B major occupancy classification that is not within the scope of Subsection 3.2.6.,
      iii) 1hfora building constructed in accordance with Article 3.2.2.51. or 3.2.2.60., and
      iv) 30 min for a building of any other occupancy.
      (See Note A-3.2.7.4.(1).)

2.If self-contained emergency lighting units are used, they shall conform to CSA C22.2 No. 141, “Emergency Lighting Equipment.”

3.2.7.5. EMERGENCY POWER SUPPLY INSTALLATION

1. Except as required by Articles 3.2.7.6. and 3.2.7.7., an emergency electrical power supply system shall be installed in conformance with CSA C282, “Emergency electrical power supply for buildings.”(See Sentence 3.2.7.8.(1) for emergency electrical power supply for voice communication systems.)

3.4.5. EXIT SIGNS

3.4.5.1. EXIT SIGNS

1. Every exit door shall have an exit sign providing visual information placed over or adjacent to it if the exit serves
   a) a building more than 2 storeys in building height,
   b) a building having an occupant load of more than 150, or
   c) a room or floor area that has a fire escape as part of a required means of egress
2. Every exit sign providing visual information shall
   a) be visible on approach to the exit,
   b) consist of a green and white or lightly tinted graphical symbol

meeting the colour specifications referred to in ISO 3864-1, "Graphical symbols – Safety coloursand safety signs–Part 1: Design principlesfor safety signs and safety markings," and

c) conform to ISO 7010, "Graphical symbols – Safety colours and safety signs – Registered safety signs," for the following symbols (see Note A-3.4.5.1.(2)(c)):

i) E001 emergency exit left,

ii) E002 emergency exit right,

iii) E005 90-degree directional arrow, and

iv) E006 45-degree directional arrow.

3. Internally illuminated exit signs shall be continuously illuminated and

a) where illumination of the sign is powered by an electrical circuit, be constructed in conformance with CSA C22.2 No. 141, "Emergency lighting equipment," or

b) where illumination of the sign is not powered by an electrical circuit, be constructed in conformance with CAN/ULC-S572, "Standard for Photoluminescent and Self-Luminous Exit Signs and Path Marking Systems."

4. Externally illuminated exit signs shall be continuously illuminated and be constructed in conformance with CAN/ULC-S572, "Standard for Photoluminescent and Self-Luminous Exit Signs and Path Marking Systems." (See Note A-3.4.5.1.(4).)

5. The circuitry serving lighting for externally and internally illuminated exit signs shall

a) serve no equipment other than emergency equipment, and

b) be connected to an emergency power supply as described in Article 3.2.7.4.

6. Where no exit is visible from a public corridor, from a corridor used by the public in a Group A or B major occupancy, or from principal routes serving an open floor area having an occupant load of more than 150, an exit sign conforming to Clauses (2)(b) and (c) with an arrow or pointer indicating the direction of egress shall be provided.

7. Except for egress doorways described in Sentence 3.3.2.4.(4), an exit sign conforming to Sentences (2) to (5) shall be placed over or adjacent to every egress doorway from rooms with an occupant load of more than 60 in Group A, Division 1 occupancies, dance halls, licensed beverage establishments, and other similar occupancies that, when occupied, have lighting levels below that which would provide easy identification of the egress doorway.

3.4.5.3. SIGNS FOR STAIRS AND RAMPS AT EXIT LEVEL

1. In a building more than 2 storeys in building height, any part of an exit ramp or stairway that continues up or down past the lowest exit level shall have a posted sign clearly indicating that it does not lead to an exit.

Division B

Notes to Part 3

FIRE PROTECTION, OCCUPANT SAFETY AND ACCESSIBILITY

A-3.1.2. USE CLASSIFICATION. The purpose of classification is to determine which requirements apply. This Code requires classification in accordance with every major occupancy for which the building is used or intended to be used. Where necessary, an application clause has been inserted in this Part to explain how to choose between the alternative requirements which multiple occupancy classification may present.

A-3.1.2.1.(1) MAJOR OCCUPANCY CLASSIFICATION. The following are examples of the major occupancy classifications described in Table 3.1.2.1.:

Group A, Division 1

Motion picture theatres

Opera houses

Television studios admitting a viewing audience

Theatres, including experimental theatres

Group A, Division 2

Art galleries

Auditoria

Bowling alleys

Churches and similar places of worship

Clubs, nonresidential

Community halls

Courtrooms

Dance halls

Exhibition halls (other than classified in Group E)

Gymnasia

Lecture halls

Libraries

Licensed beverage establishments

Museums

Passenger stations and depots

Recreational piers

Restaurants

Schools and colleges, nonresidential

Undertaking premises

Group A, Division 3

Arenas

Indoor swimming pools, with or without spectator seating

Rinks

Group A, Division 4

Amusement park structures (not elsewhere classified)

Bleachers

Grandstands

Reviewing stands

Stadia

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Group B, Division 1
Jails
Penitentiaries
Police stations with detention quarters
Prisons
Psychiatric hospitals with detention quarters
Reformatories with detention quarters

