CANADIAN ELECTRICAL CODE, PART I

Consolidated Memorandum of Revisions to the 2018 (24th) edition

Notes:

1. *This document contains the first memorandum of revisions.*

2. *First memorandum revisions are identified by a **black** number in the right hand margin.*

3. *Unless specified otherwise, revisions are indicated only by strikeout and underline. Revisions in this memorandum are subject to editing, formatting and renumbering. Revisions are also subject to modification or deletion by subsequent revisions.*

4. *The revisions in this memorandum were approved by the Committee on the Canadian Electrical Code, Part I, and by the Regulatory Authority Committee at or prior to their June 2018 meetings. The revisions are for information only and are not effective until adopted, with or without change, by the authority having jurisdiction, after the twenty-fifth edition is published.*

© CSA Group. This document is for CSA standards committee use only. No part of this document may be reproduced or redistributed, in whole or in part, by any means whatsoever without the prior permission of CSA Group. Permission is granted to members of the committee that is responsible for the development of this draft to reproduce this draft strictly for purposes of CSA standards-development activity.

October 2018

# SECTION 0	
Revise definition for Cablebus to read: **Cablebus** — an assembly of insulated conductors, cables, or both, with fittings and conductor terminations in a completely enclosed, ventilated, or non-ventilated protective metal housing (see Appendix B).	**SN3961-0D**
Revise definition for Wireway to read: **Wireway** — a raceway consisting of a completely enclosing arrangement of metal troughing and fittings formed and constructed so that insulated conductors may be readily drawn in and withdrawn, or laid in and removed, after the wireway has been completely installed, without damage either to conductors or to their insulation ~~covering~~.	**SN3961-0D**

# SECTION 12	
Add new Rule 12-124 to read: **12-124 Temporary Installation of Single Conductor Cables** Except as provided for by other Rules of this Code, single conductor cables terminated into single-pole connectors for single-conductor cables shall only be installed in accordance with Rule 76-100.	**SN4148-12**
Revise Rule 12-312 to read: **12-312 Conductors over buildings** Conductors associated with a building shall be permitted to run over the same building. ~~shall not be installed over buildings unless a deviation has been allowed in accordance with Rule rule-2-030.~~	**SN4087-12**

SECTION 16

Revise Rule 16-012 to read: **SN3961-16**

16-012 Circuits in communication cables

1) Class 1 circuits shall not be run in the same cable with communication circuits.
2) Class 2 remote control and signal circuits or their parts that use conductors in a cable assembly with other insulated conductors forming parts of communication circuits are, for the purposes of this Code, deemed to be communication circuits and shall conform to the applicable Rules of Section 60.
3) Class 2 power and data communication circuits shall comply with Rules 16-300 to 16-350.

Revise Rule 16-102 to read: **SN3961-16**

16-102 Methods of installation for Class 1 circuits

The equipment and insulated conductors of Class 1 circuits shall be installed in accordance with the requirements of other appropriate Sections of this Code, except as provided for in Rules 16-104 to 16-118.

Revise Rule 16-104 to read: **SN3961-16**

16-104 Overcurrent protection of Class 1 circuits

1) Insulated ~~C~~conductors of Class 1 circuits shall be protected against overcurrent in accordance with Section 14 of this Code, except
   a) where other Rules of this Code specifically permit or require other overcurrent protection; or
   b) where the insulated conductors are of No. 18 or No. 16 AWG copper and extend beyond the equipment enclosure, they shall be protected by overcurrent devices rated at a maximum of 5 A and 10 A respectively.
2) Where overcurrent protection is installed at the secondary terminals of the transformer and the transformer is suitably enclosed, overcurrent protection shall not be required on the primary side other than the normal overcurrent protection of the branch circuit supplying the transformer.

Revise Rule 16-110 to read: **SN3961-16**

16-110 Conductor material and sizes

1) ~~Copper~~ Insulated conductors smaller than No. 14 AWG copper shall be permitted to be used in Class 1 circuits if
   a) installed in a raceway;
   b) installed as~~in~~ a cable assembly; or
   c) within a flexible cord in accordance with Rule 12-402.
2) Subject to the conditions specified in Subrule 1), insulated conductors shall be not smaller than
   a) No. 16 AWG for individual insulated conductors pulled in raceways;
   b) No. 18 AWG for individual insulated conductors laid in raceways; and
   c) No. 18 AWG for an integral assembly of two or more insulated conductors.

Revise Rule 16-112 to read: **16-112 Insulated conductors for Class 1 wiring** 1) Where insulated conductors larger than No. 16 AWG copper are used in a Class 1 circuit, they shall be of any type selected in accordance with Rule 12-102 3). 2) Where insulated conductors of No. 18 or No. 16 AWG copper are used in a Class 1 circuit, they shall be equipment wire of the type suitable for such use as selected in accordance with Rule 12-122 1).	**SN3961-16**
Revise Rule 16-114 to read: **16-114 ~~Conductors~~ Insulated conductors of different circuits in the same enclosure, cable, or raceway** 1) Different Class 1 circuits shall be permitted to occupy the same enclosure, cable, or raceway without regard to whether the individual circuits are ac or dc, provided that all conductors are insulated for the maximum voltage of any conductor in the enclosure, cable, or raceway. 2) ~~Power supply~~ Insulated power circuits and insulated conductors of~~and~~ Class 1 circuits ~~conductors~~ shall not be permitted in the same enclosure, cable, or raceway except when connected to the same equipment, and all conductors are insulated for the maximum voltage of any conductor in the enclosure, cable, or raceway.	**SN3961-16**
Revise Rule 16-116 to read: **16-116 Mechanical protection of remote control circuits** Where mechanical damage to a remote control circuit would result in a hazardous condition as outlined in Rule 16-010, all insulated conductors of such remote control circuits shall be installed in conduit or electrical metallic tubing or be otherwise suitably protected from mechanical damage or other harmful conditions such as moisture, excessive heat, or corrosive action.	**SN3961-16**
Revise Rule 16-202 to read: **16-202 Methods of installation on the supply side of overcurrent protection, transformers, or devices having Class 2 outputs** In Class 2 circuits, the insulated conductors and equipment on the supply side of overcurrent protection, transformers, or devices having Class 2 outputs shall be installed in accordance with the requirements of other appropriate Sections of this Code.	**SN3961-16**
Revise Rule 16-208 to read: **16-208 Location of overcurrent devices** Overcurrent devices shall be located at the point where the insulated conductors to be protected receives their~~its~~ supply.	**SN3961-16**

Revise Rule 16-210 to read: **SN3961-16**

16-210 Conductors and cables for Class 2 circuit wiring (see Appendix B)

1) ~~C~~Insulated conductors for use in Class 2 circuits shall be of the type suitable for the application as selected in accordance with Rule 12-102 3) except that where insulated conductors smaller than No. 14 AWG are permitted, equipment wire Types REW, SEW-1, SEWF-1, TEW, and TEWN shall be permitted, provided that the equipment wires are installed in raceways.
2) Type ELC cables~~conductors~~ shall be limited in use to
   a) Class 2 circuits operating at 30 V or less;
   b) dwelling units in buildings of combustible construction;
   c) dry locations; and
   d) where concealed or exposed, locations where the conductors are not subject to mechanical damage.
3) Type ELC cables~~conductors~~ shall not be permitted for the wiring of heating control circuits or fire safety circuits such as fire alarm or smoke alarm devices.
4) Conductors shall be of copper and shall not be smaller than
   a) No. 16 AWG for individual insulated conductors pulled into raceways;
   b) No. 19 AWG for individual insulated conductors laid in raceways;
   c) No. 19 AWG for an integral assembly of two or more insulated conductors;
   d) No. 22 AWG for an integral assembly of four or more insulated conductors;
   e) No. 24 AWG for an integral assembly of six or more insulated conductors; and
   f) No. 26 AWG for an integral assembly of ten or more insulated conductors.
5) Notwithstanding Subrule 4) d), 4 e) or 4 f), ~~No. 22 AWG~~ Type ELC cables~~copper wire~~ shall not be pulled into raceways.~~be permitted in an integral assembly of two or more conductors where the conductors are not pulled into raceways.~~
6) The maximum allowable current shall be as listed in Table 57 for sizes No. 16 AWG and smaller, but in no case shall exceed the current limitations of Rule 16-200.
7) Notwithstanding Subrules 4) and 6), eight-conductor cables for Class 2 power and data communication circuits shall be permitted for use in accordance with Table 60.

Revise Rule 16-212 to read: **SN3961-16**

16-212 Separation of Class 2 circuits ~~conductors~~ from other circuits

1) Insulated ~~C~~conductors and cables of Class 2 circuits shall be separated at least 50 mm from insulated conductors of electric lighting, power, or Class 1 circuits operating at 300 V or less, and shall be separated at least

   600 mm from any insulated conductors of electric lighting, power, or Class 1 circuits operating at more than 300 V, unless for both conditions effective separation is afforded by use of
   a) metal raceways for the Class 2 circuits or for the electric lighting, power, and Class 1 circuits, subject to the metal raceway being bonded to ground;
   b) metal-sheathed or armoured cable for the electric lighting, power, and Class 1 circuits, ~~conductors,~~ subject to the sheath or armour

being bonded to ground; c) non-metallic-sheathed cable for the electric lighting, power, and Class 1 circuits operating at 300 V or less; or d) non-metallic conduit, electrical non-metallic tubing, insulated tubing, or equivalent, for electric lighting, power, and Class 1 circuits. ~~in addition to the insulation on the Class 2 circuit conductors or the electric lighting, power, and Class 1 circuit conductors.~~ 2) Where ~~the~~ electric lighting or power conductors are bare, all Class 2 circuit insulated conductors and cables in the same room or space shall be enclosed in a metal raceway that is bonded to ground, and no opening, such as an outlet box, shall be permitted to be located within 2 m of the bare conductors if up to and including 15 kV or within 3 m of bare conductors above 15 kV. 3) Unless ~~the~~ insulated conductors and cables of the Class 2 circuits are separated from the insulated conductors of electric lighting, power, and Class 1 circuits by an acceptable barrier, the insulated conductors and cables in Class 2 circuits shall not be placed in any raceway, compartment, outlet box, junction box, or similar fitting with the insulated conductors of electric lighting, power, or Class 1 circuits. 4) Subrule 3) shall not apply where ~~the~~ insulated conductors of a power circuit are in the raceway, compartment, outlet box, junction box, or similar fitting for the sole purpose of supplying power to the Class 2 circuits, and all conductors are insulated for the maximum voltage of any insulated conductor in the enclosure, cable, or raceway, except that no Class 2 insulated conductors and cables installed in a raceway, compartment, outlet box, junction box, or similar fitting with such insulated conductors of a power circuit shall show a green-coloured insulation, unless the Class 2 insulated conductor is completely contained within a ~~sheathed or~~ jacketed cable ~~assembly~~ throughout the length that is present in such a raceway or enclosure. 5) Notwithstanding Subrule 3), electric lighting, power, and Class 1 circuit conductors shall be permitted to be used in a cable that contains Class 2 circuit conductors, provided that the cable is marked as being suitable for applications of Class 2 circuit conductors that are a) intended for the supply or control, or both, of remote devices associated with the non-Class 2 conductors; and b) insulated for the maximum voltage of any conductor in the cable.	
Revise Rule 16-214 to read: **16-214 Insulated ~~C~~conductors of different Class 2 circuits in the same cable, enclosure, or raceway** ~~C~~Insulated conductors of two or more Class 2 circuits shall be permitted within the same cable, enclosure, or raceway, provided that all insulated conductors in the cable, enclosure, or raceway are insulated for the maximum voltage of any conductor.	**SN3961-16**
Revise Rule 16-216 to read: **16-216 Penetration of a fire separation** Insulated ~~C~~conductors and cables of a Class 2 circuit extending through a fire separation shall be installed so as to limit fire spread in accordance with Rule 2-128.	**SN3961-16**

