CANADIAN ELECTRICAL CODE, PART I

Consolidated Memorandum of Revisions to the 2021 (25th) edition

Notes:

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

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

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 as of the date below. The revisions are for information only and are not effective until adopted, with or without change, by the authority having jurisdiction, after the twenty-sixth edition is published.*

5. *To obtain the latest edition of this memorandum, visit the CE Code, Part I Portal.*

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August 18 2021

Revision history

Date	Change	Document
Aug 18 2021	MOR 1 Released	MOR 1-2021 CE Code

# REFERENCE PUBLICATIONS	
Add new entry to the reference publications: NFPA 853 Standard for the Installation of Stationary Fuel Cell Power Systems	**SN4610**

# SECTION 0	
Revise definition of Cable to read: **Cable** — 1) a product identified as a cable in Table 19; or 2) where not listed in Table 19, a complete manufactured assembly consisting of one or more insulated conductors, optical fibers, or both, and which may include fillers, strength members, bonding conductors, and insulating and protective material, and may also include a continuous overall covering providing a degree of electrical, mechanical, and environmental protection to the assembly.	**SN4533**
Delete definition of Non-incendive circuit and the associated cross reference: **Circuit** (see Appendix B) — ~~**Non-incendive circuit** — a circuit in which any spark or thermal effect that may occur under normal operating conditions or due to opening, shorting, or grounding of field wiring is incapable of causing an ignition of the prescribed flammable gas or vapour.~~ ~~**Non-incendive circuit** — see Circuit.~~	**SN4632** **SN4565-0**
Revise definition of Identified to read: **Identified —** a) when applied to a conductor, signifies that the conductor has i) a white ~~or grey~~ covering; or ii) a raised longitudinal ridge (s) on the surface of the extruded covering on certain flexible cords, either of which indicates that the conductor is a grounded conductor or a neutral; and	**SN4323-0**

b) when applied to other electrical equipment, signifies that the terminals to which grounded or neutral conductors are to be connected have been distinguished for identification by being tinned, nickel-plated, or otherwise suitably marked.	
Revise definition of Industrial establishment to read: **Industrial establishment** — a building or part of a building (other than office or exhibit space) or a part of the premises outside the building where persons are employed for the purpose of assembling, fabricating, manufacturing, processing, repairing or storing of goods and materials ~~in manufacturing processes or in the handling of material~~, as distinguished from dwellings, offices, and similar occupancies.	**SN4637**
Revise definition of Voltage to read: **Voltage** (see Appendix B) — **Extra-low voltage** — a) for ac circuits, any voltage not exceeding 30 V ac; or b) for dc circuits, any voltage not exceeding ~~42.4~~ 60 V dc. **Low voltage** — a) for ac circuits, any voltage exceeding 30 V ac but not exceeding 1000 V ac; or b) for dc circuits, any voltage exceeding ~~42.4~~ 60 V dc but not exceeding ~~1060~~ 1500 V dc. **High voltage** — a) for ac circuits, any voltage exceeding 1000 V ac; or b) for dc circuits, any voltage exceeding ~~1060~~ 1500 V dc.	**SN4555** **SN4645**

SECTION 2

Revise Rule 2-328 to read: **2-328 Electrical equipment near combustible gas equipment** (see Appendix B) The clearance distance between arc-producing electrical equipment and a combustible gas relief device or vent shall be in accordance with the requirements of CSA B149.1 and CSA B149.2 as applicable.	**SN4505**

SECTION 4

Revise Rule 4-000 to read: **SN4628-4**

4-000 Scope (see Appendix B)
1) This Section applies to conductors for services, feeders, branch circuits, and photovoltaic circuits with regard to

a) the determination of ~~maximum allowable~~ conductor ampacity;

Revise Subrule 4-004 5) to read: **SN4628-4**

4-004 Ampacity of wires and cables (see Appendix B)
5) The ~~maximum allowable~~ ampacity of neutral supported cable shall be as specified in Tables 36A and 36B.

Revise Subrule 4-004 21) to read: **SN4628-4**

4-004 Ampacity of wires and cables (see Appendix B)
21) The ~~maximum allowable~~ ampacity of bare or covered conductors in free air shall be as specified in Table 66.

Revise Subrule 4-004 22) to read: **SN4509**

4-004 Ampacity of wires and cables (see Appendix B)
22) In ventilated and ladder-type cable trays, where the air space between adjacent insulated conductors or cables or both is maintained at greater than 100% of the diameter of the largest conductor or cable, the ampacity of the conductors or cables shall be as follows:

a) for single insulated conductors, single-conductor cable, single-conductor metal-sheathed or armoured cable, and single-conductor mineral-insulated cable:

i) the value as specified in Tables 1 and 3; and
ii) the value as specified in Table 12E when Type DLO cable is marked Type TC and is used in accordance with Rule 4-034 2); and

b) for multi-conductor cables, the value as specified in Tables 2 and 4 multiplied by the correction factor from Table 5C for the number of conductors in each cable.

Revise Subrule 4-004 26) to read: **SN4628-4**

4-004 Ampacity of wires and cables (see Appendix B)

26) Where cablebus is installed in a location with an ambient temperature exceeding or anticipated to exceed 30 °C, the ampacity correction factors of Table 5A shall be applied to the cablebus ~~allowable~~ conductor ampacities marked on the cablebus nameplate.	
Revise Subrule 4-006 1) to read: **4-006 Temperature limitations** (see Appendix B) 1) Where equipment is marked with a maximum conductor termination temperature, the minimum size of conductor used shall be based on the ~~allowable~~ ampacity in the temperature column in Table 1, 2, 3, or 4, with all relevant correction factors being applied as required by Rule 4-004, corresponding to the maximum termination temperature marked on the equipment.	**SN4628-4**

SECTION 8

Revise Subrules 8-104 5) and 6) to read: **8-104 Maximum circuit loading** (see Appendix B) 5) Where a fused switch or circuit breaker is marked for continuous operation at 100% of the ampere rating of its overcurrent devices, the continuous load as determined from the calculated load shall not exceed the continuous operation marking on the fused switch or circuit breaker and a) except as required by Item b), shall not exceed 100% of the ~~allowable~~ ampacities of conductors selected in accordance with Section 4; or b) shall not exceed 85% of the ~~allowable~~ ampacities of single conductors selected in accordance with Section 4. 6) Where a fused switch or circuit breaker is marked for continuous operation at 80% of the ampere rating of its overcurrent devices, the continuous load as determined from the calculated load shall not exceed the continuous operation marking on the fused switch or circuit breaker and a) except as required by Item b), shall not exceed 80% of the ~~allowable~~ ampacities of conductors selected in accordance with Section 4; or b) shall not exceed 70% of the ~~allowable~~ ampacities of single conductors selected in accordance with Section 4.	**SN4528-8**
Revise Subrule 8-106 11) to read:	**SN4519** **SN4620-8**

8-106 Use of demand factors (see Appendix B)

11) For the purposes of Rules 8-200 1) a) vi), 8-202 1) a) vii), 8-202 3) d), 8-204 1) d), 8-206 1) d), 8-208 1) d), and 8-210 c), where an electric vehicle energy management system as described in Subrule 10) performs the functions of

a) monitoring ~~monitors~~ the consumer's service, ~~and~~ feeders, and branch circuits and

b) controlling ~~controls~~ the electric vehicle supply equipment loads in accordance with Rule 8-500,

the demand load for the electric vehicle supply equipment shall not be required to be considered in the determination of the calculated load.

SN4353

Note: This revision was suspended from publication in the 25th edition of the Code. It is intended to be superseded by a new revision under SN4635.

Revise Item 8-110 c) to read:

8-110 Determination of areas

The living area designated in Rules 8-200 and 8-202 shall be determined from inside dimensions and include the sum of

a) 100% of the area on the ground floor;

b) 100% of any areas above the ground floor used for living purposes; and

c) 75% of the area below the ground floor, which consists of areas with finished walls, provided that such areas do not exceed 1.8 m in height between the lowest part of the ceiling assembly and the ground or other surface below it.