Group B, Division 2
Care facilities with treatment
Convalescent /recovery/rehabilitation centres with treatment
Hospices with treatment Hospitals Infirmaries
Nursing homes with treatment
Psychiatric hospitals without detention quarters
Respite centres with treatment

Group B, Division 3
Assisted/supportive living facilities
Care facilities without treatment
Children's custodial homes
Convalescent/recovery/rehabilitation centres without treatment
Group homes
Hospices without treatment
Nursing homes without treatment
Reformatories without detention quarters
Respite centres without treatment

Group C
Apartments
Boarding houses
Clubs, residential
Colleges, residential
Convents
Dormitories
Hotels
Houses
Lodging houses
Monasteries
Motels
Schools, residential

Group D
Banks
Barber and hairdressing shops
Beauty parlours
Dental offices
Dry cleaning establishments, self-service, not using flammable or explosive solvents or cleaners
Laundries, self-service
Medical offices
Offices
Police stations without detention quarters
Radio stations
Small tool and appliance rental and service establishments

Group E
Department stores
Exhibition halls
Markets
Shops
Stores
Supermarkets

Group F, Division 1
Bulk plants for flammable liquids
Bulk storage warehouses for hazardous substances
Cereal mills
Chemical manufacturing or processing plants
Distilleries
Dry cleaning plants
Feed mills
Flour mills
Grain elevators
Lacquer factories
Mattress factories
Paint, varnish and pyroxylin product factories
Rubber processing plants
Spray painting operations
Waste paper processing plants

Group F, Division 2
Aircraft hangars
Box factories
Candy plants
Cold storage plants
Dry cleaning establishments not using flammable or explosive solvents or cleaners
Electrical substations
Factories
Freight depots
Helicopter landing areas on roofs
Laboratories
Laundries, except self-service
Mattress factories
Planing mills
Printing plants
Repair garages
Salesrooms
Service stations

Storage rooms
Television studios not admitting a viewing audience
Warehouses
Wholesale rooms
Woodworking factories
Workshops

Group F, Division 3

Creameries
Factories
Laboratories
Light-aircraft hangars (storage only)
Power plants
Salesrooms
Sample display rooms
Storage garages, including open air parking garages
Storage rooms
Warehouses
Workshops

9.9.11. SIGNS

9.9.11.1. APPLICATION

1. This Subsection applies to all exits except those serving not more than one dwelling unit or a house with a secondary suite.

9.9.11.2. VISIBILITY OF EXITS

1. Exits shall be located so as to be clearly visible or their locations shall be clearly indicated.
2. Where an exit door leading directly to the outside is subject to being obstructed by parked vehicles or storage because of its location, a visible sign or a physical barrier prohibiting such obstruction shall be installed or the exterior side of the door.

9.9.11.3. EXIT SIGNS

1. Every exit door shall have an exit sign placed over it or adjacent to it if the exit serves
   a) a building that is 3 storeys in building height,
   b) a building having an occupant load of more than 150, or
   c) a room or floor area that has a fire escape as part of a required means of egress.
2. Every exit sign shall
   a) be visible on approach to the exit,
   b) Consist of a green pictogram and a white or lightly tinted graphical symbol meeting the colour specifications referred to in ISO 3864-1, “Graphical symbols – Safety colours and safety signs – Part 1: Design principles for safety signs in workplaces and public areas,” and
   c) conform to the dimensions indicated in ISO 7010, “Graphical symbols – Safety colours and safety signs – for the following symbols (see A-3.4.5.1.(2)(c)
      i) E001 emergency exit left,
      ii) E002 emergency exit right,
      iii) E005 90-degree directional arrow, and
      iv) E006 45-degree directional arrow.
3. Internally illuminated exit signs shall be continuously illuminated and
   a) where illumination of the sign is powered by an electrical circuit, be constructed in conformance with CSA C22.2 No. 141, “Emergency Lighting Equipment,” or
   b) where illumination of the sign is not powered by an electrical circuit, be constructed in conformance with CAN/ULC-S572, “Photoluminescent and Self-Luminous Signs and Path Marking Systems.”
4. Externally illuminated exit signs shall be continuously illuminated and be constructed in conformance with CAN/ULC-S572, “Photoluminescent and Self-Luminous Signs and Path Marking Systems.” (See A-3.4.5.1.(4).)
5. The circuitry serving lighting for externally and internally illuminated exit signs shall
   a) serve no equipment other than emergency equipment, and
   b) be connected to an emergency power supply as described in Sentences 9.9.12.3.(2), (3) and (7).
6. Where no exit is visible from a public corridor, from a corridor used by the public, or from principal routes serving an open floor area having an occupant load of more than 150, an exit sign conforming to Clauses (2)(b) and (c) with an arrow or pointer indicating the direction of egress shall be provided.

9.9.11.4. SIGNS FOR STAIRS AND RAMPS AT EXIT LEVEL

1. In buildings that are 3 storeys in building height, any part of an exit ramp or stairway that continues up or down past the lowest exit level shall be clearly marked to indicate that it does not lead to an exit, if the portion beyond the exit level may be mistaken as the direction of exit travel.

