

Extracts from the Canadian Electrical Code

Section 46 – Emergency Systems, Unit Equipment, and Exit Signs

46-000 Scope

- 1) This section applies to the installation, operation, and maintenance of emergency systems and unit equipment intended to supply illumination and to emergency systems intended to supply power, in the event of failure of the normal supply, where required by the National Building Code of Canada.
- 2) The Section applies to the wiring of exit signs.
- 3) The requirements of this section are supplementary to, or amendatory of, the general requirements of this Code.

46-100 Capacity

Emergency systems 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 system or unit equipment which 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

- 1) Where batteries are used as a source of 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 so arranged that the failure of any one lamps 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 Method of Wiring (See Appendices B and G)

- 1) Except as permitted by Subrule (2) and Rule 46-304(3), all conductors of systems, equipment, and devices installed in accordance with this Section shall be :
 - a) installed in metal raceway of the totally enclosed type or
 - b) incorporated in a cable, having a metal armour or sheath or
 - c) installed in rigid nonmetallic conduit where embedded in at least 50mm of masonry or poured concrete or
 - d) installed in electrical nonmetallic tubing where embedded in at least 50mm of masonry or poured concrete.
- 2) Conductors installed in buildings of combustible construction in accordance with Rules 12-506 to 12-520 shall be permitted to be incorporated in a nonmetallic sheathed cable.
- 3) Conductors of emergency systems and conductors between unit equipment and remote lamps shall be kept entirely independent of all other conductors and equipment and shall not enter a fixture, raceway, box, or cabinet occupied by other conductors except where necessary :
 - a) in transfer switches and
 - b) in exit signs and emergency lighting fixtures supplied from two sources.

46-200 Emergency Systems (See Appendix B)

- 1) Rules 46-202 to 46-210 apply to emergency systems from central standby supplies only.

46-202 Supply (See Appendix G)

- 1) The emergency 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 1/2 h, and equipped with a charging means to maintain the battery in a charge condition automatically or
 - b) a generator driven by a dependable prime mover.
- 2) Automobile batteries and lead batteries not of the enclosed glass-jar type are not considered suitable under Subrule (1) and shall only be used where a deviation has been allowed in accordance with Rule 2-030.
- 3) Where a generator is used, it shall be :
 - a) of capacity sufficient to carry the load and
 - b) arranged to start automatically without failure and without undue delay upon the failure of the normal power supply of the equipment connected to this generator.

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46-204 Control

- 1) The current supply for emergency systems shall be controlled by automatic transfer equipment that energizes the emergency system upon failure of the normal current supply and that is accessible only to authorized persons.
- 2) An automatic light-actuated device, approved for the purpose, 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.

46-206 Overcurrent Protection

- 1) No device capable of interrupting the circuit, other than the overcurrent device for the current supply of the emergency system, shall be placed ahead of the branch circuit overcurrent devices.
- 2) The branch circuit overcurrent devices shall be accessible only to authorized persons.

46-208 Audible and Visual Trouble-Signal Devices

- 1) Every emergency system shall be equipped with audible and visual trouble-signal devices that give warning of derangement of the current source or sources and that indicate when the emergency load is supplied from batteries of generators.
- 2) Audible trouble signals shall be permitted to be wired 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, thus indicating the necessity of restoring the silencing switch to its normal position or
 - (ii) reset automatically so as to sound for any subsequent operation of the emergency system.

46-210 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.

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

- 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 250V 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.

46-306 Remote lamps (see Appendix B)

- 1) The circuit conductors to remote lamps shall be of such size 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).

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) Exit signs in Subrule (1) and (2) shall be illuminated by an emergency power supply where emergency lighting is required by the National Building Code of Canada.