SN4519

Revise Rule 8-202 to read:

8-202 Apartment and similar buildings (see Appendix B)

1) The calculated load for the service or feeder from a main service supplying loads in dwelling units shall be the greater of Item a) or b):

a)

i) a basic load of 3500 W for the first 45 m2 of living area (see Rule 8-110); plus

ii) an additional 1500 W for the second 45 m2 or portion thereof; plus

iii) an additional 1000 W for each additional 90 m2 or portion thereof in excess of the initial 90 m2; plus

iv) any electric space-heating loads provided for with demand factors as permitted in Section 62 plus any air-conditioning loads with a demand factor of 100%, subject to Rule 8-106 3); plus

v) any electric range load provided for as follows: 6000 W for a single range plus 40% of any amount by which the rating of the range exceeds 12 kW; plus

vi) any electric tankless water heaters or electric water heaters for steamers, swimming pools, hot tubs, or spas with a demand factor of 100%; plus

vii) any electrical vehicle supply equipment loads, if they are supplied from a panelboard installed in a dwelling unit, with a demand factor of 100%; plus

viii)~~vii)~~ any loads provided for, in addition to those outlined in Items i) to vi), at

A) 25% of the rating of each load with a rating in excess of 1500 W, if an electric range has been provided for; or
B) 25% of the rating of each load with a rating in excess of 1500 W plus 6000 W, if an electric range has not been provided for; or
b) 60 A.

2) The total load calculated in accordance with Subrule 1) and Subrule 3) a), b), and c) shall not be considered to be a continuous load for the application of Rule 8-104.

3) The calculated load for the consumer's service or feeder supplying two or more dwelling units shall be based on the calculated load obtained from Subrule 1) a) and the following:
a) excluding any electric space-heating loads and any air-conditioning loads, the load shall be considered to be
i) 100% of the calculated load in the unit having the heaviest load; plus
ii) 65% of the sum of the calculated loads in the next 2 units having the same or next smaller loads to those specified in Item i); plus
iii) 40% of the sum of the calculated loads in the next 2 units having the same or next smaller loads to those specified in Item ii); plus
iv) 25% of the sum of the calculated loads in the next 15 units having the same or next smaller loads to those specified in Item iii); plus
v) 10% of the sum of the calculated loads in the remaining units;
b) if electric space heating is used, the sum of all the space-heating loads as determined in accordance with the requirements of Section 62 shall be added to the load determined in accordance with Item a), subject to Rule 8-106 3);
c) if air conditioning is used, the sum of all the air-conditioning loads shall be added, with a demand factor of 100%, to the load determined in accordance with Items a) and b), subject to Rule 8-106 3);
d) except as permitted by Rule 8-106 11), any electric vehicle supply equipment loads ~~not located in dwelling units~~ not supplied from a panelboard installed in a dwelling unit in accordance with Rule 8-202(1)(a)(vii), shall be added with a demand factor as specified in Table 38; and
e) in addition, any lighting, heating, and power loads not located in dwelling units shall be added with a demand factor of 75%.
4) The ampacity of feeder conductors from a service supplying loads not located in dwelling units shall be not less than the rating of the equipment installed with demand factors as permitted by this Code.

SECTION 10

Revise Rule 10-206 to read:

SN4356

10-206 AC systems required to be solidly grounded
1) Except as permitted by Subrule 2), ac~~AC~~ systems exceeding extra-low voltage shall be solidly grounded.~~if~~
~~a) by doing so, their maximum voltage-to-ground does not exceed 150 V; or~~

~~b) the system incorporates a neutral conductor.~~ 2) AC systems in other than dwelling units ~~exceeding the value prescribed by Subrule 1) a)~~ shall be permitted to be ungrounded or impedance grounded., ~~provided that they meet the requirements for~~ ~~a) ungrounded systems; or~~ ~~b) impedance grounded systems.~~ 3) Extra-low-voltage ac systems shall be solidly grounded where a) run overhead outside; b) supplied by transformers energized from systems of more than 150 volts-to-ground; or c) supplied by transformers energized from ungrounded systems.	
Revise Subrule 10-308 1) to read: **10-308 Conductors used with impedance grounding devices** (see Appendix B) 1) The conductor connecting the impedance grounding device to the system source shall a) be insulated for the nominal system voltage; b) be identified white ~~or grey~~; c) be routed as directly as practicable; d) not be grounded; e) be sized to conduct the rated current of the impedance grounding device, and in no case less than i) No. 12 AWG if of copper; or ii) No. 10 AWG if of aluminum; and f) be protected from damage i) mechanically; or ii) by location.	**SN4323-10**
Revise Subrule 10-400 1) to read: **10-400 Ungrounded** systems (see Appendix B) 1) DC or ac systems shall be permitted to be ungrounded, provided that the system ~~is~~ a) is equipped with suitable ground fault detection; ~~and~~ b) does not include a distributed neutral conductor; and c)~~b)~~ is maintained by qualified persons.	**SN4356**
Revise Rule 10-616 to read: **10-616 Size of system bonding jumper or bonding conductor** (see Appendix B) 1) The size of a field-installed system bonding jumper shall not be less than that determined in accordance with Table 16 based on the ampere rating or setting of the overcurrent device protecting the ungrounded conductors. 2) The size of a bonding conductor installed in accordance with Rule 10-604 at service equipment shall not be less than that determined in accordance with Table 16 based on the ~~allowable~~ ampacity of the largest ungrounded conductor. 3) The size of a field-installed bonding conductor installed at other than service equipment shall not be less than that determined in accordance with Table 16 based on	**SN4628-10**

a) the ampere rating or setting of the overcurrent device protecting the ungrounded conductors; or b) the ~~allowable~~ ampacity of the largest ungrounded conductor for installations where the size of the circuit conductors is increased to compensate for voltage drop. 4) The size of a field-installed bonding conductor installed with each group of parallel conductors run in separate raceways or cables shall be in accordance with Subrule 3) divided by the number of groups of parallel conductors. 5) Notwithstanding Subrules 2), 3), and 4), the bonding conductor shall not be required to be larger than the current-carrying conductors. 6) A metal raceway that is permitted to be used as a bonding conductor shall be considered to meet the requirements of this Rule. 7) A bonding means that is integral to a cable assembly shall be considered to meet the requirements of this Rule.	

# SECTION 12	
Note: This revision is contingent on approval of related changes to Section 76. *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 Subrule 12-2258 2) to read: **12-2258 Provisions for bonding** (see Appendix B) 1) Where metal supports for metal cablebus are bolted to the cablebus enclosure and are in good electrical contact with the grounded structural metal frame of a building, the cablebus enclosure shall be deemed to be bonded to ground. 2) Where the conditions of Subrule 1) do not apply, the metal cablebus shall be adequately bonded a) at intervals not exceeding 15 m, and the size of bonding conductors shall be based on the ~~allowable~~ ampacity as specified in Rule 10-616; or b) at both ends, where the cablebus enclosure is marked for use as a bonding conductor.	**SN4628-12**

SECTION 14

Revise Subrule 14-104 1) to read: **SN4628-14**

14-104 Rating of overcurrent devices (see Appendix B)

1) The rating or setting of overcurrent devices shall not exceed the ~~allowable~~ ampacity of the conductors that they protect, except

a) where a fuse or circuit breaker having a rating or setting of the same value as the ampacity of the conductor is not available, and the maximum calculated or known load is in accordance with the Rules of Section 8, the ratings or settings given in Table 13 shall be permitted to be used within the maximum value of 800 A;

b) in the case of equipment wire, flexible cord in sizes Nos. 16, 18, and 20 AWG copper, and tinsel cord, which are considered protected by 15 A overcurrent devices; or

c) as provided for by other Rules of this Code.

SECTION 16

Revise Subrule 16-222 2) to read: **SN4630**

16-222 Equipment located on the load side of overcurrent protection, transformers, or devices having class 2 outputs

2) Notwithstanding Subrule 1) a), lighting products, electromedical equipment, equipment for hazardous locations, ~~and~~ thermostats incorporating heat anticipators and the field installed insulated conductors and cables, connected to these products, shall comply with Rule 2-024(1).

SECTION 18

Add new entry to Rule 18-002 to read: **SN4565-18**

18-002 Special terminology (see Appendix B)
In this Section, the following definitions shall apply:

Non-incendive circuit — a circuit in which any spark or thermal effect that may occur under normal operating conditions or due to opening, shorting, or grounding of field wiring is incapable of causing an ignition of the prescribed flammable gas or vapour.