9.9.12. LIGHTING

9.9.12.2. REQUIRED LIGHTING IN EGRESS FACILITIES

1. Every exit, public corridor or corridor providing access to exit for the public shall be equipped to provide illumination to an average level of not less than 50 lx at floor or tread level and at all points such as angles and intersections at changes of level where there are stairs or ramps.
2. The minimum value of the illumination required by Sentence (1) shall be not less than 10 lx

9.9.12.3. EMERGENCY LIGHTING

1. Emergency lighting shall be provided in
   a) exits,
   b) principal routes providing access to exit in an open floor area,
   c) corridors used by the public,
   d) underground walkways, and

e) public corridors.

2. Emergency lighting required in Sentence (1) shall be provided from a source of energy separate from the electrical supply for the building.
3. Lighting required in Sentence (1) shall be designed to be automatically actuated for a period of at least 30 min when the electric lighting in the affected area is interrupted.
4. Illumination from lighting required in Sentence (1) shall be provided to average levels of not less than 10 lx at floor or tread level.
5. The minimum value of the illumination required by Sentence (4) shall be not less than 1 lx.
6. Where incandescent lighting is provided, lighting equal to 1 W/m^2 of floor area shall be considered to meet the requirement in Sentence (4).
7. Where self-contained emergency lighting units are used, they shall conform to CSA C22.2 No. 141, “Emergency Lighting Equipment.”

Electrical Code

Extracts from the Canadian Electrical Code 2024

SECTION 46 — EMERGENCY POWER SUPPLY, UNIT EQUIPMENT, EXIT SIGNS, AND LIFE SAFETY SYSTEMS

46-000 SCOPE (SEE APPENDIX B)

1. This Section applies to the installation, operation, and maintenance of
   a) emergency power supply and unit equipment intended to provide power to life safety systems; and
   b) emergency power supply and unit equipment intended to provide illumination of exit signs, in the event of failure of the normal supply, where the emergency power supply is required by the National Building Code of Canada.
2. This Section applies to the wiring between the emergency power supply and life safety systems that are required by the National Building Code of Canada to be provided with an emergency power supply.
3. This Section applies to the wiring of exit signs.
4. The requirements of this Section supplement or amend the general requirements of this Code.

46-002 SPECIAL TERMINOLOGY (SEE APPENDIX B)

In this Section, the following definitions apply:

Emergency power supply
Emergency power, supplied by a generator, batteries, or a combination thereof, that is required by the National Building Code of Canada.

Life safety systems
Emergency lighting and fire alarm systems that are required to be provided with an emergency power supply from batteries, generators, or a combination thereof, and electrical equipment for building services such as fire pumps, elevators, smoke-venting fans, smoke control fans, and dampers that are required to be provided with an emergency power supply by an emergency generator in conformance with the National Building Code of Canada.

Unit equipment
Unit equipment for emergency lighting conforming to CSA C22.2 No. 141.

GENERAL

46-100 CAPACITY

Emergency power supply and unit equipment shall have adequate capacity and rating to ensure the satisfactory operation of all connected equipment when the principal source of power fails.

46-102 INSTRUCTIONS

1. Complete instructions for the operation and care of an emergency power supply or unit equipment that shall specify testing at least once every month to ensure security of operation shall be posted on the premises in a frame under glass.
2. The form of instructions and their locations shall be in compliance with the National Building Code of Canada.

46-104 MAINTENANCE

Where batteries are used as a source of the emergency power supply, the batteries shall be kept
   a) in proper condition; and
   b) fully charged at all times

46-106 ARRANGEMENT OF LAMPS

1. Emergency lights shall be arranged so that the failure of any one lamp will not leave in total darkness the area normally illuminated by it.
2. No appliance or lamp, other than those required for emergency purposes, shall be supplied by the emergency circuits.

46-108 WIRING METHOD (SEE APPENDICES B AND G)

1. Except as permitted by Subrule (3), Rule 46-304(3), and Rule 46-400(2), the following conductors shall be installed in accordance with Subrule (2):
   a) insulated conductors and cables required for operation of life safety systems and installed between an emergency power supply and life safety systems;
   b) insulated conductors and cables between an emergency power supply and exit signs; and
   c) insulated conductors and cables between unit equipment and remote lamps.
2. The insulated conductors described in Subrule 1) shall be
   a) installed in metal raceway of the totally enclosed type;
   b) incorporated in a cable having a metal armour or sheath;
   c) installed in rigid non-metallic conduit; or
   d) installed in electrical non-metallic tubing where embedded in at least 50 mm of masonry or poured concrete.
3. Notwithstanding Subrule 2), insulated conductors installed in buildings of combustible construction in accordance with Rules 12-566 to 12-570 shall be permitted to be
   a) run as a non-metallic-sheathed cable; or
   b) installed in a totally enclosed non-metallic raceway.
4. Insulated conductors and cables installed in accordance with Subrule 1) shall be kept entirely independent of all other insulated conductors and equipment and shall not enter a luminaire, raceway, box, cabinet, or unit equipment occupied by other insulated conductors except where necessary
   a) in transfer switches; and
   b) in exit signs and emergency lights supplied from two sources.
5. Insulated conductors and cables installed between an emergency power supply and any electrical equipment that is not defined as a “life safety system” in accordance with this Section shall not enter a luminaire, raceway, box, or cabinet occupied by insulated conductors installed as described in Subrule 1), except where necessary in busways, splitters, and other similar enclosures provided for connection to the overcurrent device for an emergency power supply described in Rule 46-208 1).