Revise Rule 16-218 to read: **16-218 Conductors in vertical shafts and hoistways** Class 2 insulated conductors and cables installed in a vertical shaft or hoistway shall meet the requirements of Rules 2-128 and 2-130.	**SN3961-16**
Revise Rule 16-220 to read: **16-220 Conductors, cables, ~~Class 2 conductors~~ and equipment for Class 2 circuits in ducts and plenum chambers** ~~Class 2~~ Insulated conductors, cables, and equipment for Class 2 circuits shall not be placed in ducts or plenum chambers except as permitted by Rules 2-130 and 12-010.	**SN3961-16**
Revise Rule 16-224 to read: **16-224 Class 2 circuits extending beyond a building** Where cables or conductors of Class 2 circuits extend beyond a building and are run in such a manner as to be subject to accidental contact with lighting or power conductors operating at a voltage exceeding 300 V between conductors, the cables or conductors of the Class 2 circuits shall also meet the requirements of Section 60.	**SN3961-16**
Revise Rule 16-226 to read: **16-226 Underground installations** 1) Underground installations of Class 2 circuits shall be installed in accordance with Rule 12-012. 2) Direct buried Class 2 circuits shall maintain a minimum horizontal separation of 300 mm from other underground systems except when installed in accordance with Subrule 3). 3) Direct buried Class 2 circuits shall be permitted to be placed at random separation in a common trench with power circuits that are for the sole purpose of supplying power to the Class 2 circuits, provided that a) the Class 2 circuit is in a metal-sheathed cable, with the sheath bonded to ground; b) the power circuit operates at 750 V or less; and c) all cables~~conductors~~ are insulated for the required maximum voltage of any cable~~conductor~~ in the trench.	**SN3961-16**

SECTION 18

Delete Cable seal from Rule 18-002: ~~**Cable seal** — a seal that is installed at a cable termination to prevent the release of an explosion from an explosion-proof enclosure and that minimizes the passage of gases or vapours at atmospheric pressure.~~	**SN4224**
Delete Conduit seal from Rule 18-002: ~~**Conduit seal** — a seal that is installed in a conduit to prevent the passage of an explosion from one portion of the conduit system to another and that minimizes the passage of gases or vapours at atmospheric pressure.~~	**SN4224**
Delete Primary seal from Rule 18-002: ~~**Primary seal** — a seal that isolates process fluids from an electrical system and that has one side of the seal in contact with the process fluid.~~	**SN4224**
Add new term Seals to Rule 18-002 and relocate existing term Secondary seal with revision as shown: **Seals** **Explosion seal** – a seal that a) when installed at a cable or conduit entry to a flameproof or explosion-proof enclosure, prevents the ignition of an explosive gas atmosphere outside the enclosure; b) when installed in a conduit, prevents the passage of an explosion from one portion of the conduit system to another; and c) minimizes the passage of flammable fluids at atmospheric pressure. **Flammable fluid migration seal** – a cable or conduit seal intended to minimize the transmission of flammable fluids at or near atmospheric pressure. **Primary seal** — a seal that isolates process fluids from an electrical system and that has one side of the seal in contact with the process fluid. **Secondary seal** — a seal that is designed to prevent the passage of process fluids at the pressure it will be subjected to upon failure of a~~the~~ primary seal.	**SN4224**
Revise Rule 18-070 to read: **18-070 ~~Flammable fluid s~~Seals** (see Appendix B) 1) Electrical equipment with a primary seal in contact with flammable fluids shall be a) constructed or installed so as to prevent migration of flammable fluid through the wiring system; and b) used at pressures lower than the marked maximum working pressure (MWP).	**SN4224**

2) Where Subrule 1) is met through the installation of secondary seals, the possibility of primary seal failure shall be indicated by a) design features that will make the occurrence of a primary seal failure obvious; or b) ~~acceptable~~ marking means indicating that the enclosure may contain flammable fluid under pressure. 3) Flammable fluid migration seals shall be permanently identified. 4) Where field installed seals are required, they shall conform to the following: a) the seal shall be accessible after installation; b) splices and taps shall not be made in fittings intended only for sealing with compound, nor shall other fittings in which splices or taps are made be filled with compound; and c) where there is a probability that liquid or other condensed vapour may be trapped within enclosures for control equipment or at any point in the raceway system, acceptable means shall be provided to prevent accumulation or to permit periodic draining of such liquid or condensed vapour.	
Revise Rule 18-094 to read: **18-094 Sealing, Zone 0** 1) Flammable fluid migration s~~S~~eals shall be provided where conduit leaves a Zone 0 location with no box, coupling, or fitting in the conduit run between the seal and the point at which the conduit leaves the location, except that a rigid unbroken conduit that passes completely through a Zone 0 area, with no fittings less than 300 mm beyond each boundary, need not be sealed, provided that the termination points of the unbroken conduit are in non-hazardous areas. 2) Flammable fluid migration s~~S~~eals shall be provided on cables at the first point of termination after entry into the Zone 0 location. ~~3) Seals as specified in Subrule 2) shall not be required to be explosion-proof or flameproof "d" but shall be identified for the purpose of minimizing the passage of gases, vapours, or dusts under normal operating conditions and shall be accessible.~~	**SN4224**
Revise Rule 18-104 to read: **18-104 Sealing, Zone 1** (see Appendix B) 1) ~~Conduit~~Explosion seals shall be provided in conduit systems where a) the conduit enters an explosion-proof or flameproof "d" enclosure containing devices that may produce arcs, sparks, or high temperatures, and shall be located as close as practicable to the enclosure, or as marked on the enclosure, but not further than 450 mm from the enclosure; b) the conduit is 53 trade size or larger and enters an explosion-proof or flameproof "d" enclosure housing terminals, splices, or taps, and shall be located no further than 450 mm from the enclosure; or c) the conduit leaves the Zone 1 location with no box, coupling, or fitting in the conduit run between the seal and the point at which the conduit leaves the location, except that a rigid unbroken conduit that passes completely through a Zone 1 area, with no fittings less than 300 mm beyond each boundary, need not be sealed, provided that the termination points of the unbroken conduit are in non-hazardous areas.	**SN4224**

2) Only explosion-proof or flameproof “d” unions, couplings, reducers, and elbows that are not larger than the trade size of the conduit shall be permitted between the sealing fitting and an explosion-proof or flameproof “d” enclosure.
3) An explosion ~~Cable~~ seal~~s~~ shall be provided in a cable system where
~~a)~~ the cable enters an enclosure required to be explosion-proof or flameproof “d”.~~; or~~
4)~~b)~~ A flammable fluid migration seal shall be provided where a ~~the~~ cable first terminates after entering the Zone 1 area.
~~4) Where secondary seals, cable seals, or conduit seals are required, they shall conform to the following:~~
~~a) the seal shall be accessible after installation;~~
~~b) splices and taps shall not be made in fittings intended only for sealing with compound, nor shall other fittings in which splices or taps are made be filled with compound;~~
~~c) where there is a probability that liquid or other condensed vapour may be trapped within enclosures for control equipment or at any point in the raceway system, acceptable means shall be provided to prevent accumulation or to permit periodic draining of such liquid or condensed vapour; and~~
~~d) where there is a probability that liquid or condensed vapour may accumulate within motors or generators, joints and conduit systems shall be arranged to minimize entrance of liquid, but if means to prevent accumulation or to permit periodic draining are judged necessary, such means shall be provided at the time of manufacture and shall be deemed an integral part of the machine.~~
5) Runs of cables, each having a continuous sheath, either metal or non-metal, shall be permitted to pass through a Zone 1 location without seals.
6) Cables that do not have a continuous sheath, either metal or non-metal, shall have a flammable fluid migration seal installed ~~be sealed~~ at the boundary of the Zone 1 location.

Revise Rule 18-154 to read:

SN4224

18-154 Sealing, Zone 2 (see Appendix B)
1) ~~Conduit~~Explosion seals shall be provided in a conduit system where
~~a)~~ the conduit enters an enclosure that is required to be explosion-proof or flameproof “d”, and shall be located as close as practicable to the enclosure, or as marked on the enclosure, but not farther than 450 mm from the enclosure.~~;~~
2) Flammable fluid migration seals for conduit shall be installed where
a)~~b)~~ the conduit leaves the Zone 2 location with no box, coupling, or fitting in the conduit run between the seal and the point at which the conduit leaves the location, except that a rigid unbroken conduit that passes completely through a Zone 2 area, with no fittings less than 300 mm beyond each boundary, need not be sealed, provided that the termination points of the unbroken conduit are in non-hazardous areas; or
b)~~c)~~ the conduit leaves a Zone 2 location outdoors, in which case the seal shall be permitted to be located more than 300 mm beyond the Zone 2 boundary, provided that it is located on the conduit before the conduit enters an enclosure or building.
3)~~2)~~ Only explosion-proof or flameproof ”d” unions, couplings, reducers, and elbows

that are not larger than the trade size of the conduit shall be permitted between the sealing fitting and an explosion-proof or flameproof “d” enclosure. 4)~~3)~~ Explosion~~Cable~~ seals shall be provided in a cable system where ~~a)~~ the cable enters an enclosure required to be explosion-proof or flameproof “d”.~~; or~~ 5)~~b)~~ Flammable fluid migration seals shall be installed where a ~~the~~ cable enters an enclosure not required to be explosion-proof or flameproof “d”, and the other end of the cable terminates in a non-hazardous location in which a negative atmospheric pressure greater than 0.2 kPa exists. 6)~~4)~~ Where a run of conduit enters an enclosure that is required to be explosion-proof or flameproof “d”, every part of the conduit from the explosion seal to that enclosure shall comply with Rule rule-18-102. 7)~~5)~~ Runs of cables, each having a continuous sheath, either metal or non-metal, shall be permitted to pass through a Zone 2 location without seals. 8)~~6)~~ Cables that do not have a continuous sheath, either metal or non-metal, shall have a flammable fluid migration seal installed ~~be sealed~~ at the boundary of the Zone 2 location. ~~7) Where seals are required, Rule rule-18-104 4) shall apply.~~	

SECTION 20

Revise Rule 20-110 as shown:

SN3961-20

20-110 Equipment above hazardous areas

1) Fixed equipment that is less than 3.6 m above floor level and that may produce arcs, sparks, or particles of hot metal, such as cut-outs, switches, charging panels, generators, motors, or other equipment (excluding receptacles and luminaires) having make-and-break or sliding contacts, shall be of the totally enclosed type or constructed to prevent escape of sparks or hot metal particles.
2) Permanently installed luminaires that are located over lanes through which vehicles are commonly driven shall be permitted to be suitable for non-hazardous locations and shall be
   a) located not less than 3.6 m above floor level; or
   b) protected from mechanical damage by a guard or by location.
3) Portable luminaires shall
   a) be of the totally enclosed gasketted type, equipped with a handle, lampholder, hook, and substantial guard attached to the lampholder or handle, and all exterior surfaces that may come in contact with battery terminals, wiring terminals, or other objects shall be of non-conducting materials or shall be effectively protected with an insulating material~~jacket~~;
   b) be of the unswitched type; and
   c) not be provided with receptacles for attachment plugs.

SECTION 24

Revise Rule 24-002 by deleting two entries and adding one new as shown: SN4235

~~**Emergency power system** — a power system that is supplied from an emergency supply and connected to feed essential systems.~~

~~**Emergency supply** — one or more in-house generators of electricity intended to be available in the event of a failure of all other supplies and capable of supplying all the essential loads.~~

Emergency electrical power supply system — one or more electrical generator sets located on health care facility premises, intended to be available if all other supplies fail, and capable of supplying all loads of essential electrical system

Revise Rule 24-304 to read: SN4235

24-304 Transfer switches (see Appendix B)

1) All transfer switches shall comply with the requirements of the supply authority.
2) Automatic transfer switches used in essential electrical systems shall conform to the requirements of CSA C22.2 No. 178.1 and, in addition, shall
   a) be electrically operated and mechanically held; and
   b) include means for safe manual operation.
3) Manual transfer switches shall conform to the following:
   a) the switching means shall be mechanically held and the operation shall be by direct manual control or by electrical remote manual control utilizing control power from the supply to which the load is being transferred;
   b) a manual transfer switch that is operated by electrical remote manual control shall include a means for safe manual mechanical operation;
   c) reliable mechanical interlocking (and, in the case of a switch operated by electrical remote manual control, electrical interlocking) to prevent interconnection of the normal and the emergency electrical power supply systems~~supplies of power~~ shall be inherent in the design of a manual transfer switch; and
   d) a manual transfer switch shall include a readily visible mechanical indicator showing the switch position.
4) The vital and delayed vital branches shall be connected to the emergency electrical power supply system by means of one or more automatic transfer switches.
5) The conditional branch shall be connected to the emergency electrical power supply system by either a manual or an automatic transfer switch.

Revise Rule 24-306 to read: SN4235

24-306 Emergency electrical power supply system

An emergency electrical power supply system~~shall be~~

a) one or more generator sets in accordance with CSA Z32; and

b) located on the health care facility premises and installed in a service room or

enclosure in accordance with CSA C282.	

SECTION 26

Revise Rule 26-602 to read: SN4255

26-602 Panelboards in dwelling units (see Appendix B)

~~A panelboard shall be installed in every dwelling unit except for dwelling units in hotels and motels, and dwelling units that~~

~~a) are not individually metered for electrical power consumption; and~~

~~b) have been created by subdivision of a single dwelling.~~

1) A panelboard shall be installed in every dwelling unit except for:

(a) dwelling units in hotels and motels, and

(b) dwelling units that have been created by subdivision of a single dwelling and are not individually metered for electrical power consumption.