Revise Subrule 18-150 2) to read: **SN4638**

18-150 Equipment, Zone 2 locations (see Appendices B and F)

2) Notwithstanding Subrule 1) and Rule 18-052, the following shall be permitted:
a) ~~transformers, solenoids, coils, and similar electromagnetic devices that comply~~ equipment that complies with the requirements of Rule 18-054 and is any of the following;
i) inductive devices, including transformers, solenoids, coils and similar equipment;
ii) capacitors that do not have integral fuses; or
iii) devices used for instrumentation and measurement purposes, including thermocouples, resistance temperature detectors (RTDs), piezoelectric pressure transducers and accelerometers, resistive strain gauges, passive RFID (radio frequency identification) tags and similar equipment;

[No change to remainder of Subrule]

SECTION 24

Add new Rule 24-101 to read: **SN4571**

24-101 Panelboards supplying circuits in patient care areas (see Appendix B)

1) Panelboards supplying circuits in patient care areas, shall be
   a) secured;
   b) accessible only to authorized personnel; and
   c) except as provided by Subrule 2), outside patient care areas.

2) Panelboards supplying circuits described in Subrule 24-302 1), shall be permitted to be located in patient care areas.

3) Panelboards installed in basic or intermediate care areas in accordance with Subrule 2), shall supply only circuits located within those patient care areas.

4) Panelboards installed in critical care areas in accordance with Subrule 2), shall supply only circuits intended for, and dedicated to, the critical care area where they are located.

Add new Subrule 24-102 9) to read: **SN4633**

9) all branch circuits supplying loads within patient care environments, other than those supplying multi-phase equipment, shall be 2-wire circuits.

Revise Rule 24-104 to read: **SN4494**

24-104 Bonding to ground in basic care areas (see Appendix B)

1) Bonding conductors shall be insulated unless they are
   a) installed in non-metallic conduit; or
   b) incorporated into a cable that is constructed in such a manner that contact between any metal shield or armour, if it is present, and a bare bonding conductor is not possible.
2) All receptacles and other permanently connected equipment shall be bonded to ground by copper equipment bonding conductors, sized in accordance with Table 16 but in no case smaller than No. 12 AWG, installed in accordance with Rule 10-614 and run with the circuit conductors in accordance with the following:
   a) each multi-wire branch circuit shall be provided with its own equipment bonding conductor;
   b) except as permitted by Items c) and d), each 2-wire branch circuit supplying a receptacle in a patient care environment shall be provided with its own equipment bonding conductor;
   c) when the receptacles in a patient care environment are supplied from two 2-wire branch circuits in the same raceway, a single equipment bonding conductor shall be permitted to be shared by the two circuits; or
   d) when receptacles intended for a pair of adjacent patient care environments are supplied by three 2-wire branch circuits and one of the circuits is intended to

be shared by both environments, the three circuits shall be permitted to share two equipment bonding conductors.

3) Utilization equipment bonding conductors required by Subrules 2), 6), and 7) shall terminate either at the panelboard supplying the branch circuits to the patient care environment from which they arise or on a separately installed busbar that is bonded to that panelboard.

4) Where branch circuits for a patient care environment are supplied from more than one panelboard, the panelboards shall be bonded together with a single copper equipment bonding conductor sized in accordance with Rule 10-616 ~~Table 16~~, but in no case smaller than a No. 6 AWG.

5) Each panelboard supplying branch circuits as described in Rule 24-102 3) and located in a basic care area shall be bonded to ground by a copper ~~utilization equipment~~ bonding conductor that is

a) installed in the same raceway as the circuit conductors supplying that panelboard or installed in accordance with Rule 10-614, and sized in accordance with Rule 10-616 ~~Table 16~~; or

b) incorporated into the assembly of the cable supplying that panelboard.

6) Each panelboard supplying branch circuits as described in Rule 24-102 3) and located outside a basic care area shall be bonded to ground in accordance with Rule 10-610.

7)~~6)~~ Each item of three-phase equipment shall be bonded to ground with a copper equipment bonding conductor that is

a) sized in accordance with Rule 10-616 ~~Table 16~~, but is in no case smaller than No. 12 AWG; and

b) connected to its own terminal at the equipment and the panelboard.

8)~~7)~~ If they could become energized, exposed non-current-carrying metal parts of communication, radio, or television equipment, other than telephone sets, in a patient care environment shall be bonded to ground using a copper equipment bonding conductor sized in accordance with Subrule 7)~~6)~~, by

a) connection to the bonding screw in the communication section of a barriered and ganged metal outlet box that serves a patient care environment; or

b) connection to an equipment bonding conductor or bonding busbar for that patient care environment as identified in Subrule 3).

9)~~8)~~ If they could become energized, exposed non-current-carrying metal parts of non-electrical equipment, in a patient care environment, shall be bonded to ground using a copper equipment bonding conductor sized in accordance with Subrule 7)~~6)~~ by connection to an equipment bonding conductor or bonding busbar for that patient care environment as identified in Subrule 3).

10)~~9)~~ Notwithstanding Subrules 1) and 2), recessed and surface-mounted luminaires located more than 2.3 m above floor level, and their associated switches located outside a patient care environment, shall be permitted to be bonded in accordance with Section 10.

SECTION 26

Revise Rule 26-256 to read: **SN4628-26**

26-256 Conductor size for transformers (see Appendix B)

1) The conductors supplying transformers shall have an ampacity ~~rating~~
   a) not less than 125% of the rated primary current of the transformer for a single transformer; or
   b) not less than the sum of the rated primary currents of all transformers plus 25% of the rated primary current of the largest transformer for a group of transformers operated in parallel or on a common feeder.
2) The secondary conductors connected to transformers shall have an ampacity ~~rating~~
   a) not less than 125% of the rated secondary current of the transformer for a single transformer; or
   b) not less than 125% of the sum of the rated secondary currents of all the transformers operated in parallel.
3) Notwithstanding Subrules 1) and 2), primary and secondary conductors shall be permitted to have an ampacity ~~rating~~ not less than that required by the demand load, provided that they are protected in accordance with Rules 14-100 and 14-104.
4) Where the transformer overcurrent protection is more than 125% of the rated primary or secondary current in accordance with Rule 26-250 1) or 2) or 26-254 3), the primary and secondary conductors connected to the transformer shall be protected in accordance with Rules 14-100 and 14-104.
5) Where multi-rating transformers are used, the primary and secondary conductors shall have an ampacity ~~rating~~ not less than 125% of the rated primary and secondary current of the transformer at the utilization voltage.

Note: This revision is contingent on approval of related changes to Section 8. **SN4428-26**

Revise Rule 26-258 to read:

26-258 Transformer continuous load (see Appendix B)

1) For the purpose of transformer overcurrent protection and conductor sizes selected in accordance with Rules 26-250 to 26-256, the continuous load as determined from the calculated load connected to the transformer secondary shall not exceed the values specified in Rule 8-104 5) or 6).
2) Notwithstanding Subrule (1), where dry-type distribution transformers are controlled by a Distribution Transformer Energy Management System with Scheduled Power Dispatch described by Subrule 8-106(12), the continuous load of the distribution transformers shall be permitted to be based on the maximum load allowed by the Distribution Transformer Energy Management System with Scheduled Power Dispatch.

Revised Subrule 26-600 1) to read: **SN4575**

26-600 Location of panelboards (see ~~Appendix~~ Appendices B and G)

1) Panelboards shall not be located in coal bins, clothes closets, bathrooms, stairways, ~~high ambient~~ rooms or spaces with high ambient temperatures, dangerous or hazardous locations, nor in any similar undesirable places.	

# SECTION 28	
Revise Rule 28-706 to read: **28-706 Insulated conductor ampacity** The ~~allowable~~ ampacity of insulated conductors of a branch circuit supplying a motor-compressor, or equipment consisting of one or more motor-compressors and other loads, shall be based on the marked rated load current of the motor-compressor or equipment and shall comply with the general requirements of this Section.	**SN4628-28**

# SECTION 38	
Revise Subrule 38-021 2) to read: **38-021 Wiring methods (**see Appendix B) **Escalators** 2) Insulated conductors and optical fiber cables in escalator and moving walk wellways shall be installed in rigid metal conduit, flexible metal conduit, liquid-tight flexible conduit, electrical metallic tubing, rigid PVC conduit, or wireways or shall be mineral-insulated cable, aluminum-sheathed cable, copper-sheathed cable, or armoured cable, if not subject to physical damage, unless otherwise permitted in Items a) and b): a) cables used in Class 1 extra-low-voltage and Class 2 low-energy circuits, including extra-low-voltage cable, extra-low-voltage control cable, communication cable, fire alarm and signal cable, multi-conductor jacketed thermoplastic-insulated cable, and hard-usage and extra-hard-usage cables shall be permitted to be installed between risers and signal equipment and operating devices, provided that the cables are supported and protected from physical damage and are of a jacketed and flame-tested type; ~~and~~ b) flexible cords and cables that are components of equipment and used in extra-low-voltage circuits (30 V or less) shall be permitted in lengths not exceeding 2 m, provided that the cords and cables are supported and protected from physical damage and are of a jacketed and flame-tested type; and c) extra-hard usage flexible cords as listed in Table 11 shall be permitted as	**SN4532**

flexible connections on escalator or moving walk controllers and disconnecting means installed in conformance with Rules 38-005 2)a).	

