



CANADIAN ELECTRICAL CODE, PART I

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

Notes:

1. *This document contains the first and second 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.
Second memorandum revisions are identified by a **blue** number.*
3. *Unless specified otherwise, revisions are indicated only by strikeout and underline.
Revisions in this memorandum are subject to editing, formatting, and renumbering.
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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.*
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Revision history

Date	Change	Document
Aug 18 2021	MOR 25-1 Released	MOR 1-2021 CE Code
Nov 3 2021	Deleted change under SN4428-26 (DTEMS)	MOR 1-2021 CE Code
Aug 5 2022	MOR 25-2 Released	MOR 25-2-2021 CE Code

REFERENCE PUBLICATIONS

Add new entry to the reference publications:

SN4610

[NFPA 853](#)
[Standard for the Installation of Stationary Fuel Cell Power Systems](#)

SECTION 0

Revise definition of Cable to read:

SN4533

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.

Delete definition of Non-incendive circuit and the associated cross reference:

SN4632
SN4565-0

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.~~

Revise definition for Dwelling unit to read:

SN4569

Dwelling unit — ~~one or more rooms for the use of one or more persons as a housekeeping unit with cooking, eating, living, and sleeping facilities.~~ [a suite operated as a housekeeping unit, used or intended to be used by one or more persons and containing cooking, eating, living, sleeping and sanitary facilities. \(see definition for Suite\)](#)

<p><i>Revise definition of Identified to read:</i></p> <p>Identified —</p> <p>a) when applied to a conductor, signifies that the conductor has</p> <ul style="list-style-type: none"> 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 <p>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.</p>	SN4323-0
<p><i>Revise definition of Industrial establishment to read:</i></p> <p>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 <u>for the purpose of assembling, fabricating, manufacturing, processing, repairing or storing of goods and materials</u> in manufacturing processes or in the handling of material, as distinguished from dwellings, offices, and similar occupancies.</p>	SN4637
<p><i>Add definition for Suite to read:</i></p> <p><u>Suite — a single room or series of rooms of complementary use, operated under a single tenancy, and includes dwelling units, individual guest rooms in motels, hotels, boarding houses, rooming houses and dormitories (see Appendix B)</u></p>	SN4569
<p><i>Revise definition of Voltage to read:</i></p> <p>Voltage (see Appendix B) —</p> <p>Extra-low voltage —</p> <ul style="list-style-type: none"> a) for ac circuits, any voltage not exceeding 30 V ac; or b) for dc circuits, any voltage not exceeding 42.4 <u>60</u> V dc. <p>Low voltage —</p> <ul style="list-style-type: none"> 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 <u>60</u> V dc but not exceeding 1060 <u>1500</u> V dc. <p>High voltage —</p> <ul style="list-style-type: none"> a) for ac circuits, any voltage exceeding 1000 V ac; or b) for dc circuits, any voltage exceeding 1060 <u>1500</u> V dc. 	SN4555 SN4645
<p><i>Note: This revision contingent on approval of Subject 4684.</i></p>	SN4683

Add definition for Wire mesh cable tray to read:

Wire mesh cable tray – a fabricated structure consisting of steel wire welded at all intersections.

SECTION 2

Add new Subrule 2-306 3) to read:

2-306 Shock and arc flash protection (see Appendix B)

1) Electrical equipment such as switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centres that are installed in other than dwelling units and are likely to require examination, adjustment, servicing, or maintenance while energized shall be field marked to warn persons of potential electric shock and arc flash hazards.

2) The marking referred to in Subrule 1) shall be located so that it is clearly visible to persons before examination, adjustment, servicing, or maintenance of the equipment.

3) Where an overcurrent protective device is rated 1200 A or higher:

- a) means shall be provided to reduce the arcing fault clearing time; and
- b) documentation regarding such means shall be provided and readily available to personnel that install, operate, inspect and maintain electrical equipment protected by the overcurrent protective device(s).

SN4623

Revise Rule 2-328 to read:

2-328 Electrical equipment near ~~combustible~~ flammable gas equipment (see Appendix B)

For locations that do not have a hazardous area classification in accordance with 18-004 or J18-004, tThe clearance distance between arc-producing electrical equipment and a ~~flammable~~ ~~combustible~~ gas relief device or vent shall be in accordance with the requirements of CSA B149.1 and CSA B149.2 as applicable.