2) Every panelboard installed in accordance with Subrule 1) shall have a single supply protected by overcurrent devices, and this supply shall be capable of being disconnected without disconnecting the supply to any other dwelling unit.

Revise Rule 26-652 to read: SN4276

26-652 Branch circuits for residential occupancies

Branch circuits for all residential occupancies (including dwelling units and single dwellings) shall meet the following requirements:

a) receptacles installed for refrigerators in accordance with Rule 26-724 d) i) shall be supplied by at least one branch circuit that does not supply any other outlets, except a recessed clock receptacle intended for use with an electric clock;

b) at least one branch circuit shall be provided solely for receptacles installed in the laundry room or in a space where the complete plumbing is installed to accommodate a washing machine;

c) at least one branch circuit shall be provided solely for receptacles installed in the utility room;

d) each receptacle installed in a cupboard, wall cabinet, or enclosure for the use of a microwave oven in accordance with Rule 26-720 h) shall be supplied by a branch circuit that does not supply any other outlets, and this circuit shall not be considered as forming part of the circuits required under Rule 26-654 b);

e) a separate branch circuit shall be provided solely to supply power to each central vacuum system; and

~~f) the ampere rating of the branch circuit wiring supplying receptacles with CSA configuration 5-20R shall be not less than 20 A; and~~

f)~~g)~~ a separate branch circuit shall be provided solely to supply power to each receptacle described in Rule 26-720 n).

Revise Rule 26-654 to read: SN4230

26-654 Branch circuits for dwelling units

Branch circuits for dwelling units (including single dwellings) shall meet the following

requirements: a) branch circuits from a panelboard installed in accordance with Rule 26-602 shall not be connected to outlets or electrical equipment in any other dwelling unit; b) Notwithstanding Item a), where a single panelboard is installed as permitted by Rule 26-602(1)(b), branch circuits from that panelboard shall be permitted to supply outlets or electrical equipment in the dwelling unit created by the subdivision of the single dwelling; c)~~b)~~ except as may be permitted by Items c) and d), at least two branch circuits shall be provided for receptacles (5-15R split or 5-20R) installed for kitchen counters of dwelling units in accordance with Rule 26-724 d) iii), iv), and v), and i) no more than two receptacles shall be connected to a branch circuit; and ii) no other outlets shall be connected to these circuits; d)~~c)~~ notwithstanding Item c)~~b)~~, where the provisions of Rule 26-724 d) iii) require only one receptacle, only one branch circuit need be provided; e)~~d)~~ notwithstanding Item c)~~b)~~ i), receptacles identified in Rule 26-720 d) shall be permitted to be connected to those receptacles required by Rule 26-724 d) iii), even though the circuit already supplies two receptacles; f)~~e)~~ outdoor receptacles readily accessible from ground level and installed in accordance with Rule 26-726 a) shall be supplied from at least one branch circuit dedicated for those outdoor receptacles; and g)~~f)~~ at least one branch circuit shall be provided solely for the receptacles in a carport or garage of a single dwelling, except that the luminaires and garage door operator for these areas shall be permitted to be connected to this circuit.	

SECTION 30

Revise Rule 30-102 to read: **SN3936**

30-102 Voltage

1) Branch circuit voltage shall not exceed 150 volts-to-ground in dwelling units.
2) Branch circuit voltage shall not exceed a nominal system voltage of 600Y/347 ~~347/600Y~~ in other than dwelling units.

Revise Rule 30-510 to read: **SN4186**

30-510 Garages and carports (see Appendix G)

1) A luminaire shall be provided for an attached, built-in, or detached garage or carport.

2) Except as provided in Subrule 3), luminaires required in Subrule 1) shall be controlled by a wall switch near the doorway.

3) Where the luminaire required in Subrule 1) is ceiling-mounted above an area not normally occupied by a parked car or is wall-mounted, a luminaire with a built-in switch ~~accessible to an adult of average height~~ shall be permitted to be used~~.~~ provided that, the operating mechanism for the switch is located no more than 1.7 m above the floor or finished grade.

4) Where a carport is lighted by a luminaire at the entrance to a dwelling unit, additional carport lighting shall not be required.

SECTION 32

Revise Rule 32-300 to read:

SN3903

32-300 Conductors (see Appendices B and G)
Conductors from the emergency power source to a fire pump shall

a) have an ampacity not less than
   i) ~~125%~~200% of the full load current rating of the motor, where an individual motor is provided with the fire pump; and
   ii) ~~125%~~200% of the sum of the full load currents of the fire pump, jockey pump, and the fire pump auxiliary loads, where two or more motors are provided with the fire pump; and
b) be protected against fire exposure to provide continued operation in compliance with the *National Building Code of Canada*.

SECTION 40

SN3961-40

Revise Rules 40-002 to 40-006 and 40-010 to 40-014 to read:

40-002 Supply conductor sizes

The size of insulated conductors in raceways or cables supplying main contact conductors or supplying equipment directly shall be determined from Table 58.

40-004 Conductor protection

1) Insulated ~~C~~conductors supplying main contact conductors shall be in rigid conduit, electrical metallic tubing, armoured cable, mineral-insulated cable, aluminum-sheathed cable, or copper-sheathed cable, except as otherwise provided for in Rule 40-018.
2) Insulated ~~C~~conductors supplying the equipment directly shall comply with Subrule 1) unless a flexible connection is required, in which case an armoured or unarmoured cable, festoon cable, or flexible cord, with take-up devices where necessary to prevent damage to the cable or cord and to keep it clear of the operating floor, shall be permitted.

40-006 Overcurrent protection

Insulated ~~C~~conductors supplying main contact conductors or supplying the equipment directly where there are no main contact conductors shall be provided with overcurrent protection in accordance with the requirements of Rule 28-200 for the motor load plus an allowance in accordance with Rule 14-104 for any other loads if the size of conductors has been increased to provide capacity for the other loads.

40-010 Main contact conductors

1) Bare main contact conductors shall have an ampacity not less than that of the conductors supplying them and, if ~~wire~~ conductor is used, in no case shall these conductors be smaller than
   a) No. 4 AWG copper or No. 2 AWG aluminum if the length of contact conductor is 18 m or less; or
   b) No. 2 AWG copper or No. 1/0 AWG aluminum if the length of contact conductor is greater than 18 m, unless the intermediate insulating supports are of a clamp type capable of providing some strain relief.
2) Bare main contact conductors shall be permitted to be of hard drawn copper or aluminum conductor~~wire~~ or shall be permitted to be made of steel or other suitable metal in the form of tees, angles, T-rails, or other rigid shapes.

40-012 Spacing of main contact conductors

1) Bare main contact conductors ~~wires~~ shall be supported so that
   a) they are separated, centre-to-centre, as follows:
      i) not less than 150 mm for other than monorail hoists, if installed in a horizontal plane;
      ii) not less than 75 mm for monorail hoists, if installed in a horizontal plane; or
      iii) not less than 200 mm, if installed in other than a horizontal plane; and
   b) the extreme limit of displacement does not bring them within less than 38 mm of the surface ~~wired over~~.
2) Rigid main contact conductors shall be supported so that there is an air space

of not less than 25 mm between conductors, between conductors and adjacent collectors, and between conductors and the surface wired over. **40-014 Supporting of main contact conductors** 1) Bare main contact conductors ~~wires~~ shall be secured at each end to strain insulators and shall be supported on insulating supports placed at intervals not exceeding 6 m except that, where building conditions make such intervals impossible, the interval between insulating supports shall be permitted to be increased to a maximum of 12 m if the separation between contact conductors is increased proportionately. 2) Rigid main contact conductors shall be secured to insulating supports spaced at intervals of not more than 80 times the vertical dimension of the conductor, but in no case shall the interval be greater than 4.5 m.	

SECTION 46

Revise Rule 46-208 to read:

SN4234

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 of the main disconnecting means and overcurrent device connecting the generator to the remainder of the emergency electrical power system in accordance with the CSA Standard C282 or in accordance with Rule 32-306 6) of this Code, selective coordination between these overcurrent protective devices shall not be required.

SECTION 54

In Rule 54-002, revise term "Power blocking device" to read:

Power blocking device — a~~n approved~~ unit that is used to prevent power other than radio and television frequency signals from extending to the outgoing coaxial cable.

SN3948-54

Revise Rule 54-010 to read:

54-010 Circuits in communication cables

Community antenna distribution circuits, or their parts, that use insulated conductors in a cable ~~assembly~~ with other conductors forming parts of communication circuits are, for the purposes of this Code, deemed to be communication circuits and shall conform to the applicable Rules of Section 60, except that the requirements for protectors and grounding for the coaxial cables shall meet the requirements of this Section.

SN961-54

Revise Rule 54-100 to read:

54-100 Conductors

1) The conductors used in community antenna distribution shall consist of coaxial cable having a central inner conductor and an outer conductive shield of circular cross-section.
2) ~~Conductors~~ Cables placed within buildings shall be of ~~approved~~ types selected in accordance with Rule 12-102 3).

SN948-54
SN3961-54

Revise Rule 54-102 to read:

54-102 Voltage and current limitations (see Appendix B)

1) Coaxial cable shall be permitted to be used for connection between the cable distribution plant and the customer service enclosure, or between two customer service enclosures, and for providing power to associated community antenna distribution circuits, provided that the following requirements are met:
   a) for a single dwelling, the open-circuit voltage does not exceed 90 V, and the maximum current is limited to 100/V amperes, up to and including the customer service enclosure;
   b) for a building with multiple occupancies, the open-circuit voltage does not exceed 90 V, and the maximum current is limited to 10 A, up to and including the customer service enclosure;
   c) the current supply is from an ~~approved~~ amplifier, transformer, or other ~~approved~~ device having energy-limiting characteristics;
   d) the cable distribution plant complies with the applicable requirements of CSA C22.3 No. 1 and CSA C22.3 No. 7;
   e) the power does not extend beyond the customer service enclosure unless extending to another customer service enclosure, and not to the coaxial cable extending to the customer electrical equipment;

SN3948-54

f) the customer service enclosure is grounded and all coaxial cables entering it are bonded to ground; g) the customer service enclosure is provided with a lock or similar closing device and contains power blocking devices to prevent the coaxial cable to the customer electrical equipment from being energized; and h) all customer distribution circuits fed from a common multitap that is capable of delivering power to the customer distribution circuit are provided with power blocking devices to prevent the coaxial cable to the customer electrical equipment from being energized. 2) Coaxial cable for the connection between the customer service enclosure and a point located at least 1 m from the customer electrical equipment shall be permitted to be energized by ~~an approved~~ a 0 to 30 V Class 2 transformer or power supply within the premises, provided that power blocking devices are installed to prevent the connection at the customer electrical equipment from being energized.	
Revise Rule 54-108 to read: **54-108 Supports** Where ~~conductors~~ cables are attached to, or supported on, buildings, the attachment or supporting equipment shall be acceptable for the purpose.	**SN3961-54**
Revise Rule 54-200 to read: **54-200 Grounding of outer conductive shield of a coaxial cable** (see Appendix B) 1) Where coaxial cable is exposed to lightning or to accidental contact with lightning arrester conductors or insulated power conductors operating at a voltage exceeding 300 volts-to-ground, the outer conductive shield of the coaxial cable shall be grounded at the building as close to the point of cable entry as possible. 2) Where the outer conductive shield of a coaxial cable is grounded, no other protective device shall be required. 3) Grounding of a coaxial cable shield by means of a protective device shall be permitted, provided that the device does not interrupt the grounding system within the building.	**SN3961-54**
Revise Rule 54-202 to read: **54-202 Provision of protector** (see Appendix B) Where a protective device is provided, it shall be ~~a) approved for the purpose;~~ a)~~b)~~ located in or on the building as near as practicable to the point of cable entry; b)~~c)~~ located external to any hazardous location as defined in Sections 18, 20, and 24, and away from the immediate vicinity of flammable or explosive materials; c)~~d)~~ mounted on a flame-retardant, absorption-resisting insulating base; and d)~~e)~~ covered if located outdoors.	**SN3948-54**
Revise Rule 54-304 to read: **54-304 Grounding electrode connection** The grounding conductor shall be attached to a grounding electrode, as required in	**SN3961-54**