SECTION 58

Revise Rule 58-014 to read: **58-014 Voltage limitations** 1) Voltages for safety, communication, control, remote control, monitoring, supervision, and signal circuits shall not exceed 48 volts-to-ground (nominal), ~~with the exception of~~ except circuits for hand-crank-type telephone signal bells. 2) Only safety, communication, control, remote control, monitoring, supervision and signal circuits shall be carried between towers that support the passenger ropeway. 3)~~2)~~ Voltages for motors, machine brakes, motor-generator sets, floodlighting, and heaters shall not exceed 750 volts-to-ground. 4)~~3)~~ Voltages for motor control circuits shall not exceed 120 volts-to-ground (nominal). ~~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.	**SN4574**

SECTION 62

Revise Subrules 62-114 2), 3), and 8) to read: **62-114 Overcurrent protection and grouping** (see Appendix B) 2) For dwelling units ~~In buildings for residential occupancy~~, two or more heating fixtures, trace heater sets, or heating panel sets shall be permitted to be connected to a branch circuit used for space heating, provided that the branch circuit overcurrent devices are rated or set at not more than 30 A.	**SN4621** **SN4628-62**

3) For ~~In~~ other than dwelling units ~~buildings for residential occupancy~~, a) two or more heating fixtures, trace heater sets, or heating panel sets shall be permitted to be grouped on a branch circuit, and the branch circuit overcurrent devices shall not be set or rated in excess of 60 A unless a deviation has been allowed in accordance with Rule 2-030 to use overcurrent devices having a higher setting or rating; and b) where three heating fixtures, trace heater sets, or heating panel sets are grouped on a branch circuit in a balanced three-phase arrangement, the branch circuit overcurrent devices shall be permitted to be set or rated in excess of 60 A. 8) Notwithstanding Subrule 7) b), where 125% of the ~~allowable~~ ampacity of an insulated conductor does not correspond to a standard rating of the overcurrent device, the next higher standard rating shall be permitted.	
Revise Rule 62-124 to read: **62-124 Installation of series trace heater sets** 1) The heating portion of a series trace heater set shall not be shortened, and any trace heater set that does not bear its original markings shall be considered to have been shortened unless the installer can demonstrate, by instrument measurements, that the characteristics of the series trace heater set have not been altered. 2) Except as provided for in Subrule 3), ~~T~~the entire length of the heating portion, including connections to non-heating leads, shall be installed within the heating area. 3) Where a series trace heater set is designed for installation without non-heating leads, the transition of the trace heater from the heating area shall be through a suitable fitting and junction box assembly.	**SN4607**
Revise Rule 62-130 to read: **62-130 Heater controls installed in proximity to sinks, tubs, or shower stalls** (see Appendix B) 1) A manually operated control for a heating device shall be located not less than 1 m from a sink (a wash basin complete with a drainpipe), tub, or shower stall entrance, this distance being measured horizontally between the control and the sink, tub, or shower stall entrance without piercing a wall, partition, or similar obstacle. 2) Notwithstanding Subrule 1), a manually operated control shall be permitted to be located less than 1 m from a sink (a wash basin complete with a drainpipe) and not less than 500 mm from a tub or shower stall entrance, provided that it is a) protected by a ground fault circuit interrupter of the Class A type; or b) supplied by an extra-low-voltage Class 2 circuit.	**SN4567**
Revise Rule 62-132 to read: **62-132 Heating devices installed in proximity to sinks, tubs, or shower stalls** (see Appendix B) 1) A heating device installed less than 1.8 m above the floor shall not be installed less than 1 m horizontally from a sink (a wash basin complete with a drainpipe), tub,	**SN4567**

or shower stall entrance, this distance being measured horizontally between the heating device and the sink, tub, or shower stall entrance without piercing a wall, partition, or similar obstacle. 2) Notwithstanding Subrule 1), a heating device shall be permitted to be installed less than 1.8 m above the floor and less than 1 m from a sink (a wash basin complete with a drainpipe), tub, or shower stall entrance, provided that it is protected by a ground fault circuit interrupter of the Class A type.	
Note: This revision is suspended pending approval of the corresponding revision to Standards CSA C22.2 No. 130. *Revise Rule 62-216 to read:* **62-216 Trace heater sets and heating panel sets ~~in gypsum board and other cementitious~~ for ceiling and wall installations** (see Appendix B) 1) Trace heater sets and heating panel sets shall be installed parallel to the joists, studs, or nailing strips, with clearance not less than 13 mm on each side of the joist, stud, or nailing strip. 2) After the trace heater sets and heating panel sets are installed, the heater surface facing the space to be heated ~~entire ceiling below the installed trace heater set or heating panel set~~ shall be covered with gypsum board or acceptable cementitious materials not exceeding 13 mm in thickness. 3) Trace heater sets shall be permitted to cross at the ends of the joists and studs, no further than 150 mm from the ends of the joists or studs. 4) Notwithstanding Subrule 1), trace heater sets and heating panel sets shall be permitted for installation up to, and over the face of joists and studs a) for walls, provided they are i) mechanically protected; ii) installed up to a maximum height of 1.2 m above the finished floor; and iii) protected by a ground fault circuit interrupter of the Class A type; and b) for ceilings, provided they are i) mechanically protected; or ii) protected by a ground fault circuit interrupter of the Class A type. 5) Notwithstanding Subrule 2), trace heater sets and heating panel sets shall be permitted to be installed without gypsum board or cementitious materials when provided with mechanical protection.	**SN4568**

SECTION 64

Revise Subrules 64-214 1) and 2) to read: **SN4628-64**

64-214 Overcurrent protection for apparatus and conductors (see Appendix B)
1) Notwithstanding Rules 64-058 1) and 64-066 1) a), individual overcurrent protection devices shall not be required where the sum of the available short-circuit currents from all photovoltaic source circuits connected to the same power conditioning unit is not greater than the ~~rated~~ ampacity of the apparatus or conductors.

2) Where overcurrent protection is required by Rule 64-058 1) for a photovoltaic source circuit, each photovoltaic source circuit shall be protected by an individual overcurrent device rated or set at not more than the ~~allowable~~ ampacity of the conductors of the photovoltaic source circuit or the maximum overcurrent protection indicated on the photovoltaic module nameplate, whichever is less.

Revise Subrules 64-308 1) and 3) to read: **SN4628-64**

64-308 Overcurrent protection for apparatus and insulated conductors (see Appendix B)
1) Notwithstanding Rules 64-058 1) and 64-066 1) a), individual overcurrent protection devices shall not be required where the available steady-state short-circuit current is not greater than the ~~rated~~ ampacity of the apparatus or insulated conductor.

3) Notwithstanding Subrule 2), an overcurrent device shall not be required for insulated circuit conductors sized in accordance with this Rule and when the maximum currents from all sources do not exceed the ~~allowable~~ ampacity of the insulated conductors.

Revise Subrule 64-506 1) to read: **SN4628-64**

64-506 Overcurrent protection for apparatus and insulated conductors
1) Notwithstanding Rules 64-058 1) and 64-066 1) a), individual overcurrent protection devices shall not be required where the available short-circuit current is not greater than the ~~rated~~ ampacity of the equipment or insulated conductor.

Revise Subrule 64-606 1) to read: **SN4628-64**

64-606 Overcurrent protection for apparatus and insulated conductors
1) Notwithstanding Rules 64-058 1) and 64-066 1) a), individual overcurrent protection devices shall not be required where the available steady-state short-circuit current is not greater than the ~~rated~~ ampacity of the apparatus or insulated conductor.