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EMERGENCY POWER SUPPLY

46-200 EMERGENCY POWER SUPPLY (SEE APPENDIX B)

Rules 46-202 to 46-212 apply only to emergency power supply from central standby power sources.

46-202 TYPES OF EMERGENCY POWER SUPPLY (SEE APPENDICES B AND G)

1. The emergency power supply shall be a standby supply consisting of
   a) a storage battery of the rechargeable type having sufficient capacity to supply and maintain at not less than 91% of full voltage the total load of the emergency circuits for the time period required by the National Building Code of Canada, but in no case less than 30 min, and equipped with a charging means to maintain the battery in a charged condition automatically; or
   b) a generator.
2. Automobile batteries and lead batteries not of the enclosed glass-jar type are not considered suitable under Subrule (1) and shall be used only where a deviation has been allowed in accordance with Rule 2-030.
3. Where a generator is used, it shall be
   a) of sufficient capacity to carry the load;
   b) arranged to start automatically without failure and without undue delay upon the failure of the normal power supply to any transfer switch connected to this generator; and
   c) in conformance with CSA C282.

46-204 PROTECTION OF ELECTRICAL CONDUCTORS AND CABLES (SEE APPENDIX B)

All power, control, and communication insulated conductors and cables between an emergency generator as described in Rule 46-202 3) and electrical equipment required to be installed as a part of the emergency power supply and located outside the generator room shall be protected against fire exposure to provide continued operation in compliance with the National Building Code of Canada.

46-206 CONTROL

1. An emergency power supply shall be controlled by automatic transfer equipment that actuates the emergency power supply upon failure of the normal current supply and that is accessible only to authorized persons.
2. An automatic light-actuated device shall be permitted to be used to control separately the lights located in an area that is adequately illuminated during daylight hours without the need for artificial lighting.

46-208 OVERCURRENT PROTECTION (SEE APPENDIX B)

1. The overcurrent device for an emergency power supply shall be coordinated with the overcurrent devices of feeders and branch circuits supplying life safety systems and other electrical equipment connected to the emergency power supply in order to provide selective operation of the branch circuit overcurrent device when a fault occurs in that branch circuit.
2. The branch circuit overcurrent devices shall be accessible only to authorized persons.
3. Notwithstanding Subrule 1), where the overcurrent protective devices are permitted to be connected upstream from the main disconnecting means and overcurrent device connecting the generator to the remainder of the emergency electrical power system in accordance with Rule 32-306 6) or CSA C282, selective coordination between these overcurrent protective devices shall not be required.

46-210 AUDIBLE AND VISUAL TROUBLE-SIGNAL DEVICES

1. Every emergency power supply shall be equipped with audible and visual trouble-signal devices that warn of derangement of the current source or source(s) and that indicate when exit signs or life safety systems are supplied from the emergency power supply
2. Audible trouble signals shall be permitted to be connected so that
   a) they can be silenced, but a red warning or trouble light shall continue to provide the protective function; and
   b) when the system is restored to normal, the audible signal will
      i) sound, indicating the need to restore the silencing switch to its normal position; or
      ii) reset automatically so as to provide sound for any subsequent operation of the emergency power supply.

46-212 REMOTE LAMPS

Lamps shall be permitted to be mounted at some distance from the current supply that feeds them, but the voltage drop in the wiring feeding such lamps shall not exceed 5% of the applied voltage.

UNIT EQUIPMENT

46-300 UNIT EQUIPMENT (SEE APPENDIX B)

Rules 46-302 to 46-306 apply to individual unit equipment for emergency lighting only.

46-302 MOUNTING OF EQUIPMENT

Each unit equipment shall be mounted with the bottom of the enclosure not less than 2 m above the floor, wherever practicable.

46-304 SUPPLY CONNECTIONS

Each unit equipment shall be mounted with the bottom of the enclosure
not less than 2 m above the floor, wherever practicable.

1. Receptacles to which unit equipment is to be connected shall be not less than 2.5 m above the floor, where practicable, and shall be not more than 1.5 m from the location of the unit equipment.
2. Unit equipment shall be permanently connected to the supply if
   (a) the voltage rating exceeds 250 V; or
   (b) the marked input rating exceeds 24 A.
3. Where the ratings in Subrule (2) are not exceeded, the unit equipment shall be permitted to be connected using the flexible cord and attachment plug supplied with the equipment.
4. Unit equipment shall be installed in such a manner that it will be automatically actuated upon failure of the power supply to the normal lighting in the area covered by that unit equipment.

Electrical Code

Extracts from the Canadian Electrical Code 2024

46-306 REMOTE LAMPS (SEE APPENDIX B)

1. The size of insulated circuit conductors to remote lamps shall be such that the voltage drop does not exceed 5% of the marked output voltage of the unit equipment, or such other voltage drop for which the performance of unit equipment is certified when connected to the specific remote lamp being installed.
2. Remote lamps shall be suitable for remote connection and shall be included in the list of lamps provided with the unit equipment.
3. The number of lamps connected to a single unit equipment shall not result in a load in excess of the watts output rating marked on the equipment for the emergency period required by the National Building Code of Canada, and the load shall be computed from the information in the list of lamps referred to in Subrule 2).