Rule 10-118 a) directly; or b) to a conductor~~wire~~ lead permanently connected to the ground rod electrode in a manner specified in CSA C83.	
Revise Rule 54-400 to read: **54-400 Separation from other conductors** 1) ~~Conductors~~ Cables of community antenna distribution circuits shall be separated at least 50 mm from insulated conductors of electric lighting, power, or Class 1 circuits operating at 300 V or less, and shall be separated at least 600 mm from any insulated conductor of an electric lighting, power, or Class 1 circuit operating at more than 300 V, unless effective separation is afforded by use of the following: a) grounded metal raceways for the community antenna distribution circuits or for the electric lighting, power, and Class 1 circuits; b) grounded metal-sheathed or armoured cable for the electric lighting, power, and insulated Class 1 conductors; or c) raceways of a non-metal-type as permitted in Section 12, in addition to the insulation on the community antenna distribution circuit conductors or on the electric lighting, power, and Class 1 circuit conductors. 2) Where the electric lighting or power conductors are bare, all community antenna distribution cables ~~conductors~~ in the same room or space shall be enclosed in a grounded metal raceway and no opening, such as an outlet box, shall be located within 2 m of bare conductors if up to and including 15 kV or within 3 m of bare conductors above 15 kV. 3) The cables~~conductors~~ of a community antenna distribution circuit shall not be placed in any raceway, compartment, outlet box, junction box, or similar fitting that contains insulated conductors of electric light, power, or Class 1 circuits, unless a) the cables~~conductors~~ of the community antenna distribution circuit are separated from the electric light, power, or insulated Class 1 circuit conductors by a barrier that conforms to Rule 12-904 2) for insulated conductors in raceways or Rule 12-3030 1) for insulated conductors in boxes, cabinets, and fittings; or b) the power or insulated Class 1 conductors are placed solely for the purpose of supplying power to the community antenna distribution circuit.	**SN3961-54**
Revise Rule 54-402 to read: **54-402 Cables~~onductors~~ in a vertical shaft** Cables~~onductors~~ of a community antenna distribution circuit in a vertical shaft shall be in a totally enclosed non-combustible raceway.	**SN3961-54**
Revise Rule 54-404 to read: **54-404 Penetration of a fire separation** Cables~~onductors~~ of a community antenna distribution circuit extending through a fire separation shall be installed so as to limit fire spread in accordance with Rule 2-128.	**SN3961-54**

Revise Rule 54-406 to read: **54-406 Community antenna distribution cablesconductors in ducts and plenum chambers** Community antenna distribution cables ~~conductors~~ shall not be placed in ducts or plenum chambers except as permitted by Rules 2-130 and 12-010.	**SN3961-54**
Revise Rule 54- to read: **54-500 Community antenna distribution amplifiers and other power sources** ~~1) Amplifiers and other devices that supply current to a community antenna distribution circuit from an electric supply circuit shall be approved for the purpose.~~ 1)~~2)~~ Where amplifiers and other power devices are connected to an electric supply circuit and enclosed in a cabinet, the cabinet shall be positioned to be readily accessible and shall be adequately ventilated. 2)~~3)~~ The chassis and cabinets of the community antenna distribution amplifier or other power sources, the outer conductive shield of the coaxial cables, and the metal conduit or the metal cable sheath enclosing the insulated electric supply conductors shall all be connected to the system ground with a minimum No. 6 AWG copper conductor. 3)~~4)~~ Where a cabinet containing an amplifier or other power device is mounted where it is accessible to the public, it shall be provided with a lock or similar closing device.	**SN3948-54** **SN3961-54**
Revise Rule 54-600 to read: **54-600 Overhead cables~~conductors~~ on poles** The installation of overhead community antenna distribution cables~~conductors~~ in proximity to power conductors on poles and in aerial spans between buildings, poles, and other structures shall conform to the provisions of the *Canadian Electrical Code, Part III*.	**SN3961-54**
Revise Rule 54-602 to read: **54-602 Overhead conductors on roofs** 1) Community antenna distribution cables~~conductors~~ passing over buildings shall be kept at least 2.5 m above any roof that can be readily walked upon. 2) Community antenna distribution cables~~conductors~~ shall not be attached to the upper surfaces of roofs or be run within 2.5 m, measured vertically, of a roof, unless a deviation has been allowed in accordance with Rule 2-030. 3) A deviation in accordance with Rule 2-030 shall not be necessary where the building is a garage or other auxiliary building of one storey.	**SN3961-54**
Revise Rule 54-604 to read: **54-604 Cables~~onductors~~ on buildings** 1) Community antenna distribution cables~~conductors~~ on buildings shall be separated from insulated light or power conductors not in cable or conduit by at least 300 mm, unless the conductors are permanently separated by a	**SN3961-54**

continuous and firmly fixed non-metal-type raceway, as permitted in Section 12, in addition to the insulation on the conductors. 2) Community antenna distribution cables~~conductors~~ subject to accidental contact with light or power conductors operating at voltages exceeding 300 V, and attached exposed to buildings, shall be separated from combustible material by being supported on glass, porcelain, or other insulating material acceptable for the purpose, except that such separation is not required where the outer conductive sheath of the coaxial cable is grounded. 3) Community antenna distribution cables~~conductors~~ attached to buildings shall not conflict with other communication cables~~conductors~~ attached to the same building, and sufficient clearances shall be provided so that there will be no unnecessary interference to maintenance operations, and in no case shall the insulated conductors, strand, or equipment of one system cause abrasion to the insulated conductors, strand, or equipment of the other system.	
Revise Rule 54-606 to read: **54-606 Cables~~onductors~~ entering buildings** The community antenna distribution conductors shall enter the building either through a non- combustible, non-absorptive insulating bushing, or through a metal raceway, except that the insulating bushing or raceway shall be permitted to be omitted where the entering conductors pass through masonry or are acceptable for the purpose.	**SN3961-54**
Revise Rule 54-608 to read: **54-608 Lightning conductors** A separation of at least 2 m shall be maintained between cables~~conductors~~ of a community antenna distribution circuit on buildings and lightning conductors.	**SN3961-54**
Revise Rule 54-610 to read: **54-610 Swimming pools** Where cables~~conductors~~ are installed over or adjacent to swimming pools, they shall be placed in accordance with Rules 68-054 and 68-056.	**SN3961-54**
Revise Rule 54-700 to read: **54-700 Direct buried systems** Where community antenna distribution cables~~conductors~~ are direct buried, the sheath shall be suitable for direct burial and the cables~~conductor~~ shall be a) installed outside the same vertical plane that contains differing underground cables~~conductors~~ other than communication cables~~conductors~~, except when installed in accordance with Item f); b) maintained at a minimum horizontal separation of 300 mm from differing underground cables~~conductors~~ other than communication cables~~conductors~~, except when installed in accordance with Item f); c) placed at a minimum depth of 600 mm, unless rock bottom is encountered at a lesser depth, in which case a minimum depth of 450 mm shall be permitted, except that for service cables~~wires~~ under parkways and lawns the depth shall be permitted to be reduced to 450 mm; d) placed with a layer of sand 75 mm deep, both above and below the	**SN3961-54**

cable, if in rocky or stony ground; e) placed at a minimum depth of 900 mm under an area that is subject to vehicular traffic, except that the depth shall be permitted to be reduced to 600 mm provided that there is mechanical protection that consists of i) treated plank at least 38 mm thick or other suitable material that shall be placed over the ~~conductor or~~ cable after first backfilling with 75 mm of sand or earth containing no rocks or stones; or ii) a conduit suitable for earth burial placed to facilitate cable replacement and to minimize traffic vibration damage; and f) equipped with a metal shield when placed in a common trench involving random separation with power supply cables or wiring operations at 750 V or less, in which case the community antenna distribution conductors shall not cross under the supply cables.	
Revise Rule 54-702 to read: **54-702 Underground raceway** Where community antenna distribution cables~~conductors~~ are placed in underground raceway systems a) the raceway, including laterals, shall be separated from those used for the electric power system by not less than 50 mm of concrete or 300 mm of well-tamped earth; b) the raceway shall be located to maintain a minimum depth of 600 mm in areas subject to vehicular traffic and 450 mm in all other areas, except that where rock bottom is encountered at lesser depth the raceway shall be encased in concrete; c) the raceway shall not terminate in the same maintenance hole, and the ~~conductors or~~ cable assembly shall not be placed in the same maintenance hole, used for an electric power system, unless all requirements of Clause 6 of CSA C22.3 No. 7 are adhered to; d) the cables~~conductors~~ shall not be placed in the same raceway containing electric lighting, power, or insulated Class 1 circuit conductors; e) the cable sheath shall be suitable for wet locations; and f) raceways entering a building and forming part of an underground installation shall be sealed with a suitable compound in such a way that moisture and gas will not enter the building and shall i) enter the building above ground where practicable; or ii) be suitably drained.	**SN3961-54**
Revise Rule 54-704 to read: **54-704 Underground block distribution** Where the entire street circuit is run underground and the circuit is placed to prevent contact with electric lighting, power, or Class 1 circuits of more than 300 V, insulating bushings or raceways as specified in Rule 54-606 shall not be required where the circuit cables~~conductors~~ enter a building.	**SN3961-54**
Revise Rule 54-800 to read: **54-800 Lightning arresters for receiving stations** 1) A lightning arrester shall be provided for each lead-in conductor from an	**SN3961-54**

outdoor antenna to a receiving station, except where such a lead-in conductor is protected by a continuous grounded metal shield between the antenna and the point of entrance to the building. 2) Lightning arresters for receiving stations shall be located outside the building or inside the building between the point of entrance of the lead-in and the radio set or transformer, and as near as practicable to the entrance of the cables~~conductors~~ to the building. 3) Lightning arresters for receiving stations shall not be located near combustible material nor in a hazardous location.	
Revise Rule 54-902 to read: **54-902 Insulation of grounding conductor** ~~The~~ A bare grounding conductor shall be permitted ~~to be uninsulated~~.	**SN3961-54**
Revise Rule 54-920 to read: **54-920 Radio noise suppressors** Radio interference eliminators, interference capacitors, or radio noise suppressors connected to power supply leads ~~shall be of a type approved for the purpose and~~ shall not be exposed to mechanical damage.	**SN3948-54**

SECTION 58

Revise Rule 58-014 to read: SN3961-58

58-014 Voltage limitations

1) Voltages for communication, control, remote control, monitoring, supervision, and signal circuits shall not exceed 48 volts-to-ground (nominal), with the exception of circuits for hand-crank-type telephone signal bells.
2) Voltages for motors, machine brakes, motor-generator sets, floodlighting, and heaters shall not exceed 750 volts-to-ground.
3) Voltages for motor control circuits shall not exceed 120 volts-to-ground.
4) Voltages for aerial conductors or cables carried between towers that support the passenger ropeway shall not exceed 30 volts-to-ground or 42 volts-to-ground peak, with the exception of circuits for hand- crank-type telephone signal bells.
5) Voltages for all other circuits shall not exceed 300 volts-to-ground.

Revise Rule 58-102 to read: SN3961-58

58-102 Minimum size of conductors

1) In travelling cables, the minimum size of insulated conductors for all communication, control, remote control, monitoring, supervision, and signal circuits shall be No. 20 AWG copper.
2) Except as specified in Subrule 1), the minimum size of insulated conductors for all communication, control, remote control, monitoring, supervision, and signal circuits shall be No. 26 AWG copper.

Revise Rule 58-104 to read: SN3961-58

58-104 Grouping of insulated conductors and cables

1) Optical fiber cables, shielded cables, and insulated conductors for operating devices, power, motor, heating, air conditioning, operating, signal, communication, control, safety, fire alarm, and lighting circuits shall be permitted to be run in the same raceway system or travelling cable, provided that the insulation rating for each conductor is not less than the maximum circuit voltage in the cable or raceway system.
2) Optical fiber cables, shielded cables, and insulated conductors for operating devices, operating, signal, communication, control, safety, and fire alarm circuits shall be permitted to be run in the same aerial cable, provided that the insulation rating for each conductor is not less than the maximum circuit voltage.
3) The optical fiber cables referred to in Subrules 1) and 2) shall include conductive, non-conductive, and hybrid types.

Revise Subrule 58-200 1) and Item 58-200 2)i) to read: SN3961-58

58-200 Wiring methods

1) Insulated ~~C~~conductors, cables, and optical fiber~~s~~ cables located in machine

rooms, control rooms, machinery spaces, control spaces, and in or on cabins, not including travelling cables connecting the movable drive carriage or movable return carriage, shall be installed in rigid metal conduit, electrical metallic tubing, rigid PVC conduit, or wireways. 2) Notwithstanding Subrule 1), the following wiring methods shall be permitted in machine rooms, control rooms, machinery spaces, control spaces, and in or on cabins: “ “ i) ~~jacketed~~ flexible cords and cables used in extra-low-voltage circuits ~~(30 V or less)~~, provided that the cords and cables are i) not greater than 2 m in length; and ii) supported and provided with mechanical protection.	