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Revise Item 64-710 c) to read: **64-710 Location of fuel cells** (see Appendix B) A fuel cell system(s) and associated equipment, components, and controls shall meet the following requirements: c) stationary fuel cell systems shall not be located in: ~~clothes closets, bathrooms, stairways,~~ i) spaces with high ambient ~~rooms~~ temperatures; ii) storage areas for flammable, combustible, or hazardous materials; iii) hazardous, corrosive or wet locations, unless suitably rated; or iv) any similar undesirable places; and	**SN4610**

Tables

Revise Title of Table 1 to read: **Table 1** ~~**Allowable**~~ **Ampacities for...** *[no change to remainder of title]*	**SN4628-4**
Revise Table 1, header for temperature columns, to read: ~~**Allowable a**~~**Ampacity** †	**SN4628-4**
Revise Title of Table 2 to read: **Table 2** ~~**Allowable**~~ **Ampacities for...** *[no change to remainder of title]*	**SN4628-4**
Revise Table 2, header for temperature columns, to read: ~~**Allowable a**~~**Ampacity** †,††	**SN4628-4**
Revise Title of Table 3 to read: **Table 3** ~~**Allowable**~~ **Ampacities for...** *[no change to remainder of title]*	**SN4628-4**

Revise Table 3, header for temperature columns, to read: ~~**Allowable a**~~**A****mpacity †**	**SN4628-4**
Revise Title of Table 4 to read: **Table 4** ~~**Allowable**~~ **A****mpacities for...** *[no change to remainder of title]*	**SN4628-4**
Revise Table 4, header for temperature columns, to read: ~~**Allowable a**~~**A****mpacity †§**	**SN4628-4**
Revise Title of Table 12 to read: **Table 12** ~~**Allowable**~~ **A****mpacity of...** *[no change to remainder of title]*	**SN4628-4**
Revise Table 12, first column header for temperature columns, to read: ~~**Allowable a**~~**A****mpacity**	**SN4628-4**
Revise Title of Table 12A to read: ~~**Allowable a**~~**A****mpacities for...** *[no change to remainder of title]*	**SN4628-4**
Revise Title of Table 12E to read: ~~**Allowable a**~~**A****mpacities for...** *[no change to remainder of title]*	**SN4628-4**
Revise Title of Table 36A to read: ~~**Maximum allowable a**~~**A****mpacity for...** *[no change to remainder of title]*	**SN4628-4**
Revise Title of Table 36B to read: ~~**Maximum allowable a**~~**A****mpacity for...** *[no change to remainder of title]*	**SN4628-4**

Revise Table 16, header for column 2, to read:

SN4628-10

Table 16

Minimum size of field-installed system bonding jumpers and bonding conductors

(See Rule 10-616.)

Ampere rating or setting of overcurrent device protecting conductor (s), equipment, etc.	~~Allowable~~ Ampacity of largest ungrounded conductor or group of conductors	Minimum size of system bonding jumper and bonding conductor			
		Wire		Bus	
Not exceeding		Copper, AWG or kcmil	Aluminum, AWG or kcmil	Copper, mm²	Aluminum, mm²

No change to content of Table 16

Revise Table 18 entries for Impedance heating in Class 1, Division 2, Class II, Division 2, and Class III Division 2 to read:

SN4640

Class I, Division 2	Impedance heating	CSA C22.2 No. 293.3, with EPL ~~Gb or~~ Gc**
Class II, Division 2	Impedance heating	CSA C22.2 No. 293.3, with EPL ~~Db or~~ Dc**
Class III, Division 2	Impedance heating	CSA C22.2 No. 293.3, with EPL ~~Db or~~ Dc

Revise title of Table 43 to read:

SN4502

Table 43
Minimum conductor size for field-assembled grounding ~~concrete-encased~~ electrodes
(See Rule 10-102.)

Ampacity of largest service conductor or equivalent for multiple conductors, A	Size of bare copper conductor, AWG
165 or less	4
166–200	3
201–260	2
261–355	0
356–475	00
Over 475	000

Revise title of Table 57 to read:

SN4628-16

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

SN4590
SN4594
SN4628-16
SN4608

Revise Table 60 to read:

Table 60
~~Allowable a~~Ampacities for copper, eight-conductor, Class 2 power and data communication circuit cables
(based on an ambient temperature of 30 °C)
(See Rule 16-330 and Table 5A.)

Size, AWG	Allowable ampacity																				
	Number of cables in one cable bundle																				
	~~1~~			~~2 7~~ 1-7			8-19			20-37			38-61			62-91			92-192		
	~~60°C~~	~~75°C~~	~~90°C~~	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C
26	~~1.0~~	~~1.0~~	~~1.0~~	~~1.0~~ 1.00	~~1.0~~ 1.23	~~1.0~~ 1.42	~~0.7~~ 0.71	~~0.8~~ 0.87	~~1.0~~ 1.02	~~0.5~~ 0.55	~~0.6~~ 0.68	~~0.7~~ 0.78	~~0.4~~ 0.46	~~0.5~~ 0.57	~~0.6~~ 0.67	~~0.4~~ 0.45	~~0.5~~ 0.55	~~0.6~~ 0.64			
24	~~2.0~~	~~2.0~~	~~2.0~~	~~1.0~~ 1.19	~~1.4~~ 1.46	~~1.6~~ 1.69	~~0.8~~ 0.81	~~1.0~~ 1.01	~~1.1~~ 1.17	~~0.6~~ 0.63	~~0.7~~ 0.78	~~0.9~~ 0.91	~~0.5~~ 0.55	~~0.6~~ 0.67	~~0.7~~ 0.78	~~0.4~~ 0.46	~~0.5~~ 0.56	~~0.6~~ 0.65	~~0.3~~ 0.40	~~0.4~~ 0.48	~~0.5~~ 0.55
23	~~2.5~~	~~2.5~~	~~2.5~~	~~1.2~~ 1.24	~~1.5~~ 1.53	~~1.7~~ 1.78	~~0.8~~ 0.89	~~1.1~~ 1.11	~~1.2~~ 1.28	~~0.6~~ 0.77	~~0.8~~ 0.95	~~0.9~~ 1.10	~~0.5~~ 0.66	~~0.7~~ 0.80	~~0.8~~ 0.93	~~0.5~~ 0.58	~~0.7~~ 0.71	~~0.8~~ 0.82	~~0.4~~ 0.45	~~0.5~~ 0.55	~~0.6~~ 0.63
22	~~3.0~~	~~3.0~~	~~3.0~~	~~1.4~~ 1.50	~~1.8~~ 1.86	~~2.1~~ 2.16	~~1.0~~ 1.04	~~1.2~~ 1.28	~~1.4~~ 1.49	~~0.7~~ 0.77	~~0.9~~ 0.95	~~1.1~~ 1.11	~~0.6~~ 0.66	~~0.8~~ 0.82	~~0.9~~ 0.96	~~0.6~~ 0.62	~~0.8~~ 0.77	~~0.9~~ 0.89	~~0.5~~ 0.53	~~0.6~~ 0.63	~~0.7~~ 0.72

Notes:
1) *Ampacities shown are for each conductor of the eight-conductor cable.*
2) The per-contact current rating of connectors can limit the maximum allowable current below the ampacity shown in the Table. When cable connectors operate at elevated temperatures near 90°C, their ampacity limitations may render the cable installation inoperable.

SN4624

Revise Table 65 as shown:
Note: All "x" entries are replaced with "✓".

Table 65
Enclosure selection table for non-hazardous locations
(See Rules 2-400 and 2-402.)

Provides a degree of protection against the following environmental conditions	Enclosure type													
	Indoor use						Indoor/outdoor use							
	1	2	5	12*	12K†	13	3	3X	3R	3RX	3S	3SX	4	4X
Accidental contact with live parts	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Falling dirt	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dripping and light splashing of non-corrosive liquids	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Circulating dust, lint, fibres, and flyings	–	–	–	✓	✓	✓	✓	✓	–	–	✓	✓	✓	✓
Settling **airborne** dust, lint, fibres, and flyings	–	–	✓	✓	✓	✓	✓	✓	–	–	✓	✓	✓	✓
Hosedown and splashing water	–	–	–	–	–	–	–	–	–	–	–	–	✓	✓
~~Corrosion~~ **Corrosive agents**	–	–	–	–	–	–	–	✓	–	✓	–	✓	–	✓
Occasional temporary submersion	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Occasional prolonged submersion	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Oil and coolant seepage	–	–	–	✓	✓	✓	–	–	–	–	–	–	–	–
Oil ~~and~~**or** coolant ~~seepage,~~ spraying and splashing	–	–	–	–	–	✓	–	–	–	–	–	–	–	–
Rain, snow **and sleet**, and external formation of ice‡	–	–	–	–	–	–	✓	✓	✓	✓	✓	✓	✓	✓
Rain, snow and sleet and ~~E~~ external formation of ice§	–	–	–	–	–	–	–	–	–	–	✓	✓	–	–
Wind-blown dust	–	–	–	–	–	–	✓	✓	–	–	✓	✓	✓	✓

** Without knockouts.*
† With knockouts.
‡ The external operating mechanism(s) is not required to operate when the enclosure is ice covered.
§ The external operating mechanism(s) shall be operable when the enclosure is ice covered.