EXIT SIGNS

46-400 EXIT SIGNS (SEE APPENDICES B AND G)

1. Where exit signs are connected to an electrical circuit, that circuit shall be used for no other purpose.
2. Notwithstanding Subrule 1), exit signs shall be permitted to be connected to a circuit supplying emergency lighting in the area where these exit signs are installed.
3. The exit signs referred to in Subrules 1) and 2) shall be illuminated by an emergency power supply where emergency lighting is required by the National Building Code of Canada.
4. The circuitry serving luminaires used to illuminate exit signs that are not connected to an electrical circuit shall comply with Subrules 1) to 3), as required by the National Building Code of Canada.

Fire Code

Extracts from the National Fire Code Of Canada 2020

2.7. SAFETY TO LIFE

2.7.3. EXIT LIGHTING, EXIT SIGNS AND EMERGENCY LIGHTING

2.7.3.1. INSTALLATION AND MAINTENANCE 1. Exit lighting, exit signs and emergency lighting shall be provided in buildings in conformance with the NBC. (See Note A-2.37.3.1.(1).)

2. Exit lighting and exit signs shall be illuminated during times when the building is occupied.
3. Emergency lighting shall be maintained in operating condition, in conformance with Section 6.5.

6.5. EMERGENCY POWER SYSTEMS, UNIT EQUIPMENT FOR EMERGENCY LIGHTING, AND EXIT SIGNS

6.5.1 GENERAL

6.5.1.1. INSPECTION, TESTING AND MAINTENANCE

1. Except as provided in Articles 6.5.1.2. to 6.5.1.5., emergency power systems shall be inspected, tested and maintained in conformance with CSA-C282, “Emergency Electrical Power Supply for Buildings.”
2. An emergency electrical power supply system for emergency equipment for health care facilities shall be inspected, tested and maintained in conformance with CSA Z32, “Electrical Safety and Essential Electrical Systems in Health Care Facilities.” (See Note A-6.5.1.1.(2).)

6.5.1.2. NOTIFICATION

1. When an emergency power system or any part thereof is shut down, the supervisory staff shall be notified in conformance with Section 2.8.

6.5.1.3. INSTRUCTIONS

1. Where an emergency power system is installed, instructions shall be provided for switching on essential loads and for starting the generator when this is not done automatically.

6.5.1.4. RECORDS

1. Written records shall be maintained as required in CSA C282, “Emergency electrical power supply for buildings.”

6.5.1.6. INSPECTION OF UNIT EQUIPMENT

1. Self-contained emergency lighting unit equipment shall be inspected
   at intervals not greater than one month to ensure that
   a) pilot lights are functioning and not obviously damaged or obstructed,
   b) the terminal connections are clean, free of corrosion and lubricated when necessary,
   c) the terminal clamps are clean and tight as per manufacturer’s specifications, and
   d) the battery surface is kept clean and dry.
2. Self-contained emergency lighting unit equipment shall be tested
   a) at intervals not greater than one month to ensure that the emergency lights will function upon failure of the primary power supply, and
   b) at intervals not greater than 12 months to ensure that the unit will provide emergency lighting for a duration equal to the design criterion under simulated power failure conditions.
3. After completion of the test required in Clause (2)(b), the charging conditions for voltage and current and the recovery period shall be tested to ensure that the charging system is functioning in accordance with the manufacturer’s specifications.

6.5.1.7. INSPECTION OF EMERGENCY LIGHTS

1. Except as provided in Article 6.5.1.6., emergency lights shall be inspected at intervals not greater than 12 months to ensure that they are functional.

6.5.1.8. INSPECTION OF EXIT SIGNS

(See Note A-6.5.1.8.)

1. Except as provided in Sentence (2), exit signs shall be inspected at intervals not greater than 12 months to ensure that the exit signs will be visible upon failure of the primary power supply.
2. Exit signs provided with a battery back-up shall be inspected at intervals
   a) not greater than one month to ensure the exit signs will be visible upon failure of the primary power supply, and
   b) not greater than 12 months to ensure the exit signs will be visible for a duration equal to the design criterion upon failure of the primary power supply.

A-6.5.1.8.

Exit signs are to be visible by being unobstructed, illuminated and readily identifiable as indicating the location of the means of egress.

Emergency Electrical Power Supply For Buildings

Extract from CSA C282: 24

SECTION 6

EMERGENCY ELECTRICAL POWER SUPPLY PLANT

6.11 EMERGENCY LIGHTING

6.11.1 UNIT EQUIPMENT FOR EMERGENCY LIGHTING IN SERVICE ROOMS AND ENCLOSURES

The service room or enclosure containing the emergency electrical power supply and the service room containing the automatic transfer switch(es), shall be equipped with unit equipment for emergency lighting that complies with CSA C22.2 No. 141. Sufficient lamps shall be provided to ensure that a minimum lighting level of 50 lx for 2 h is available at all equipment locations requiring adjustment or service.