SECTION 64

NOTE: The revision below was conditionally approved subject to development and approval of Rules for energy storage systems.

SN4275

Revise the title of Section 64 and Rule 64-000 to read:

Section 64 — Renewable energy, energy production, and energy storage systems

64-000 Scope (see Appendix B)

1) This Section applies to the installation of renewable energy systems, energy production systems, and energy storage systems except where the voltage and current are limited in accordance with Rule 16-200 1) a) and b).

2) This Section supplements or amends the general requirements of this Code.

SECTION 66

Revise Rule 66-100 to read: SN3961-66

66-100 Supporting of ~~conductors~~cables

1) Only decorative lighting, signal, communication, and control circuits shall be supported on structures that support amusement rides.
2) The decorative lighting and control circuits of one amusement ride shall not be installed on a supporting structure of another ride.
3) Overhead cables~~conductors~~ shall have a vertical clearance to finished grade of not less than the following:
   a) across highways, streets, lanes, and alleys: 5.5 m;
   b) across areas accessible to vehicles: 5 m; and
   c) across areas accessible to pedestrians: 3.5 m.

Revise Rule 66-200 to read: SN3961-66

66-200 Grounding

1) The service and electrical distribution shall be grounded in accordance with Section 10.
2) Notwithstanding Rule 10-118 1) a), a plug-in, locking-type single-conductor cable connector shall be permitted for connection to a grounding electrode for a mobile generator.~~grounding electrodes for mobile generators shall be permitted to be connected using single-conductor, plug-in, locking-type connectors.~~
3) A mobile generator grounding conductor shall
   a) be dedicated to the mobile generator;
   b) be run directly, by the shortest practicable route;
   c) have no more than two sets of mated, in-line, single-pin connections, excluding the connections at the grounding electrodes and the mobile generator;
   d) not exceed 50 m in total length; and
   e) be not less than No. 4 AWG.

Revise Subrules 66-456 7) and 8) to read: SN3961-66

66-456 Single-conductor cable connections

“

“

7) No more than one tapping or parallel tee per single-conductor cable shall be used at any one point in a power distribution system.
8) Any distribution splitting or combining devices requiring more than two load connections per single-conductor cable shall use a single multiple-connection device at that point.

SECTION 68

Revise Rule 68-054 to read:

SN3961-68

68-054 Overhead wiring (see Appendix B)

1) No pool shall be placed under or near overhead wiring, and no overhead wiring shall be placed over or near a pool, unless the installation complies with the requirements of this Rule.
2) There shall not be any overhead wiring above the pool and other elevated surfaces associated with the pool, such as a diving structure, slide, swings, observation stand, tower, or platform, or above the adjacent area extending 5.0 m horizontally from the pool edge, except as permitted by Subrules 3) and 4).
3) ~~Insulated c~~Communication cables~~conductors~~, communication antenna distribution cables~~conductors~~, and neutral supported cables not exceeding 750 V shall be permitted to be located over a pool and other elevated surfaces associated with the pool, or above the adjacent area extending horizontally from the pool edge, provided that there is a clearance of at least 5.0 m measured from the outer edge of the pool or from other elevated surfaces associated with the pool.
4) Conductors other than the cables~~those~~ covered by Subrule 3) and operating at not more than 50 kV phase-to-phase shall be permitted to be located over a pool and other elevated surfaces associated with the pool, or above the adjacent area extending horizontally from the pool edge, provided that there is a clearance of at least 7.5 m measured from the outer edge of the pool or from other elevated surfaces associated with the pool.

Revise Rule 68-056 to read:

SN3961-68

68-056 Underground wiring

The horizontal separation between the inside walls of a pool and underground cables or insulated conductors in a raceway, except for bonding conductors or cables or insulated conductors in a raceway supplying electrical equipment associated with the pool and protected by a Class A ground fault circuit interrupter, shall be not less than that shown in Table 61.

Revise Subrule 68-058 6) to read:

SN3961-68

68-058 Bonding (see Appendix B)

“

“

6) The bonding conductor from the junction box referred to in Rule 68-060 shall be run to the panelboard supplying pool electrical equipment and, if smaller than No. 6 AWG, shall be installed and mechanically protected in the same manner as the insulated circuit conductors or cable.

Revise Subrules 68-060 2) and 4) to read: **68-060 Junction and deck boxes** (see Appendix B) “ 2) Junction boxes installed on the supply side of conduits extending to forming shells, hereafter referred to as deck boxes, shall be suitable~~specifically approved~~ for the purpose. “ 4) Deck boxes shall not contain the insulated conductors of any circuits other than those used exclusively to supply the underwater equipment. “	**SN3948-68** **SN3961-68**
Revise Subrule 68-066 1) to read: **68-066 Luminaires and lighting equipment** 1) Wet-niche or submersible luminaires shall a) be mounted in forming shells that have provision for a suitable connection to the wiring method used; b) unless suitable~~specifically approved~~ and marked for submersion at a greater depth, not be submersed in the pool water at a depth of more than 600 mm, such distance being measured from the centre of the lens face of the luminaire to the normal water level; and c) operate with neither the supply voltage to the luminaire nor its associated ballast or transformer, if applicable, nor the secondary open-circuit voltage of the ballast or transformer exceeding 150 V during either starting or operating conditions.	**SN3948-68**
Revise Subrule 68-100 4) to read: **68-100 Wiring method** “ 4) Insulated ~~C~~conductors on the load side of each Class A ground fault circuit interrupter shall be kept entirely independent of all other wiring that is not protected in that way and shall not enter a luminaire, raceway, box, or cabinet occupied by other wiring except for panelboards that house the interrupters.	**SN3961-68**
Revise Rule 68-200 to read: **68-200 Electrical equipment** No electrical equipment shall be located in the pool water or on the pool wall unless suitable~~specifically approved~~ for the purpose.	**SN3948-68**
Revise Rule 68-202 to read: **68-202 Pumps** 1) Swimming pool pumps shall be a) supplied from a permanently installed receptacle located not less than 1.5 m nor more than 7.5 m from the pool wall; and b) protected by a Class A ground fault circuit interrupter if located within 3 m of the inside walls of the pool and not suitably separated from the pool	**SN3948-68**

area by a fence, wall, or other permanent barrier. 2) Swimming pool pumps located within 3 m of the pool walls shall be marked ~~specifically approved~~ for the purpose.	
Revise Rule 68-304 to read: **68-304 Control** 1) A hydromassage bathtub shall be controlled by an on-off device located in accordance with Subrule 2). 2) Electric controls associated with a hydromassage bathtub shall be located behind a barrier or shall be located not less than 1 m horizontally from the wall of the hydromassage bathtub, unless they are an integral part of a~~n approved~~ factory-built hydromassage bathtub.	**SN3948-68**
Revise Subrule 68-404 1) to read: **68-404 Controls and other electrical equipment** (see Appendix B) 1) Controls for a spa or hot tub shall be located behind a barrier or not less than 1 m horizontally from the spa or hot tub, unless they are an integral part of a~~n approved~~ factory-built spa or hot tub.	**SN3948-68**
Revise Subrule 68-406 5) to read: **68-406 Leakage current collectors** “ “ 5) The bonding conductor for leakage current collectors shall be a) not smaller than that required by Table 16 where the bonding conductors are mechanically protected in the same manner as the insulated circuit conductors or cable; or b) a minimum No. 6 AWG copper conductor.	**SN3961-68**
Revise Rule 68-408 to read: **68-408 Field-assembled units** (see Appendix B) 1) Spas and hot tubs field assembled with individual components shall be installed in accordance with Rules 68-402 to 68-406 and Subrules 2) and 3) of this Rule. 2) Individual components such as pumps, heaters, and blowers shall be ~~specifically approved~~ suitable for use with spas or hot tubs. 3) Air blowers shall be installed above the tub rim, or other means shall be used to prevent water from contacting blower live parts.	**SN3948-68**

SECTION 70

Revise Subrule 70-108 1) to read:

SN3948-70
SN3961-70

70-108 Power supply cord or cord set

1) Where a power supply cord or cord set is used except as provided for in Subrule 4), the cord shall

a) be provided as part of the mobile structure;
b) have an ampacity not less than the ampere rating of the attachment plug;
c) be of the extra-hard-usage type suitable for outdoor use as selected in accordance with Rule 12-402 1) or 12-406 1);
d) have separate identified and bonding conductors;
e) be not less than 7.5 m in length, as measured from the attachment plug to the point of entrance to the unit;
f) if it is a permanently connected power supply cord, terminate at the main disconnecting means in the unit or at a box in or on the unit, suitable space being provided in the unit for storage of the cord when it is not in use to protect it from damage; and
g) have a suitable grounding-type attachment plug and where used in an application covered by Section 8, the plug shall have ~~with~~ an ampere rating ~~as follows:~~

~~i) for applications covered by Section 8,~~ not less than that of the insulated service conductor ampacity required in Section 8.~~; or~~

~~ii) for other applications, not less than that for which it is approved.~~

Revise Item 70-110 1)b) to read:

SN3961-70

70-110 Disconnecting means and main overcurrent protection

1) Except as provided for in Subrule 2), each structure shall be provided with

a) a service box or a combined service and distribution box located within the structure with provision for grounding the neutral;
b) main overcurrent protection having a current rating at least equal to the minimum ampacity of the consumer's service, as determined in accordance with Section 8, but in no case less than 50 A for mobile homes and not exceeding the ampacity of the insulated supply conductors actually used, except as permitted by Rule 14-104; and

Revise Item 70-112 d) to read:

SN3961-70

70-112 Location of service or distribution equipment

Service or distribution equipment shall be

"

"

d) located as close as practicable to the point where the insulated supply conductors enter the structure; and

Revise Rule 70-114 to read: **70-114 Wiring methods — General** 1) The wiring method shall be as specified in Section 12, except where flexible cords are permitted in Rule 70-116 or for Class 2 circuits. 2) Surfaces against which ~~conductors~~ cables are in contact shall be smooth and entirely free from sharp edges and burrs that may cause abrasion of the cable jacket or insulation on the conductors. 3) Where cable is required to be protected from mechanical damage by Rules 12-516, 12-616, and 12-710, plates or tubes of sheet steel of at least No. 16 MSG or the equivalent, secured in place, shall be used to protect the cable from driven nails, screws, or staples. 4) Cable run through holes in joists or studs shall be considered to be secured for the purposes of Rules 12-510 and 12-618. 5) Unless provided with insulation suitable for the highest voltage involved, insulated conductors of low-voltage and extra-low-voltage circuits shall be separated by barriers, or shall be segregated by clamping, routing, or equivalent means that will ensure permanent separation, and shall in any case be separated or segregated from bare live parts of the other circuit. 6) For the purposes of Subrule 5), the outer covering of non-metallic-sheathed cable shall be considered to be a suitable barrier. 7) Bare live parts, including terminals of electrical equipment in extra-low-voltage circuits other than Class 2 circuits, shall be enclosed in accordance with Rule 2-202 1). 8) Insulated ~~C~~conductors for extra-low-voltage Class 2 circuits shall be Type LVT, low-energy safety control cable, or the equivalent, and if protected by fuses in accordance with Rule 16-200, the fuses shall not be interchangeable with those of higher ratings.	**SN3961-70**
Revise Subrule 70-124 1) to read: **70-124 Ventilating fans used in kitchen areas** (see Appendix B) 1) The motor of any fan installed in the kitchen area above or in the vicinity of cooking equipment and located in the air stream shall be of the totally enclosed type unless marked as being suitable for use in a household cooking area.~~specifically approved for this application.~~	**SN3948-70**
Revise Subrule 70-204 1) to read: **70-204 Service and distribution equipment** 1) Provision shall be made at the factory for the installation either at the factory or on the job site of a service box or other service equipment in the structure that shall be a) in a readily accessible location within the building; b) as close as practicable to the point where the insulated service conductors or cable enter the building; and c) within the individual units where multiple occupancy residential condominium or row-house structures are involved or, in all other cases, in a central location accessible to all tenants.	**SN3961-70**

# SECTION 72	
Revise Rule 72-104 to read: **72-104 Feeders** Feeders between the park consumer's service equipment and the park distribution centres shall be permitted to be installed in accordance with the applicable requirements for service conductors and cables.	**SN3961-72**

SECTION 74

Revise Subrule 74-004 3) to read: **SN3961-74**

74-004 Wiring methods (see Appendix B)

“

3) For installations covered by this Section of the Code, in areas not accessible to the public, ~~single conductors and~~ cable[s] ~~assemblies~~ shall be Type ASLC and shall be installed as follows:
   a) when installed in a raceway, be no less than 450 mm deep;
   b) when direct buried, be no less than 450 mm deep with a layer of sand or screened earth extending at least 75 mm above and below the cables~~conductors~~, if in rocky or stony ground; and
   c) when installed under runways, taxiways, aprons, and roads, be provided with mechanical protection in the form of rigid conduit or a system of concrete-encased underground raceways installed a minimum of 600 mm deep.