Appendix A

Appendix A is periodically updated in accordance with Appendix C. The latest version of Appendix A is available on the CE Code, Part I Portal.

Appendix B

Revise Appendix B Note for Rules 2-329 and 64-918 7) to read: **SN4505**

Rules 2-328 and 64-918 7)
The clearance distances specified in CSA B149.1 and CSA B149.2 between a source of ignition and a combustible gas relief discharge device or vent are as follows:
a) 1 m for natural gas as specified in CSA B149.1; and
b) 3 m for propane gas as specified in CSA B149.2.
Arc-producing electrical equipment that is considered a source of ignition includes, but is not limited to: receptacles, switches, meter base plug in transfer devices, meter base plug in devices with an internal service disconnecting feature, electric metering equipment with an internal service disconnecting feature, air conditioning units, and related disconnecting means.

Revise Appendix B Note for Rule 4-004 to read: **SN4628-4**

Rule 4-004
The ~~allowable~~ ampacities of Tables 1, 2, 3, and 4 are based on temperature alone and do not take voltage drop into consideration (see Table D3).

Revise Appendix B Note for Rule **SN4628-4**

Rule 4-006
In accordance with CSA product Standards (e.g., CSA C22.2 No. 4 or CSA C22.2 No. 5), when equipment of 600 V or less is evaluated relative to the appropriate temperature characteristics of the terminations, conductors sized similar to those in the 75 °C column of Table 2 or 4 are used.

It is intended by this Rule that the size of conductors terminating on equipment described in Subrules 1), 2), 3), and 4) be not less than the conductor size selected for the ~~maximum~~ insulated conductor ampacity in the corresponding temperature column of Table 1, 2, 3, or 4.

This Rule is not intended to address conductor ~~allowable~~ ampacity (see Rule 4-004).

Regardless of conductor ~~allowable~~ ampacities determined by other Rules in this Code (for underground conductors, cables, flexible cords, portable power cables, DLO cables, and conductors with higher temperature ratings, etc.), it is intended that the minimum conductor size be based on the requirements of this Rule.

Revise Appendix B Note for Rules 8-104 5)b) and 6)b) to read: **SN4628-8**

Rules 8-104 5) b) and 6) b)
It is intended that Subrule 5) b) or 6) b) be applied when the ~~allowable~~ ampacity of

conductors is obtained from tables such as Table 1, 3, 12E, D8A, D8B, D9A, D9B, D17A, D17B, D17C, D17D, D17I, D17J, or D17M in accordance with Section 4.	
Revise Appendix B Note for Rule 10-614 3)b) to read: **Rule 10-616 3) b)** When the size of a circuit conductor is increased to compensate for voltage drop due to circuit length, the ampacity of that conductor exceeds that required for the connected load and the rating of the overcurrent protective device. The bonding conductor needs to be increased proportionately to minimize the impedance of the bonding path and facilitate the operation of the overcurrent device. The size of the bonding conductor is based on the circuit ~~conductor allowable~~ ampacity given in Column 2 of Table 16 to compensate for conductor length.	**SN4628-10**
Revise Appendix B Note for Rule 10-700 to read: **Rule 10-700** This Rule applies to equipotential bonding of the conductive surfaces of non-electrical equipment, devices, and structures where the control of voltage rise is required or desired. The equipotential bonding of these conductive pipes and systems is provided to prevent them from carrying a voltage different from the electrical system in order to control potential differences that may cause unwanted circulating currents, galvanic corrosion, or tingle voltages. Continuous water and waste water systems can, under certain circumstances, carry impressed currents from lightning strikes or faults in neighbouring buildings where conductive piping may interconnect the electrical systems of other structures that share the same water supply. Waste water systems constructed of cast iron and rubber couplings are not considered continuous. Metallic waste water systems that used solder joints are considered continuous. The installer should verify that the system is metallic and continuous. In relation to 10-700 c), to provide equipotential bonding to a metal gas piping system, CSA B149.1-2020 Natural Gas and Propane Installation Code defines “gas piping system” as “all components that convey gas or liquids, such as piping, tubing, valves, hoses, and fittings from the point of delivery to the inlet of an appliance.” CSA B149.1 also requires that all metallic gas piping systems are to be made electrically continuous. It should be noted that exterior gas piping systems may be required to be isolated from interior gas piping to prevent the introduction of current as well as to preserve any cathodic protection of the gas piping system. In general, this is accomplished using dielectric fittings at the demarcation between the interior and exterior gas piping system. Any conditions limiting the equipotential bonding of the exterior gas system should be verified with the local gas inspection authority. ~~It should also be noted that the requirement in Rule 10-700 c) to provide equipotential bonding to a metal gas piping system is not intended to apply to metal gas tubing. Attempts to bond metal gas tubing with conventional bonding means~~	**SN4605**

~~can create a hazardous situation where the tubing can be punctured by installation of the bonding means or by arcing between improperly secured bonding means during faults or lightning strikes.~~ When bonding a corrugated stainless steel tubing (CSST) component of a gas piping system, refer to the manufacturer's instructions. Livestock are particularly sensitive to the effects of step and touch voltages. For this reason, equipotential bonding is prescribed for all conductive metal parts (e.g., metal water pipes, stanchions, water bowls or troughs, vacuum lines, and other metal objects that could become energized) accessible by livestock in a building housing livestock. Methods to establish equipotentiality at buildings housing livestock are described in ASABE EP473.2-2001. Low grounding electrode system resistances may reduce potential differences in livestock facilities. Conductive materials used for equipotential bonding need not be wires and can take the form of structural steel, bus, metallic framing and support structures, conductive static mats, or the support structure of a computer room floor. Each of these materials, when adequately interconnected, form an effective equipotential plane. The user should be aware of the effects of galvanic corrosion where dissimilar metals are joined together and ensure that the materials used are compatible or appropriately protected from corrosion at joints and connections.	
Revise Appendix B Note for Rules **Rules 12-100, 12-102 4), 5), and 6), 12-122, 12-402, and 12-406** When a conductor, cable, flexible cord, equipment wire, or portable power cable is being selected, it is important that it be designed for the specific application and conditions of intended use. Rule 2-024 requires conductors, cables, flexible cords, equipment wire, or portable power cables to be approved and installed for use within the design parameters for which they were manufactured and certified. Consult Table 11 or 19 as applicable and the cable manufacturer to ensure that the proper conductor, cable, flexible cord, equipment wire, or portable power cable is selected for the specific application. Limitations on the use of certain product types may be specified in other Rules of this Code. Extra Low Voltage cable types are in CSA C22.2 No. 35, and include the following: • Low-energy control cables; • Type LVT extra-low-voltage control circuit cables; • Type ELC extra-low-voltage control cables; • Type GCS golf course; • Type LSS lawn sprinkler; • Type LVLL low-voltage landscape lighting; and • Type ULEC underground low-energy circuit cables.	**SN4627**
Add an Appendix B Note for Rule 12-402 1) to read:	**SN4656**

Rule 12-402 1)
The CSA type designation of certain flexible cords may be followed by a "-B" suffix indicating that a decorative braid has been applied over the cord.

Revise Appendix B Note for Rule 14-104 to read: **SN4628-14**

Rule 14-104
When conductors are selected based on a calculated load or a known load, Table 13 is useful in selecting the appropriate rating of overcurrent device based on the installed ampacity of the conductor for the installation. Code users are reminded that the circuit loading requirements of Rule 8-104 apply. It is intended that the ~~conductor~~ ampacity values used in Table 13 can refer to single or multiple conductors. Table 13 is also useful in determining standard overcurrent ratings for Rules such as 14-212 b) or 26-254 3).

Add an Appendix B Note for Rule 16-330 3)a) to read: **SN4593**

Rule 16-330 3)a)
Elevated cable temperatures can reduce a cable's data transmission performance. For information on practices for 4-pair balanced twisted pair cabling, see TIA-TSB-184-A and 6.6.8, 6.8.3, and Annex I of ANSI/TIA-568.2-D, which provide guidance on adjustments for operating temperatures between 20°C and 60°C.

Add new Appendix B Note for Rule 18-150 2)a)ii) to read: **SN4638**

Rule 18-150 2) a) ii)
This subrule is intended to allow for capacitors to be installed in Zone 2 such as are used for partial discharge monitoring, power factor correction, and harmonic reduction.