Note: This illumination level is significantly greater than that specified in the NBCC, which requires 10 lx for egress route emergency lighting.

6.11.2 TESTING OF EMERGENCY LIGHTING UNITS

Emergency lighting units shall be tested in accordance with Table 2 and CSA C22.2 No. 141.

6.11.3 REQUIREMENTS FOR THE EMERGENCY LIGHTING UNITS

The emergency lighting unit shall include

(a) automatic self-diagnostic circuitry; and

(b) a transient voltage surge suppressor on the supply side of power to the unit.

Table 2

Weekly inspection, test, and maintenance requirements

(See Clauses 6.7, 6.8.1, 6.11.2, 7.3.1, 7.6.1, 10.7, 11.1.2, 11.4, 11.5.1, and 11.5.2 and Tables 3 to 5.)

1. Consumables:
 a) Inspect auxiliary supply tank fuel level (gas pressure) and main tank level (gas pressure) (if applicable). There shall be a minimum supply of 2 h (see Clause 7.3.1).
 b) Inspect lubricating oil level.
 c) Inspect engine coolant level.
 d) Inspect engine, alternator, fuel tank(s), and cooling systems for leakage.
 e) Inspect for proper operation of fuel transfer pump (if applicable).
 f) Inspect fuel filter for contamination if filter is equipped with a transparent bowl.

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2. Starter system:
 a) Inspect electric starter for cleanliness, mounting, and terminal security.
 b) Air starter:
  i) Inspect air tanks for pressure.
  ii) Inspect valves for leakage.
  iii) Test auxiliary engine and compressor for proper operation.
  iv) Bleed off any condensation.

TABLE 18

Equipment suitable for explosive atmospheres
[See Rules 18-050 7), 18-090, 18-100, 18-150, 18-190, 18-200, 18-250, J18-100, J18-150, J18-200, J18-250, J18-300, and J18-350.]

AREA CLASSIFICATION	TYPE (LEVEL) OF PROTECTION	
ZONE 0	Intrinsic safety (Group II)	ia
	Encapsulation (Group II)	ma
	Flameproof (Group II)	da*
	Equipment assemblies	60079-49, with EPL Ga**
	Intrinsicallysafe optical radiation	op is, with EPL Ga**
	Optical system with interlock	op sh, with EPL Ga**
	Intrinsically safe	Intrinsically safe, IS, I.S., Exi, Exia, for Class I
	EPL††	Ga
ZONE 1	Equipment suitable for use in Zone 0	
	Equipment suitable for use in Class I, Division 1	
	Flameproof (Group II)	d, db
	Intrinsic safety (Group II)	ib
	Increased safety (Group II)	e, eb
	Pressurized enclosure (Group II)	p, px, pxb, py, pyb
	Encapsulation (Group II)	m, mb
	Powder filling (Group II)	q, qb
	Liquid immersion (Group II)	o, ob
	Electrical resistance trace heating	60079-30-1, with EPL Gb**
	Skin effect trace heating	CSA C22.2 No. 293.1, with EPL Gb**
	Equipment assemblies	60079-46, with EPL Gb**
	Inherently safe optical radiation	op is, with EPL Gb**
	Optical system with interlock	op sh, with EPL Gb**
	Protected optical radiation	op pr, with EPL Gb**
	EPL††	Gb
ZONE 2	Equipment suitable for use in Zone 0	
	Equipment suitable for use in Zone 1	
	Equipment suitable for use in Class I, Division 1	
	Equipment suitable for use in Class I, Division 2	
	Type of Protection “n” (Group II)	nA, nC, nL, nR
	Pressurized enclosure (Group II)	pz, pzc
	Intrinsic safety (Group II)	ic
	Flameproof (Group II)	dc
	Increased safety (Group II)	ec
	Liquid immersion (Group II)	oc
	Encapsulation (Group II)	mc
	Electrical resistance trace heating	60079-30-1, with EPL Gc**
	Skin effect trace heating	CSA C22.2 No. 293.1, with EPL Gc**
	Impedance heating	CSA C22.2 No. 293.3, with EPL Gc**
	Equipment assemblies	60079-46, with EPL Gc**
	Inherently safe optical radiation	op is, with EPL Gc**
	Optical system with interlock	op sh, with EPL Gc**
	Protected optical radiation	op pr, with EPL Gc**
	EPL††	Gc
	Other electrical apparatus‡	