Revise Subrule 74-006 2) to read: **SN3961-74**

74-006 Direct burial transformers

“

2) The secondary insulated conductors shall be colour-coded and one conductor shall be identified.

Revise Subrule 74-010 1) to read: **SN3961-74**

74-010 Ground counterpoise

1) Ground counterpoise conductors shall be soft copper ~~wire~~ not smaller than No. 8 AWG and shall be
   a) solid bare conductor~~wire~~ where installed in earth; or
   b) insulated and have a green finish if installed underground in raceways.

TABLES

Revise Table 57 as shown:

SN3961-16

Table 57
Allowable ampacities for insulated copper conductors of Class 2 circuits~~copper conductors~~
(based on an ambient temperature of 30 °C†)
[See Rule 16-210 6) and Table 5A.]

Size, AWG	Single conductors in free air, A	Not more than three ~~copper~~ conductors in raceway or cable*, A
26	3	1
24	4	2
22	5	2.5
20	7	3.5
19	8	4
18	9	5
16	13	10
Col. 1	**Col. 2**	**Col. 3**

** Where more than three insulated conductors are in a raceway or cable, apply the following derating factors to Column 3:*

Conductors in raceway or cable	*Derating factor*
4–6	*0.8*
7–24	*0.7*
25–42	*0.6*
43–50	*0.5*

† For ambient temperatures over 30 °C for Columns 2 and 3, apply the correction factors of Table 5A, Column 2.

Revise Notes beneath Table 58 to read:

SN3961-40

Notes:

1) *Allowable ampacities of insulated copper conductors used with 15 minute motors shall be the 30 minute ratings increased by 12%.*

2) *For five or more simultaneously energized ~~power~~ insulated conductors in raceway or cable, the ampacity of each shall be reduced to 80% of that shown in this Table.*

3) *For insulated conductors subject to ambient temperatures in excess of 30 °C, the correction ~~derating~~ factors in Table 5A shall apply to the ampacities shown in this Table.*

Revise Table 61 as shown:

SN3961-68

Table 61
Minimum buried cable horizontal separations from pools
(See Rule 68-056.)

Type of installation	Minimum horizontal separation, m	
	Direct buried unjacketed cable with bare neutral or cables with a semi-conducting jacket	Cables with a non-conducting jacket or insulated conductors in non-conducting raceways~~ducts~~
Communication conductors	1.5	1.0
Power cables and insulated conductors		
0–750 V	1.5	1.0
751–15 000 V	3.0	1.5
15 001–28 000 V	6.0	2.0

Notes:
1) *Voltages are phase-to-phase.*
2) *This Table is derived from CEA 266 D 991.*
3) *The separation from non-conducting raceways~~ducts~~ is measured from the nearest edge of the raceway ~~duct~~ to the inside wall of the pool.*

APPENDIX B

Revise Appendix B Note for definition of Approved to read:

SN4252

Approved
It is intended by this definition that electrical equipment installed under provisions of this Code is required to be certified to the applicable CSA product Standards as listed in Appendix A. Where such CSA Standards do not exist or are not applicable, it is intended by this definition that such electrical equipment be certified to other applicable Standards, such as ULC Standards. Code users should be aware that fire alarm system equipment is deemed to be approved when it is certified to the applicable product Standards listed in CAN/ULC-S524.

This definition is also intended to reflect the fact that equipment approval could be accomplished via a field evaluation procedure in conformance with CSA Model Code SPE-1000, or for medical electrical equipment - in conformance with CSA Model Code SPE-3000, where special inspection bodies are recognized by participating provincial and territorial authorities having jurisdiction. For new products that are not available at the time this Code is adopted, the authority having jurisdiction may permit the use of products that comply with the requirements set out by that jurisdiction.

Revise Appendix B Note for definition of Ventilated cable tray to read:

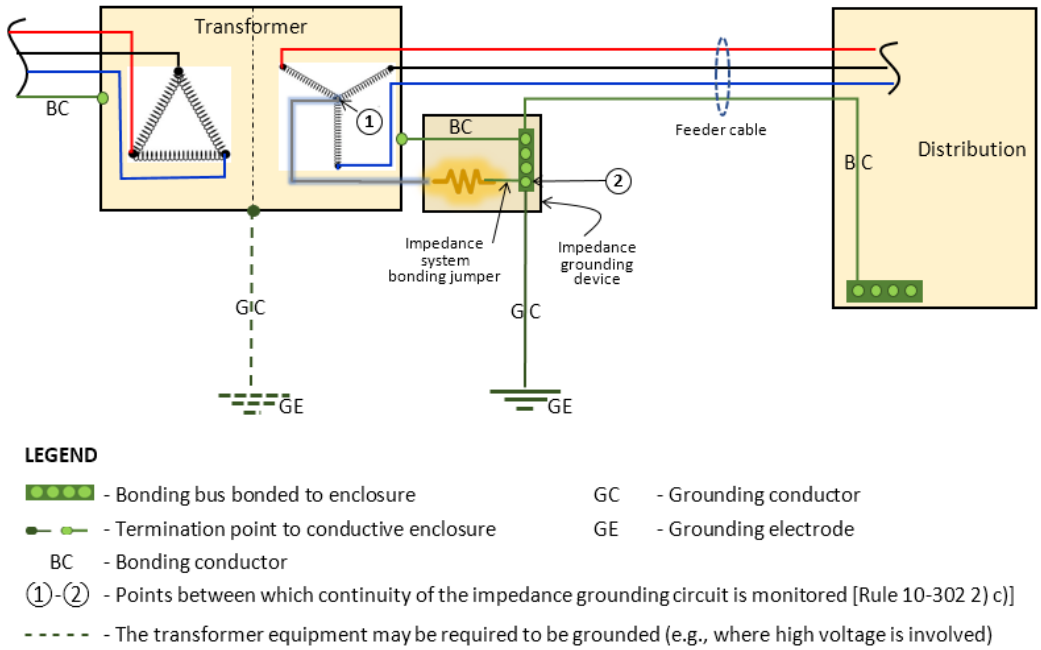
SN3961-0D

Ventilated cable tray
Ventilated cable tray includes ~~a cable tray of the~~ wire mesh cable tray.~~type.~~

Replace Figure B10-12 with the following:

SN4261

Figure B10-12
Impedance grounded system



LEGEND

- Bonding bus bonded to enclosure
- Termination point to conductive enclosure
- BC - Bonding conductor
- GC - Grounding conductor
- GE - Grounding electrode
- ①-② - Points between which continuity of the impedance grounding circuit is monitored [Rule 10-302 2) c)]
- - - - - - The transformer equipment may be required to be grounded (e.g., where high voltage is involved)

Revise Appendix B Note for Rule 16-210 to read:

SN3961-16

Rule 16-210
Both LVT and ELC are approved cables for Class 2 circuit applications under the conditions outlined in Table 19. Type ELC cables~~conductors~~ do not have an overall protective jacket and are further limited in use under this Rule to certain Class 2 circuits operating at 30 V or less, such as doorbells, intrusion devices, etc., in dwelling units in buildings of combustible construction. Type ELC is not permitted for the wiring of circuits related to fire safety, such as fire alarms or smoke alarm devices.

Revise Appendix B Note for Rule 18-002 to read:

SN4224

Rule 18-002

~~**Cable seal** — a seal that is designed to prevent the escape of flames from an explosion-proof enclosure. Because cables are not designed to withstand the pressures of an explosion, transmission of an explosion into a cable could result in ignition of gases or vapours in the area outside the enclosure.~~

Combustible dust — combustible dust includes dust and grit as defined in ISO 4225. The term “solid particles” is intended to address particles in the solid phase and not the gaseous or liquid phase but does not preclude a hollow particle. See ASTM E1226 or ISO 6184-1 for procedures for determining the explosibility of dusts. Dusts are considered combustible dusts unless it has been confirmed by

test in accordance with ASTM E1226 or ISO 6184-1 that they are not combustible dusts.

Combustible flyings — examples of combustible flyings include rayon, cotton (including cotton linters and cotton waste), sisal, jute, hemp, cocoa fibre, oakum, and baled waste kapok.

~~**Conduit seal** — a seal that is designed to prevent the passage of flames from one portion of the electrical installation to another through the conduit system and to minimize the passage of gases or vapours at atmospheric pressure. Unless specifically designed for the purpose, conduit seals are not intended to prevent the passage of fluids at a continuous pressure differential across the seal. Even at differences in pressure across the seal equivalent to a few centimetres of water, there may be passage of gas or vapour through the seal and/or through the insulated and bare conductors passing through the seal. Where conduit seals are exposed to continuous pressure, there may be a danger of transmission of flammable fluids to "safe areas" resulting in fire or explosions.~~

Explosion seal –This seal is intended to prevent hot gases resulting from an ignition of an explosive gas atmosphere on one side of the seal, from igniting an explosive gas atmosphere on the other side of the seal (or external to the cable, for a cable seal). The design of these seals also minimizes the passage of flammable fluids through them under atmospheric pressure.

Flammable fluid migration seal – A flammable fluid migration seal is only intended to prevent the passage of flammable fluid at atmospheric pressure. It is not intended to prevent the transmission of an explosion or of flammable fluids under pressure. While explosion seals can meet this definition (see note to Rule 18-070), other methods using compounds such as silicone or duct seal will be suitable, providing they are installed in a manner that will prevent migration of flammable fluids at atmospheric pressure.

Hazardous location cables — cables that are certified to CSA C22.2 No. 174 are marked "HL". Before a cable type can be submitted for testing under CSA C22.2 No. 174, it must first be approved under a CSA cable Standard, for example, CSA C22.2 No. 131. The additional tests in CSA C22.2 No. 174 ensure a more rugged cable suitable for all hazardous locations. While "HL" marked cables are suitable for use in all hazardous locations, they are not required for all hazardous locations. For example, tray cables and instrument and control cables are also suitable for use in Zones 2 and 22.

Primary seal — a seal that is typically a part of electrical devices such as pressure-, temperature-, or flow-measuring devices and devices (such as canned pumps) in which the electrical connections are immersed in the process fluids.

Secondary seal — a seal that is designed to prevent flammable process fluids from entering the electrical wiring system upon failure of a primary seal. These devices typically prevent passage of fluids at process pressure by a combination of sealing and pressure relief.

Revise Appendix B Note for Rule 18-070 to read:

SN4224
SN4313

Rule 18-070

ANSI/~~ISA~~ UL 122701 provides construction, performance, and marking requirements for the process seals incorporated into process-connected electrical equipment. Equipment containing a primary seal that complies with this Standard is eligible to include either the "Single Seal" or "Dual Seal" designation in the nameplate markings. These markings indicate that the electrical equipment is designed to prevent the migration of flammable fluid through the equipment into the wiring system when the equipment is operated at or lower than its rated pressure. Devices certified as conforming to ANSI/~~ISA~~ UL 122701 and marked either "Single Seal" or "Dual Seal" meet the intent of Subrule 1) a).

Where devices containing primary seals are not marked to indicate conformance with ANSI/~~ISA~~ UL 122701, other means may be used to prevent fluid migration though the wiring system. This may include the use of suitable barriers located between the primary seal and the wiring system, such as secondary seals or short lengths of mineral-insulated (MI) cable. IEEE 1673, *Standard for Requirements for Conduit and Cable Seals for Field Connected Wiring to Equipment in Petroleum and Chemical Industry Exposed to Pressures above Atmospheric (1.5 kPa, 0.22 psi)*, provides construction, performance, and marking requirements for field installed secondary seals. Where secondary seals are installed, examples of design features that make the occurrence of primary seal failure obvious are vents, drains, visible rupture or leakage, audible whistles, or electronic monitoring. The intent of making the primary seal failure obvious is to prevent continuous pressure on the secondary seal and the possibility of an eventual secondary seal failure, as well as to protect personnel working on the device. Alternatively, where means to relieve pressure on a secondary seal is not provided, a cautionary label should be provided to warn personnel that the enclosure may contain flammable fluid under pressure.

