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 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) conductors required for operation of life safety systems and installed between an emergency power supply and life safety systems;

   b) conductors between an emergency power supply and exit signs; and

   c) conductors between unit equipment and remote lamps.

2. 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. Not with standing Subrule (2), conductors installed in buildings of combustible construction in accordance with Rules 12-506 to 12-520 shall be permitted to be

   a) run as a non-metallic-sheathed cable; or

   b) installed in a totally enclosed non-metallic raceway.

4. Conductors installed in accordance with Subrule (1) shall be kept entirely independent of all other conductors and equipment and shall not enter a luminaire, raceway, box, cabinet, or unit equipment occupied by other conductors except where necessary

   a) in transfer switches; and

   b) in exit signs and emergency lights supplied from two sources.

5. Conductors 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, cabinet, or unit equipment occupied by other conductors 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).

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 APPENDIX 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
   (SEE APPENDICES B AND G)
All power, control, and communication conductors 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, 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.

46-208 OVERCURRENT PROTECTION
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.

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 sources 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 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, 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.

46-306 REMOTE LAMPS (SEE APPENDIX B)
1. The size of 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
Location requirements for exit signs are set out in the NBCC. Rule 46-400
covers only their connection to a power supply. Rule 46-400 also covers
connection of circuits supplying lighting in the area where externally
illuminated exit signs are installed in accordance with the NBCC
requirements.

If an exit sign is required by the NBCC and is electrically illuminated,
Subrule (1) requires that the power for the exit sign be provided by
a branch circuit that supplies only other exit signs.
Subrule (2) exempts the circuit supplying only exit signs to allow it to
supply emergency lighting in the area where the exit signs are located.
However, in an area where exit signs are installed and where emergency
lighting is required by the NBCC or local building codes, Subrule (3) requires
that exit signs must also be illuminated by an emergency power supply.
This ensures that the exit sign is provided with a minimum illumination whenever
the emergency lighting
is energized.

Subrule (4) requires that the luminaires used to illuminate exit signs
are to meet the circuit requirements of Subrule (1) and (2) and the
illumination requirements of Subrule (3).
Note (2) to Rule 46-400 in Appendix B cautions that the circuit
supplying both emergency lighting and exit signs not be controlled
by a switch, time clock, or other disconnecting means.