TABLE 18 CONTINUED

AREA CLASSIFICATION	TYPE (LEVEL) OF PROTECTION	
	Equipment suitable for use in Class II, Division 1	
ZONE 20	Intrinsic safety (Group III)	ia
	Intrinsically safe	Intrinsically safe, IS, I.S., Exi, Exia, for Class II
	Protection by enclosure (Group III)	ta
	Encapsulation (Group III)	ma
	Equipment assemblies	60079-46, with EPL Da**
	Inherently safe optical radiation	op is, with EPL Da**
	Optical system with interlock	op sh, with EPL Da**
	EPL††	Da
GROUP IIIA ONLY	Equipment suitable for use in Class III, Division 1	
	Equipment suitable for use in Zone 20	
	Equipment suitable for use in Class II, Division 1	
ZONE 21	Intrinsic safety (Group III)	ib
	Protection by enclosure (Group III)	tb
	Pressurized enclosure (Group III)	p, px, pxb, py, pyb
	Encapsulation (Group III)	mb
	Electrical resistance trace heating	60079-30-1, with EPL Db**
	Skin effect trace heating	CSA C22.2 No. 293.1, with EPL Db**
	Equipment assemblies	60079-46, with EPL Da**
	Inherently safe optical radiation	op is, with EPL Db**
	Optical system with interlock	op sh, with EPL Db**
	Protected optical radiation	op pr, with EPL Db**
	EPL††	Db
GROUP IIIA ONLY	Equipment suitable for use in Class III, Division 1	
	Equipment suitable for use in Zone 20	
	Equipment suitable for use in Zone 21	
	Equipment suitable for use in Class II, Division 1	
	Equipment suitable for use in Class II, Division 2	
ZONE 22	Intrinsic safety (Group III)	ic
	Protection by enclosure (Group III)	tc
	Pressurized enclosure (Group III)	pz, pzc
	Encapsulation (Group III)	mc
	Electrical resistance trace heating	60079-30-1, with EPL Dc**
	Skin effect trace heating	CSA C22.2 No. 293.1, with EPL Dc**
	Impedance heating	CSA C22.2 No. 293.3, with EPL Dc**
	Equipment assemblies	60079-46, with EPL Da**
	Inherently safe optical radiation	op is, with EPL Dc**
	Optical system with interlock	op sh, with EPL Dc**
	Protected optical radiation	op pr, with EPL Dc**
	EPL††	Dc
	Other electrical apparatus‡	
GROUP IIIA ONLY	Equipment suitable for use in Class III, Division 1	
	Equipment marked for use in Class I, Division 1†	
	Intrinsically safe	Intrinsically safe, IS, I.S., Exi, Exia, for Class I
	Purged equipment to NFPA 496	Type X, Type Y, for Class I
CLASS I, DIVISION 1	Equipment suitable for use in Zone 0	ia
	Intrinsic safety (Group II)	ma
	Encapsulation (Group II)	da*
	Flameproof (Group II)	op is, with EPL Ga**
	Inherently safe optical radiation	op sh, with EPL Ga**
	Optical system with interlock	60079-46, with EPL Da**
	Equipment assemblies	

TABLE 18 CONTINUED

AREA CLASSIFICATION	TYPE (LEVEL) OF PROTECTION	
CLASS I, DIVISION 2	Equipment suitable for use in Class I, Division 1 Equipment marked for use in Class I, Division 2† Purged equipment to NFPA 496	 Type Z, for Class I
	Equipment suitable for use in Zone 0, Zone 1, or Zone 2 Type of Protection “n” (Group II) Pressurized enclosure (Group II) Intrinsic safety (Group II) Flameproof (Group II) Increased safety (Group II) Liquid immersion (Group II) Encapsulation (Group II) Electrical resistance trace heating Skin effect trace heating Impedance heating Inherently safe optical radiation Optical system with interlock Protected optical radiation Equipment assemblies Other electrical apparatus‡	 nA, nC, nL, nR px, pxb, py, pyb, pz, pzc ia, ib, ic da, db, dc eb, ec ob, oc ma, mb, mc 60079-30-1, with EPL Gb or Gc** CSA C22.2 No. 293.1, with EPL Gb or Gc** CSA C22.2 No. 293.3, with EPL Gb or Gc** op is, with EPL Ga, Gb, or Gc** op sh, with EPL Ga, Gb, or Gc** op pr, with EPL Gb or Gc** 60079-46, with EPL Ga, Gb, or Gc**
CLASS II, DIVISION 1	Equipment marked for use in Class II, Division 1† Intrinsically safe Purged equipment to NFPA 496	 Intrinsically safe, IS, I.S., Exi, Exia, for Class II Type X, for Class II
	Equipment suitable for use in Zone 20§ Intrinsic safety (Group III) Protection by enclosure (Group III) Encapsulation (Group III) Inherently safe optical radiation Optical system with interlock Equipment assemblies	 ia ta ma op is, with EPL Da** op sh, with EPL Da** 60079-46, with EPL Da**
CLASS II, DIVISION 2	Equipment suitable for use in Class II, Division 1 Equipment marked for use in Class II, Division 2† Purged equipment to NFPA 496	 Type Z, for Class II
	Equipment suitable for use in Zone 20, Zone 21, or Zone 22§ Intrinsic safety (Group III) Protection by enclosure (Group III) Pressurized enclosure (Group III) Encapsulation (Group III) Electrical resistance trace heating Skin effect trace heating Impedance heating Inherently safe optical radiation Optical system with interlock Protected optical radiation Equipment assemblies Other electrical apparatus‡	 ia, ib, ic ta, tb, tc px, pxb, py, pyb, pz, pzc ma, mb, mc 60079-30-1, with EPL Db or Dc** CSA C22.2 No. 293.1, with EPL Db or Dc** CSA C22.2 No. 293.3, with EPL Db or Dc** op is, with EPL Da, Db, or Dc** op sh, with EPL Da, Db, or Dc** op pr, with EPL Db or Dc** 60079-46, with EPL Da, Db, or Dc**