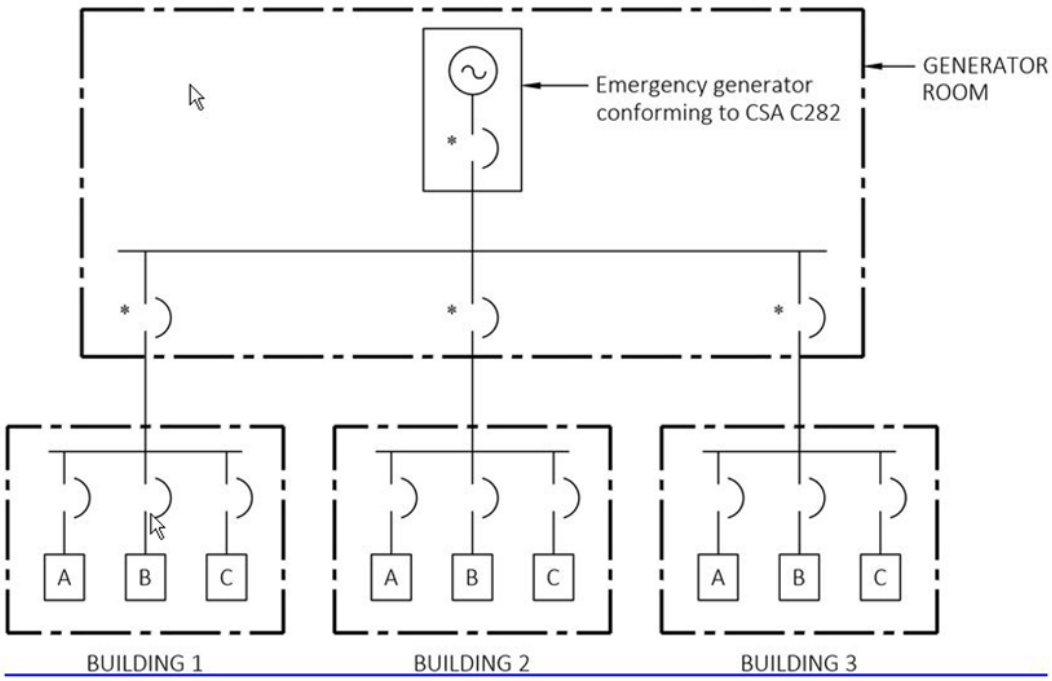
In subsurface applications, for example oil and gas wells, the requirement for process (flammable fluid) sealing still exists. Wiring and fibre optic systems would need to be process sealed as they pass through the surface wellhead to prevent flammable fluids from migrating through the wiring and fibre optic systems on the surface. A field installed secondary seal would be difficult to implement as there is a need to have a primary seal with annunciation of failure, which may be difficult to address on downhole equipment. Sealing at the wellhead should incorporate both primary and secondary seals, which can be certified "dual seals" or "single seals".

Engineering considerations may lead to the conclusion that the probability of leakage from a specific installation will be negligible. Acceptable factors such as an extensive history of safe operation with similar installations, or the use of a primary seal with a pressure rating well in excess of the maximum process operating pressure, may be considered.

In conduit systems, the function of the primary and secondary seals is to prevent flammable fluids (liquid, gas or vapour) that may be under pressure from getting into the wiring system. Beyond the primary and secondary seals there is no opportunity for gas under significant pressure to enter the wiring system. However it is important to understand that situations such as where fluids under pressure are located in an enclosed space (such as gas sample tubing situated inside a control panel), conduits and cables entering the enclosure may require sealing (secondary seal) in case there is a leak under pressure within the enclosure from sources of release.

Therefore downstream of the secondary seals (or primary seals where there are no secondary seals), any fluids entering the wiring system will be at or near atmospheric pressure. For example, where there is a major release of natural gas into a process building, it is not possible to build up significant pressure in the building as the walls and windows will burst at a relatively low pressure. There is no need to seal conduit against significant pressure in Zone 1, however the conduit itself is required to be an explosion-proof enclosure, so seals at the boundary of Zone 1 locations are required to be explosion-proof to maintain the explosion-proof rating of the conduit. In Zone 2, conduit is not required to be explosion-proof, so boundary seals are not required to be explosion-proof. They need only be flammable fluid migration seals, for fluids that are not under pressure. A flammable fluid migration seal can be made using any suitable fitting that has been filled with a material capable of sufficiently prohibiting the transmission of the flammable fluid at or near atmospheric pressure. Properly installed explosion seals are one possible means of providing a flammable fluid migration seal. Cables with continuous sheaths will only admit fluids at the point they terminate in hazardous areas. Therefore after the primary and secondary seals, the probability of flammable fluids entering cables (except in enclosures containing equipment with fluids under pressure), is low enough that only a flammable fluid migration seal is required. In many situations, filling the end of the cable connector where the conductors exit the connector (or where the conductors exit the cable when the jacket extends beyond the connecter) with silicone or other suitable material will provide an effective flammable fluid migration seal in Zones 0, 1 and 2. Properly installed explosion-proof or flameproof cable glands are one possible means of providing a fluid migration seal. As flammable fluid migration seals are often not obvious where they are installed, they are required to be identified. This can be done with a label or tag located near the seals, identifying them as a “flammable fluid migration seal” and indicating their location if it is not readily apparent.	
Revise Appendix B Note for Rule 24-106 5) to read: **Rule 24-106 5)** It is intended by this Subrule to mandate installation of 15 A or 20 A non-locking hospital grade receptacles throughout all locations within a patient care area, including locations of tables, desks, or counters used by the staff who perform care or treatment functions in a patient care area. Nursing stations may also be located within some patient care areas, such as intensive care units, emergency wards, etc. It is not intended by this Subrule to mandate installation of hospital-grade receptacles in bathrooms or washrooms contained within a patient care area.	**SN4243**
Revise Appendix B Note for Rule 32-300 to read: **Rule 32-300** In light of on the requirement of Subrule 32-206(4) for the setting of the overcurrent protection in the circuit breaker upstream of the fire pump feeder conductors, the feeder conductors between a fire pump and normal and emergency power sources maybe subjected to locked rotor current of the fire pump. The intent of this Rule is to size conductors so that upon temporary subjection to rotor current there will be no compromise in the integrity of their insulation.	**SN3903**

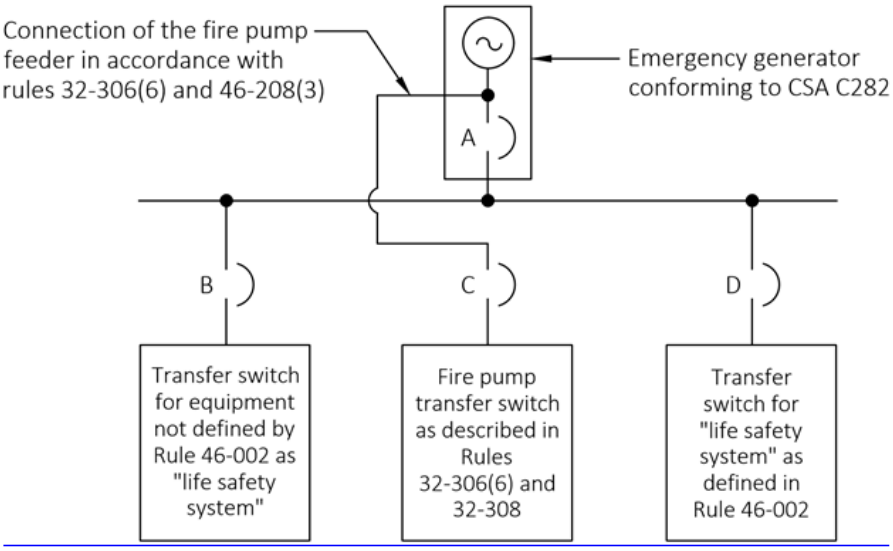
The intent of this Rule is also to protect the feeder conductors between a fire pump and an emergency power source from fire damage. The *National Building Code of Canada* requires that conductors supplying life and fire safety equipment be protected against exposure to fire to ensure continued operation of this equipment for a period not less than 1 h. NFPA 20 also mandates protection of circuits feeding fire pumps against possible damage by fire. Specific requirements pertaining to the protection of conductors against exposure to fire can be found in Article 3.2.7.10 of the *National Building Code of Canada* or in the appropriate provincial/territorial legislation.	
Revise Appendix B Note for Rule 46-108 5) to read: **Rule 46-108 5)** The intent of this Subrule is to keep the wiring between the *National Building Code of Canada* required emergency power supply and life safety systems entirely independent of all wiring to other loads that are connected to the emergency power supply, except where necessary in enclosures for splitters that are provided for connection between the emergency power supply overcurrent device and a) a separate disconnecting means and overcurrent device for a feeder supplying a transfer switch for equipment that does not fall within the definition of “life safety systems” in this Section; b) a separate circuit breaker for a feeder supplying a fire pump transfer switch in conformance with Rules 32-306 4) and 32-308; and c) except for a fire pump circuit breaker, a separate disconnecting means and the overcurrent device for a feeder supplying a transfer switch for equipment that falls within the definition of “life safety systems” in this Section. See Figure B46-1. For installations where, in accordance with C282, a single emergency generator provides an emergency power supply to a site comprising multiple buildings, it is intended by this Rule that a distribution arrangement shown in Figure B46-2 is provided for the loads located in each building at the site supplied by the single emergency generator.	**SN4236**

Add new Figure B46-2 as shown: **Figure B46-2** **Emergency power supply from one building to the loads located in multiple buildings**  A - Transfer switch for loads not defined by Rule 46-002 as "life safety system" B - Fire pump transfer switch, as described in Rule 32-308. Note: For fire pump feeder connection, see also arrangement shown in the Figure B46-2, as permitted by Rules 32-306(6) and 46-208(3). C - Transfer switch for loads of "life safety systems" as defined in Rule 46-002.	**SN4236**
Add new Appendix B Note for Rule 46-208 1) to read: **Rule 46-208 1)** The feeder or branch circuit overcurrent devices described by this Subrule may also be provided as part of the emergency generator supply, in accordance with Clauses 5.1(f) of C282.	**SN4234**
Add new Appendix B Note for Rule 46-208 3) to read: **Rule 46-208 3)** It is not intended to provide selective coordination between the overcurrent protective devices when the feeder or branch circuit overcurrent protective devices are permitted to be connected upstream of the generator main overcurrent protective device in accordance with Clause 8.7.2 of C282 (see Rule 32-306(6) and Figure B46-3)	**SN4234**

Add new Figure B46-3 as shown:

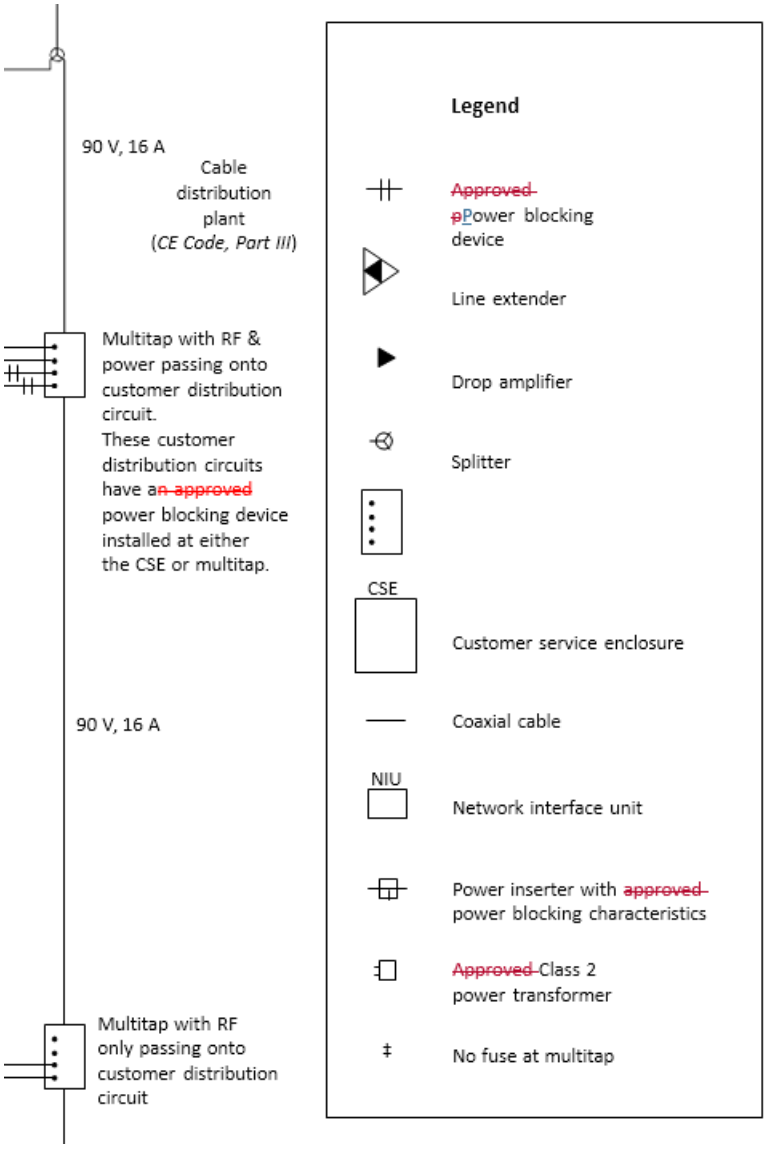
SN4234

Figure B46-3



A - Circuit breaker of the emergency generator
B - Circuit breaker of the feeder supplying equipment other than "Life Safety System"
C - Circuit breaker of the fire pump feeder
D - Circuit breaker of the feeder supplying "Life Safety System"