Add new Appendix B Note for Rule 18-150 2)a)iii) to read: **SN4638**

Rule 18-150 2) a) iii)
This type of equipment operates at such extremely low power levels that any operating temperature rise is negligible, and is thereby in compliance with Rule 18-054. All are non-sparking, and do not incorporate inductors, capacitors or other internal components capable of storing or producing significant amounts of electrical energy. For additional information, refer to the description of "simple apparatus" in CSA Standard C22.2 No. 60079-11. RFID tag Readers are not included in this allowance and they would need to be certified for the areas in which they are used.

Add the following entry to Appendix B, Table B18-1: **SN4640**

Equipment, equipment selection (Products)+	UL	1836 *Outline of Investigation for Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations*

Revise the Appendix B Note for Rule 18-150 2)e) to read: **Rule 18-150 2) e)** Rule 18-150 does not require rotating electrical machines of the open or non-explosion proof type to be certified for Zone 2 locations unless the machines incorporate ignition capable components or heat-producing components that exceed the minimum ignition temperature defined for the hazardous location. This Subrule provides the criteria for applying rotating electrical machines in Zone 2 locations that do not have a certification suitable for Zone 2 or Division 2. Refer to IEEE 1349 for more detailed information on applying these rotating electrical machines in Zone 2 locations. There is no Class I, Division 2 certification standard for ~~R~~rotating electrical machines, ~~of the open or non-explosion-proof type do not have a certification Standard for Class I, Division 2;~~ however, there are types of protection that can be used for certifying these machines for use in Zone 2 locations. . In addition, these machines can be evaluated for use in Zone 2 locations in accordance with UL1836 “Outline of Investigation for Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations”. ~~This Subrule provides the criteria for applying, in Zone 2, rotating electrical machines that do not have a certification suitable for Zone 2 or Division 2. Refer to IEEE 1349 for more detailed information on applying these rotating electrical machines in Zone 2 locations.~~	**SN4522**
Add new Appendix B Note for Rule 18-250 to read: **Rule 18-250** In addition to certifying rotating electrical machines with “types of protection”, these machines can be evaluated for use in Zone 22 locations in accordance with UL1836 “Outline of Investigation for Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations”.	**SN4522**
Add new Appendix B Note for Rule 24-101 to read: **Rule 24-101** It is intended by this Rule that panelboards supplying circuits in patient care areas, should be located in service rooms or service spaces, readily accessible to authorized personnel only. It is also intended by this Rule to permit the installation of panelboards supplying circuits of the essential electrical system in basic or intermediate care areas, within those care areas, when access by authorized personnel to these patient care areas is allowed by the health care facility administration. The intent of this Rule is also to ensure that when a panelboard is permitted to be located in a critical care area, such panelboard is dedicated to only supplying loads serving the critical care area where it is located, and as such, access by authorized	**SN4571**

personnel to that particular critical care areas is allowed by the health care facility administration when required. It should be noted that when panelboards are permitted to be installed in patient care areas in accordance with Subrule (2), access to those patient care areas for control of the circuits located outside of the patient care area, may not be granted by the health care facility administration to all maintenance personnel.	
Revise Appendix B Note for Rule 24-108 8) to read: **Rule 24-104 8)** This Subrule is intended to require that all exposed metal parts of non-electrical equipment located within a patient care environment that could become energized during a single fault condition be bonded to ground. ~~Examples of such equipment are metal parts of medical gas equipment, metal parts of support arms or consoles installed in a patient care environment, etc.~~ It is not intended by this Subrule that metal parts of portable non-electrical equipment or metal parts of the building structure and miscellaneous small conductive parts (e.g., metal sinks not provided with line-connected equipment such as electrically operated faucets, metal door frames, window frames, and soap dishes) be bonded to ground.	**SN4606** **SN4634**
Add new Appendix B Note for Subrule 26-600 1) to read: **Rule 26-600 1)** It should be noted that in accordance with C22.2 No. 29, panelboards are tested to operate normally at ambient temperatures up to 40C.	**SN4575**
Revise Appendix B Note for Rule 28-308 c) to read: **Rule 28-308 c)** The intent of this Item is to allow motors that are designed, constructed, and certified to CSA C22.2 No. 77, ~~and marked as impedance "ZP" and thermally "TP" protected~~ as motors ~~to~~ that can be installed without the overload protection ~~that is~~ required by Rule 28-300. Such motors have inherent overheating protection and are identified with one of the following markings: a) "THERMALLY PROTECTED", or "TP" b) "IMPEDANCE PROTECTED", or "ZP" c) "ELECTRONICALLY PROTECTED", or "EP"	**SN4595**
Add new Appendix B Note for Rules 62-124 2) and 3) to read: **Rules 62-124 2) and 3)** This Rule addresses installation requirements for series trace heater sets. Subrule 2) currently addresses the need to maintain the trace heater set and its connection to a non-heating lead within the heating area, typically beneath the thermal insulation. The non-heating lead may then pass through the thermal insulation and be connected within a junction box. Trace heating systems can be designed to allow the	**SN4607**

trace heater to pass through a heating surface mounted fitting assembly and transition directly into close-coupled power and termination junction boxes. A non-heating lead is not required in this case and the trace heater can be connected directly into the junction box terminal block. Subrule 62-108 3) addresses requirements when temperatures at the point of connection for branch circuit wiring exceeds 60 ºC.

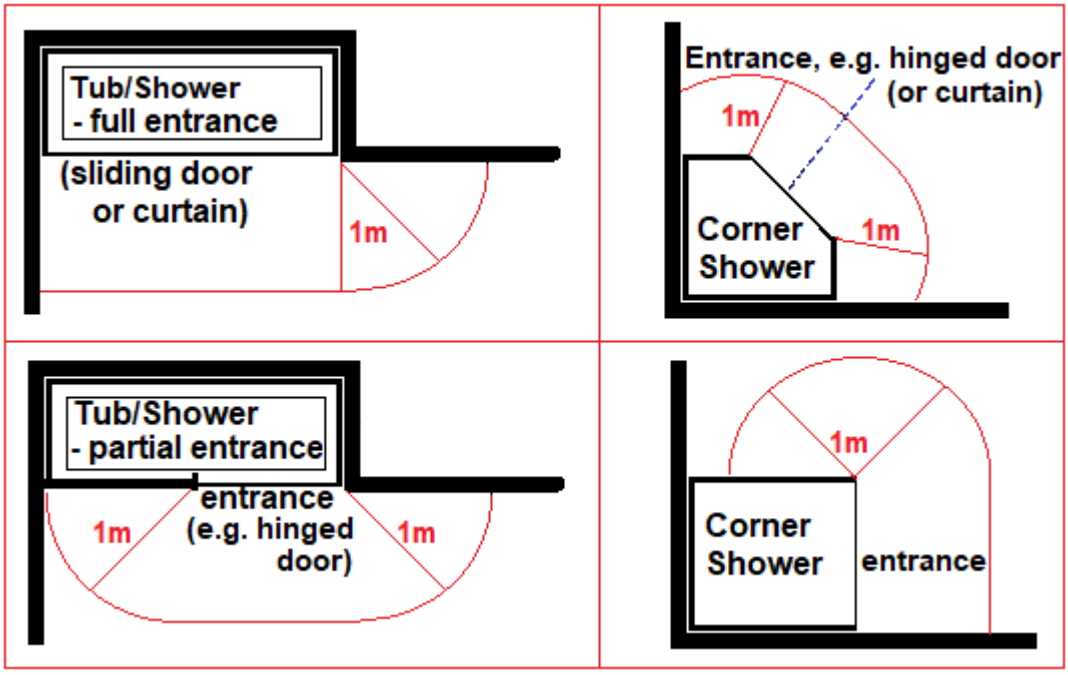
SN4567

Add new Appendix B Note for Rules 62-130 and 62-132 to read:

Rule 62-130 and 62-132

What is meant by "tub or shower stall entrance" is wherever a person can stand (or sit) and reach from the tub or shower. It does not matter what type of entrance it is, open, curtained, hinged, sliding or similar, the distance would be measured from the entire entrance. Figure B62-1.5 shows a few examples:

Figure B62-1.5



SN4568

Note: This revision is suspended pending approval of the corresponding revision to Standards CSA C22.2 No. 130.

Revise Appendix B Note for Rule 62-216 1) to read:

Rule 62-216 ~~1)~~

In Subrule 1), t~~T~~he 13 mm clearance is to prevent mechanical damage of the heating device during installation of the gypsum board and other cementitious material.