SN4505
SN4712

SECTION 4

Revise Rule 4-000 to read:

SN4628-4
SN4701

<p>4-000 Scope (see Appendix B)</p> <p>1) This Section applies to conductors for services, feeders, branch circuits, and photovoltaic circuits with regard to</p> <ul style="list-style-type: none"> a) the determination of maximum allowable conductor ampacity <u>for specific conditions of use</u>; b) the determination of maximum conductor termination temperature; c) the selection of neutral conductors; <u>and</u> d) the selection of a conductor type for a specific condition of use; and <u>ed</u>) conductor identification. <p>2) This Section does not apply to other conductors except where specifically referenced in other Sections of this Code.</p>	
<p><i>Revise Subrule 4-004 5) to read:</i></p> <p>4-004 Ampacity of wires and cables (see Appendix B)</p> <p>5) The maximum allowable ampacity of neutral supported cable shall be as specified in Tables 36A and 36B.</p>	SN4628-4
<p><i>Revise Subrule 4-004 21) to read:</i></p> <p>4-004 Ampacity of wires and cables (see Appendix B)</p> <p>21) The maximum allowable ampacity of bare or covered conductors in free air shall be as specified in Table 66.</p>	SN4628-4
<p><i>Revise Subrule 4-004 22) to read:</i></p> <p>4-004 Ampacity of wires and cables (see Appendix B)</p> <p>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:</p> <ul style="list-style-type: none"> a) for single insulated conductors, single-conductor cable, single-conductor metal-sheathed or armoured cable, and single-conductor mineral-insulated cable: <ul style="list-style-type: none"> <u>i) the value as specified in Tables 1 and 3; and</u> <u>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</u> 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. 	SN4509
<p><i>Revise Subrule 4-004 26) to read:</i></p> <p>4-004 Ampacity of wires and cables (see Appendix B)</p> <p>26) Where cablebus is installed in a location with an ambient temperature exceeding</p>	SN4628-4

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.	
<p><i>Revise Subrule 4-006 1) to read:</i></p> <p>4-006 Temperature limitations (see Appendix B)</p> <p>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.</p>	SN4628-4

SECTION 6	
<p><i>Revise Subrule 6-212 3) to read:</i></p> <p>6-212 Wiring space in enclosures</p> <p>3) Consumer's service conductors that enter a service box that is not equipped with a barrier between the line and load sides shall</p> <ul style="list-style-type: none"> a) enter the service box as close as possible <u>practicable</u> to the line terminals of the main switch or circuit breaker; and b) not come into contact with or cross conductors connected to the load terminals of the main switch or circuit breaker. 	SN4661
<p><i>Revise Subrule 6-402 2) to read:</i></p> <p>6-402 Method of installing meter loops (see Appendix B)</p> <p>2) Metering equipment shall be connected on the load side of the service box, except that it shall be permitted to be connected on the supply side where</p> <ul style="list-style-type: none"> a) no live parts or wiring are exposed, ; b) the supply is ac, and the voltage does not exceed 300 V between conductors, ; and e) the rating of the consumer's service does not exceed <ul style="list-style-type: none"> i) 200 A for a meter mounting device; ii) 320 A for a meter mounting device equipped with a bypass means; or iii) 600 A for a transformer rated meter mounting device located outdoors. ; <u>or</u> <u>b) a single or multiple meter mounting device, rated 300 Volts or less between conductors is provided as an integral part of service equipment for use in nonhazardous locations.</u> 	SN4512
<i>Revise Subrule 6-408 1) to read:</i>	SN4576

6-408 Location of meters ([See Appendix B](#))

- 1) Meters and metering equipment shall be
- a) located as near as practicable to the service box except as provided for in Subrule 2);
 - b) grouped where practicable;
 - c) readily accessible;
 - d) not 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;
 - e) if mounted outdoors, of weatherproof construction or in weatherproof enclosures; and
 - f) in compliance with the requirements of the supply authority.

SECTION 8

Revise Subrules 8-104 5) and 6) to read:

SN4528-8

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](#).