Notes:
1. Selective coordination between the circuit breaker "A" and circuit breaker "C" is not required, when a connection arrangement permitted by Subrule 46-208(3), is used.
2. Selective coordination between circuit breaker "A" and circuit breakers "B" and "D" is required as per Subrule (1)

Revise text in Figure B54-1 (complete Figure not shown):  	**SN3948-54**
Revise Appendix B Note for Rule 54-200 1) to read: **Rule 54-200 1)** The point at which the exposed cables~~conductors~~ enter a building is considered to be the point of emergence through an exterior wall, a concrete floor slab, or from a totally enclosed non-combustible entrance raceway.	**SN3961-54**
Add new Appendix B Note for Rule 68-202 to read: **Rule 68-202** CSA Standard C22.2 No 108 Liquid pumps, has additional construction, and testing requirements for pumps designed for swimming pool use. Such pumps are marked "INSULATED WET END PUMP and POMPE À EXTRÉMITÉ IMMERGÉE ISOLÉE."	**SN3948-68**

Add new Appendix B Note for Rule 68-408 to read: **Rule 68-408** CSA Standard C22.2 No. 218.1 Spas, hot tubs, and associated equipment, has specific requirements for pumps, heaters, and blowers used with spas or hot tubs.	**SN3948-68**
Add new Appendix B Note for Rule 70-124 a) to read: **Rule 70-124 a)** CSA Standard C22.2 No. 113 contains construction and testing requirements for ventilating fans in range hoods. Such fans are marked “SUITABLE FOR USE IN A HOUSEHOLD COOKING AREA and CONVIENT A L’EMPLOI DANS UNE ZONE DE CUISSON MENAGERE, or equivalent wording.	**SN3948-70**

© CSA Group

# APPENDIX I	
Add the following entry to Appendix I: **Rule 4-006 1)** **Question:** In accordance with the new note in Table 5A, "** The insulation temperature rating is the temperature marked on the conductor.", if a circuit breaker rated with a maximum conductor termination of 75 degrees C has Teck 90 connected to it to feed a piece of equipment that is marked with a maximum conductor termination of 75 degrees C, yet part way through the cable run, the Teck 90 goes through an area with an ambient exceeding 30 degrees C, would we use the 90 degree column of Table 5A so long as the high ambient area is more than 1.2 meters away from the equipment in accordance with 4-006 (1) & (4)? **Answer:** Yes	**SN4262**
Add the following entry to Appendix I: **Rule 8-304 1)** **Question:** For the application of Rule 8-304(1) is a duplex receptacle considered as one outlet? **Answer:** Yes.	**SN4225A**
Add the following entry to Appendix I: **Rule 8-304 1)** **Question:** For the application of Rule 8-304(1) is a quad receptacle considered as one outlet? **Answer:** Yes	**SN4225B**

APPENDIX J

Delete the following entries from Rule J18-002: SN4224

~~**Cable seal** — a seal that is installed at a cable termination to prevent the release of an explosion from an explosion-proof enclosure and that minimizes the passage of gases or vapours at atmospheric pressure.~~

~~**Conduit seal** — a seal that is installed in a conduit to prevent the passage of an explosion from one portion of the conduit system to another and that minimizes the passage of gases or vapours at atmospheric pressure.~~

Add new term Seals to Rule J18-002 and relocate existing term Secondary seal with revision as shown: SN4224

Seals

Explosion seal – a seal that

a) when installed at a cable or conduit entry to a flameproof or explosion-proof enclosure, prevents the ignition of an explosive gas atmosphere outside the enclosure;

b) when installed in a conduit, prevents the passage of an explosion from one portion of the conduit system to another; and

c) minimizes the passage of flammable fluids at atmospheric pressure.

Flammable fluid migration seal – A cable or conduit seal intended to minimize the transmission of flammable fluids at or near atmospheric pressure.

Primary seal — a seal that isolates process fluids from an electrical system and that has one side of the seal in contact with the process fluid.

Secondary seal — a seal that is designed to prevent the passage of process fluids at the pressure it will be subjected to upon failure of a~~the~~ primary seal.

Revise Rule J18-068 as shown: SN4224

J18-068 ~~Flammable fluid s~~Seals (see Annex JB)

1) Electrical equipment with a primary seal in contact with flammable fluids shall be
   a) constructed or installed ~~so as~~ to prevent migration of flammable fluids through ~~the~~ wiring and fibre optic systems; and
   b) used at pressures lower than the marked maximum working pressure (MWP).
2) Where Subrule 1) is met through the installation of secondary seals, the possibility of primary seal failure shall be indicated by
   a) design features that will make the occurrence of a primary seal failure

obvious; or

b) ~~acceptable~~ marking means indicating that the enclosure may contain flammable fluid under pressure.

3) Flammable fluid migration seals shall be permanently identified.

4) Where field installed seals are required, they shall conform to the following:

a) the seal shall be accessible after installation;

b) splices and taps shall not be made in fittings intended only for sealing with compound, nor shall other fittings in which splices or taps are made be filled with compound; and

c) where there is a probability that liquid or other condensed vapour may be trapped within enclosures for control equipment or at any point in the raceway system, acceptable means shall be provided to prevent accumulation or to permit periodic draining of such liquid or condensed vapour.

Revise Rule J18-108 as shown:

SN4224

J18-108 Sealing, Class I, Division 1 (see Annex JB)

1) ~~Conduit~~ Explosion seals shall be provided in conduit systems where

a) the conduit enters an explosion-proof enclosure containing devices that may produce arcs, sparks, or high temperatures, and shall be located as close as practicable to the enclosure, or as marked on the enclosure, but not farther than 450 mm from the enclosure;

b) the conduit is 53 trade size or larger and enters an explosion-proof enclosure housing terminals, splices, or taps, and shall be located no further than 450 mm from the enclosure;

c) the conduit leaves the Class I, Division 1 location with no box, coupling, or fitting in the conduit run between the seal and the point at which the conduit leaves the location, except

that a rigid unbroken conduit that passes completely through a Class I, Division 1 area, with no fittings less than 300 mm beyond each boundary, need not be sealed, provided that the termination points of the unbroken conduit are in non-hazardous areas; or

d) the conduit enters an enclosure that is not required to be explosion-proof, except that a seal is not required where an unbroken and continuous run of conduit connects two enclosures that are not required to be explosion-proof.

2) Only explosion-proof unions, couplings, reducers, and elbows that are not larger than the trade size of the conduit shall be permitted between the sealing fitting and an explosion-proof enclosure.

3) An explosion~~Cable~~ seal~~s~~ shall be provided in a cable system where

~~a)~~ the cable enters an enclosure required to be explosion-proof or flameproof "d".~~; or~~

4)~~b)~~ A flammable fluid migration seal shall be provided where a ~~the~~ cable first terminates after entering the Division 1 area.

~~4) Where secondary seals, cable seals, or conduit seals are required, they shall conform to the following:~~

~~a) the seal shall be made~~

~~i) in a field-installed sealing fitting or cable gland that is accessible and complies with the requirements of Rule J18-100; or~~

~~ii) in a sealing fitting provided as part of an enclosure, and where the seal is factory made, the enclosure shall be marked to indicate that such a seal~~

~~is provided;~~
~~b) splices and taps shall not be made in fittings intended only for sealing with compound, nor shall other fittings in which splices or taps are made be filled with compound;~~
~~c) where there is a probability that liquid or other condensed vapour may be trapped within enclosures for control equipment or at any point in the raceway system, means shall be provided to prevent accumulation or to permit periodic draining of such liquid or condensed vapour; and~~
~~d) where there is a probability that liquid or condensed vapour may accumulate within motors or generators, joints and conduit systems shall be arranged to minimize entrance of liquid, but if means to prevent accumulation or to permit periodic draining are judged necessary, such means shall be provided at the time of manufacture and shall be deemed an integral part of the machine.~~

5) Runs of cables, each having a continuous sheath, either metal or non-metal, shall be permitted to pass through a Class I, Division 1 location without seals.
6) Cables that do not have a continuous sheath, either metal or non-metal, shall have a flammable fluid migration seal installed~~be sealed~~ at the boundary of the Division 1 location.

Revise Rule J18-154 as shown:

SN4224

J18-154 Sealing, Class I, Division 2 (see Annex JB)

1) ~~Conduit~~Explosion seals shall be provided in a conduit system where
~~a)~~ the conduit enters an enclosure that is required to be explosion-proof or flameproof and shall be located as close as practicable to the enclosure, or as marked on the enclosure, but not farther than 450 mm from the enclosure.~~;~~

2)~~b)~~ Flammable fluid migration seals for conduit shall be installed where
a) the conduit leaves the Class I, Division 2 location with no box, coupling, or fitting in the conduit run between the seal and the point at which the conduit leaves the location, except that a rigid unbroken conduit that passes completely through a Class I, Division 2 area, with no fittings less than 300 mm beyond each boundary, need not be sealed, provided that the termination points of the unbroken conduit are in non-hazardous areas; or
b)~~c)~~ the conduit leaves a Class I, Division 2 location outdoors, in which case the seal shall be permitted to be located more than 300 mm beyond the Class I, Division 2 boundary, provided that it is located on the conduit before the conduit enters an enclosure or building.

3)~~2)~~ Only explosion-proof unions, couplings, reducers, and elbows that are not larger than the trade size of the conduit shall be permitted between the sealing fitting and an explosion-proof or flameproof enclosure.

4)~~3)~~ Explosion~~Cable~~ seals shall be provided in a cable system where
~~a)~~ the cable enters an enclosure required to be explosion-proof or flameproof.~~; or~~

5)~~b)~~ Flammable fluid migration seals shall be installed where a ~~the~~ cable enters an enclosure not required to be explosion-proof or flameproof, and the other end of the cable terminates in a non-hazardous location in which a negative atmospheric pressure greater than 0.2 kPa exists.

6)~~4)~~ Where a run of conduit enters an enclosure that is required to be explosion-proof or flameproof, every part of the conduit from the explosion seal to that

enclosure shall comply with Rule J18-106.

7)~~5)~~ Runs of cables, each having a continuous sheath, either metal or non-metal, shall be permitted to pass through a Class I, Division 2 location without seals.

8)~~6)~~ Cables that do not have a continuous sheath, either metal or non-metal, shall have a flammable fluid migration seal installed ~~be sealed~~ at the boundary of the Division 2 location.

~~7) Where seals are required, Rule J18-108 4) shall apply.~~

Revise Rule J20-110 to read:

SN3961-20

J20-110 Equipment above hazardous areas

1) Fixed equipment that is less than 3.6 m above floor level and that may produce arcs, sparks, or particles of hot metal, such as cut-outs, switches, charging panels, generators, motors, or other equipment (excluding receptacles, lamps, and lampholders) having make-and-break or sliding contacts, shall be of the totally enclosed type or constructed to prevent escape of sparks or hot metal particles.
2) Permanently installed luminaires that are located over lanes through which vehicles are commonly driven shall be permitted to be suitable for non-hazardous locations and shall be
   a) located not less than 3.6 m above floor level; or
   b) protected from mechanical damage by a guard or by location.
3) Portable lamps shall comply with the following:
   a) they shall be of the totally enclosed gasketted type, equipped with a handle, lampholder, hook, and substantial guard attached to the lampholder or handle, and all exterior surfaces that may come in contact with battery terminals, wiring terminals, or other objects shall be of non-conducting materials or shall be effectively protected with an insulating material ~~jacket~~;
   b) the lampholders shall be of the unswitched type; and
   c) they shall not be provided with receptacles for attachment plugs.

Subjects incorporated				
MOR #1				
3903				
3936				
3948-54				
3948-68				
3948-70				
3961-0D				
3961-16				
3961-20				
3961-40				
3961-54				
3961-58				
3961-66				
3961-68				
3961-70				
3961-72				
3961-74				
4087-12				
4148-12				
4186				
4224				
4225A				
4225B				
4230				
4234				
4235				
4236				
4243				
4252				
4255				
4261				
4262				
4275				
4276				
4313				