Subrule 3) is intended to allow for a trace heater to transition from one ceiling or wall cavity to another by crossing the stud or joist within 150mm of the end, for example in a notch, or through a hole, or around the end of the stud or joist if available.

Subrule 4) is intended to allow for trace heaters and panels to cross over the face of studs or joists without making a notch. For ceiling installations, GFCI-A or mechanical protection would be needed. For wall installations, they are limited to 1.2m above the floor and both GFCI-A and mechanical protection is needed. Subrule 5) is intended to allow for alternative methods of installing trace heaters or panels without gypsum board when mechanical protection is provided. Mechanical protection referred to in Subrules 4) and 5) can be provided by the requirements of the safety standard for a manufactured product or by field installation. In either case, manufacturer's instructions are provided and need to be followed. One example would be a manufactured panel with the trace heater or heating panel set embedded in it, and integral mechanical protection, which is then attached to the studs or joists. Another example would be the trace heater or heating panel set installed on the face of the studs or joists, with the mechanical protection installed on top of that, and optionally gypsum board installed on top of the mechanical protection, or vice versa, as would be detailed in the manufacturer's instructions. Standard C22.2 No. 130 contains the details for certifying products for installations requiring mechanical protection.	
Revise Appendix B Note for Rule 64-710 to read: **Rule 64-710** Fuel cells should be considered fuel-burning equipment and be installed in accordance with the National Building Code of Canada. Hydrogen-fuelled systems should be installed in accordance with CAN/BNQ 1784-000. Other considerations for siting and location may be found in NFPA 853.	**SN4610**

# Appendix C	
Add new Clauses C5.5.1 to C5.5.5 to read: C5.5.1 Where it is intended to make parallel changes to Section 18 and Annex J18, separate companion proposals shall be submitted concurrently C5.5.2 Where a proposal is intended to change either Section 18 or Annex J18, but not both, the Section 18 subcommittee shall, prior to or in parallel with the deliberations, review the proposal for its suitability as a stand-alone proposal. C5.5.3 Where, in accordance with Clause C5.5.2, the Subcommittee determines that a companion proposal is required, a concurrent proposal shall be prepared by the submitter or by a Section 18 subcommittee member.	**SN4377**

C5.5.4 Where, in accordance with Clause C5.5.2, the Subcommittee determines that a companion proposal is not required, this finding shall be documented by the Subcommittee and included with the recommendation submitted to the Committee on Part I for ballot approval. C5.5.5 Each proposal shall be processed in accordance with Clause C5.4.	

Appendix D

Revise Title of Table D3 to read:

Table D3
Distance to centre of distribution for a 1% drop in voltage on nominal 120 V, 2-conductor copper circuits
(See Appendix B Note to Rule ~~4-004~~ 8-102.)

SN4582

Delete all occurrences of the word "allowable" in Tables D3, D8A, D8B, D9A, D9B, D10A, D10B, D11A, and D11B.

SN4628-4

Revise heading of Table D16, column 2 to read:

Minimum ~~allowable~~ ampacity of insulated conductor, A

SN4628-28

Revise Item 8 and dagger note in Table D17 as shown:

SN4601

Table D17
Conditions of use for Tables D17A to D17N*††
(See Rule 4-004.)

Item	Characteristic	Condition
"	*No change to items 1 to 7*	
"		
8	Insulated conductor or cable shield, ~~ground~~ bonding and armour bonding†	Both ends of e
"	*No change to items 9 to 18*	
"		

"

"

† *It is assumed that insulated conductor shields, ~~ground~~ bonding conductors, and armou present) are grounded at more than one point. The ampacities in the D17 series of Table been adjusted to take into consideration the heating due to shield, ~~ground~~ bonding cond and armour circulating currents.*

"

"

"

Notes not shown are unchanged

Delete all occurrences of the phrase "maximum insulated conductor" in Table D17.	**SN4628-4**
Delete all occurrences of the word "Allowable" in Tables D17A through D17N.	**SN4628-4**

Appendix I

Add the following entry to Appendix I: **Rule 68-058** **Question:** Does the rebar for a small pad on which a moveable Hot Tub is intended to be set and connected require bonding in accordance with Rule 68-058? **Answer:** No	**SN4614A**
Add the following entry to Appendix I: **Rule 68-058** **Question:** Does the rebar for a large pad/patio on which a moveable Hot Tub is intended to be set and connected require bonding in accordance with Rule 68-058? **Answer:** No	**SN4614B**
Add the following entry to Appendix I: **Rule 68-058** **Question:** Does the rebar for a patio from which people access a moveable Hot Tub located on the adjacent earth require bonding in accordance with Rule 68-058? **Answer:** No	**SN4614C**

Appendix J, Annex J18

Add new entry to Rule J18-002 to read: SN4565-J18

J18-002 Special terminology (see Annex JB)
In this Section, the following definitions shall apply:

Non-incendive circuit — a circuit in which any spark or thermal effect that may occur under normal operating conditions or due to opening, shorting, or grounding of field wiring is incapable of causing an ignition of the prescribed flammable gas or vapour.

Revise Subrules J18-150 1) and 2) to read: SN4638-J18

J18-150 Equipment in Class I, Division 2 locations (see Annex JB)
1) Electrical ~~E~~equipment installed in a Class I, Division 2 location shall be in accordance with Table 18.
2) Notwithstanding Subrule 1) and Rule J18-052, the following shall be permitted:
a) ~~transformers, solenoids, coils, and similar electromagnetic devices~~ equipment that complies ~~comply~~ with the requirements of Rule J18-054 and is any of the following:
i) inductive devices, including transformers, solenoids, coils and similar equipment;
ii) capacitors that do not have integral fuses; or
iii) devices used for instrumentation and measurement purposes, including thermocouples, resistance temperature detectors (RTDs), piezoelectric pressure transducers and accelerometers, resistive strain gauges, passive RFID (radio frequency identification) tags and similar equipment;

[No change to remainder of Subrule]

Appendix J, Annex JB

Add new Annex JB Note for Rule J18-150 2)a)ii) to read: SN4638-J18

Rule J18-150 2) a) ii)
This subrule is intended to allow for capacitors to be installed in Division 2 such as are used for partial discharge monitoring, power factor correction, and harmonic reduction.

Add new Annex JB Note for Rule J18-150 2)a)iii) to read: **Rule J18-150 2) a) iii)** This type of equipment operates at such extremely low power levels that any operating temperature rise is negligible, and is thereby in compliance with Rule J18-054. All are non-sparking, and do not incorporate inductors, capacitors or other internal components capable of storing or producing significant amounts of electrical energy. For additional information, refer to the description of “simple apparatus” in CSA Standard C22.2 No. 60079-11. RFID tag Readers are not included in this allowance and they would need to be certified for the areas in which they are used.	SN4638-J18
Revise Annex JB Note for Rule J18-150 2)e) to read: **Rule J18-150 2) e)** See the Note to Rules J18-114 and J18-150. Rule J18-150 does not require rotating electrical machines of the open or non-explosion proof type to be certified for Class I, Division 2 locations unless the machines incorporate ignition capable components or heat-producing components that exceed the minimum ignition temperature defined for the hazardous location. ~~Rotating electrical machines of the open or non-explosion-proof type do not have a certification Standard for Class I, Division 2.~~ This Subrule provides the criteria for applying, in Division 2, rotating electrical machines that do not have a certification suitable for Division 2. Refer to IEEE 1349 for more detailed information on applying these rotating electrical machines in Class I, Division 2 locations. Rotating electrical machines do not have a certification Standard for Class I, Division 2. However, these machines can be evaluated for use in Class I, Division 2 locations in accordance with UL1836 “Outline of Investigation for Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations”.	SN4522-J18
Add new Annex JB Note for Rule J18-250 to read: **Rule J18-250** Rotating electrical machines can be evaluated for use in Class II, Division 2 locations in accordance with UL1836 “Outline of Investigation for Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations”.	SN4522-J18

Subjects incorporated into this Memorandum of Revisions						
MOR #1						
4148-12	4621					
4323-0	4624					
4323-10	4627					
4353	4628-4					
4356	4628-8					
4377	4628-10					
4428-26	4628-12					
4494	4628-14					
4502	4628-16					
4505	4628-26					
4509	4628-28					
4519	4628-62					
4522	4628-64					
4522-J18	4630					
4532	4632					
4533	4633					
4555	4634					
4565-0	4637					
4565-18	4638					
4565-J18	4638-J18					
4567	4640					
4568	4645					
4571	4656					
4574						
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4614A						
4614B						
4614C						
4620-8						

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