TABLE 18 CONCLUDED

AREA CLASSIFICATION	TYPE (LEVEL) OF PROTECTION	
CLASS III, DIVISION 1	Equipment suitable for use in Class II, Division 1	
	Equipment marked for use in Class III, Division 1†	
	Intrinsically safe	Intrinsically safe, IS, I.S., Exi, Exia, for Class II or Class III
	Enclosure	Type 5‡‡
	Equipment suitable for use in Zone 20 or Zone 21§	
	Intrinsic safety (Group III)	ia, ib
	Protection by enclosure (Group III)	ta, tb
	Encapsulation (Group III)	ma, mb
	Inherently safe optical radiation	op is, with EPL Da or Db**
	Optical system with interlock	op sh, with EPL Da or Db**
	Equipment assemblies	60079-46, with EPL Da or Db**
CLASS III, DIVISION 2	Equipment suitable for use in Class II, Division 1	
	Equipment suitable for use in Class II, Division 2	
	Equipment suitable for use in Class III, Division 1	
	Equipment marked for use in Class III, Division 2†	
	Equipment suitable for use in Zone 20, Zone 21, or Zone 22§	
	Intrinsic safety (Group III)	ia, ib, ic
	Protection by enclosure (Group III)	ta, tb, tc
	Pressurized enclosure (Group III)	px, pxb, py, pyb, pz, pzc
	Encapsulation (Group III)	ma, mb, mc
	Electrical resistance trace heating	60079-30-1, with EPL Db or Dc**
	Skin effect trace heating	CSA C22.2 No. 293.1, with EPL Db or Dc**
	Impedance heating	CSA C22.2 No. 293.3, with EPL Db or Dc**
	Inherently safe optical radiation	op is, with EPL Da, Db, or Dc**
	Optical system with interlock	op sh, with EPL Da, Db, or Dc**
	Protected optical radiation	op pr, with EPL Db, or Dc**
	Equipment assemblies	60079-46, with EPL Da or Db**
	Other electrical apparatus‡	

" da" is limited to sensors of portable combustible gas detectors.

† With the exception of intrinsically safe equipment, equipment for use in a Class XX, Division XX location is not required to be marked with a type of protection — only the location where that equipment is permitted to be installed

‡ "Other electrical apparatus" means electrical apparatus complying with the requirements of a recognized Standard for industrial electrical apparatus that does not in normal service

a) have ignition-capable hot surfaces; or

b) produce incendive arcs or sparks.

See Rules 18-150 2), 18-250 2), J18-150 2) and 3), J18-252, J18-254, and J18-262." Other electrical apparatus" also makes reference to equipment or systems currently acceptable as alternative means of protection (see Rules 18-066, 18-070, J18-066, and J18-068).

§ For use in Class II and Class III, such (Zone acceptable) equipmentis subject to the limitation of

a) Rules J18-054 2) and J18-054 3) for Class II; and

b) Rule J18-054 4) for Class III.

Group IIIA equipmentis not suitable for use in Class II locations.

*** Equipment marked with these types of protection is available in multiple levels of protection that are not specifcally identifed within the Ex marking*

†† The EPL takes precedence over the type of protection; for example," Ex ia Gb" is suitable for Zone 1 (not Zone 0)," Ex op is Db" is suitable for Zone 21 (not Zone 20), and" Ex 60079-30-1 Gc is suitable for Zone 2 (not Zone 1). Selection according to the marked EPL is critical to the safe application of this equipment.

‡‡ IIn Class III, Division 1, switches, controllers, circuit breakers, fuses, control transformers, resistors, utilization equipment (fixed and portable), electric cranes, hoists, and similar equipment may be housed in Enclosure Type 5.

Note: This Table is structured to show the area classification on the left side and the permitted equipment on the right side. Zone equipmentis suitable for use in some Class/Division locations and vice versa. This is indicated by the phrase "Equipment suitable for use in...". For example, in Class I, Division 1 locations, "Equipment suitable for use in Zone 0" means all equipment listed under Zone 0 can be used.

TABLE 18A
Equivalent Zone and Division Group classifications
[See Rules 18-050 7) and J18-050 5).]

	GROUP (FOR ZONES)	GROUP (FOR DIVISIONS)
GASES	IIC	A, B, C, D
	(IIB + H2)*	B, C, D
	IIB	C, D
	IIA	D
DUSTS	IIC	Class II, Group E
	IIB	Class II, Group F, G
	IIA	Class III

** Equipment marked" IIB + H2" is suitable for atmospheres containing any Group IIA gas, Group IIB gas, or hydrogen. It is not completely equivalent to Group B, C, D.*

Notes:

1) Equipment marked "IIC" may also be used in Group IIB and IIA classified locations. Equipment marked "IIB" may also be used in Group IIA classified locations.
2) Equipment marked "IIIC" may also be used in Group IIIB and IIIA classified locations. Equipment marked "IIIB" may also be used in Group IIIA classified locations.