Revise Subrule 8-106 11) to read:

SN4519
SN4620-8

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

<p>11) For the purposes of Rules 8-200 1) a) vi), <u>8-202 1) a) vii)</u>, 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) <u>performs the functions of</u> <u>a) monitoring</u> monitors the consumer's service, and <u>and</u> feeders, <u>and branch circuits</u> and <u>b) controlling</u> 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.</p>	
<p><i>Revise Item 8-110 c) to read:</i></p> <p>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</p> <p>a) 100% of the area on the ground floor;</p> <p>b) 100% of any areas above the ground floor used for living purposes; and</p> <p>c) 75% of the only those <u>areas</u> below the ground floor <u>that exceed 1.8 m in height, measured from the lowest part of the ceiling assembly to the ground or other surface below it.</u></p>	<p>SN4353 SN4635</p>
<p><i>Revise Subrule 8-200 2) to read:</i></p> <p>8-200 Single dwellings (see Appendix B) 2) The calculated load for the consumer's service or feeder conductors supplying two or more dwelling units of row housing shall be based on</p> <p>a) the calculated load in the dwelling unit, as determined in accordance with Subrule 1), excluding <u>electric vehicle supply equipment loads, described in paragraph 8-202(1)(a)(vii)</u>, any electric space-heating loads, and any air-conditioning loads, with application of demand factors to the calculated loads as required by Rule 8-202 3) a) i) to v); plus</p> <p>b) the requirements of Rule 8-202 3) b) to e).</p>	<p>SN4729</p>
<p><i>Revise Rule 8-202 to read:</i></p> <p>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):</p> <p>a)</p> <p>i) a basic load of 3500 W for the first 45 m² of living area (see Rule 8-110); plus</p> <p>ii) an additional 1500 W for the second 45 m² or portion thereof; plus</p> <p>iii) an additional 1000 W for each additional 90 m² or portion thereof in excess of the initial 90 m²; plus</p> <p>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</p>	<p>SN4519</p>

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 10-004 definition for Solidly grounded system to read:

SN4320

Solidly grounded system — an electrical system in which a point of that system is connected, without inserting an impedance grounding device,

- a) to a system bonding jumper; and
- b) ~~by a grounding conductor,~~ to a grounding electrode or to a conductive body that extends the ground connection.

Revise Rule 10-004 definition for System bonding jumper to read:

SN4320

System bonding jumper — a connection between the ~~system-grounded~~ point of an electrical system to be solidly grounded and the non-current carrying conductive parts of ~~an~~ that electrical system ~~to establish a solidly grounded system.~~

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:

SN4323-10

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

<p>f) be protected from damage</p> <ul style="list-style-type: none"> i) mechanically; or ii) by location. 	
<p><i>Revise Subrule 10-400 1) to read:</i></p> <p>10-400 Ungrounded systems (see Appendix B)</p> <p>1) DC or ac systems shall be permitted to be ungrounded, provided that the system is</p> <ul style="list-style-type: none"> a) <u>is</u> equipped with suitable ground fault detection; and b) <u>does not include a distributed neutral conductor; and</u> c) b) <u>is</u> maintained by qualified persons. 	SN4356
<p><i>Revise Rule 10-604 to read:</i></p> <p>10-604 Bonding continuity for service equipment (see Appendix B)</p> <p>1) The bonding continuity for service <u>equipment</u> raceways, cable armour, cable sheaths, and all service equipment enclosures containing service conductors, including meter fittings, boxes, or the like, shall be assured by <u>bonding means prescribed in Rule 10-610.</u></p> <ul style="list-style-type: none"> a) threaded couplings and threaded connections to the conductive enclosures, with joints made up tight where rigid metal conduit is used; b) couplings and connectors made up tight where electrical metallic tubing is used; and c) bonding bushings supplemented with a bonding conductor where the connection to the enclosure is made using standard locknuts. <p><u>2) Standard locknuts serving as the bonding means for metal raceway, metal sheath, or cable armour connecting to service equipment shall be supplemented by bonding bushings with a bonding conductor connecting to a bonding bus within the enclosure</u></p> <ul style="list-style-type: none"> <u>a) at both ends where the metal raceway, metal sheath, or cable armour serves as the bonding means between service equipment; or</u> <u>b) at one end where</u> <ul style="list-style-type: none"> <u>i) a bonding conductor is run with circuit conductors; or</u> <u>ii) the termination to service equipment is only at one end.</u> <p>2)3) Notwithstanding Subrule 2) 1)c), bonding bushings shall not be required for cable assemblies incorporating an internal bonding conductor in continuous contact with the cable armour, provided that the internal bonding conductor extends from the cable and connects to the service equipment.</p>	SN4591
<p><i>Revise Rule 10-212 to read:</i></p> <p>10-212 Grounding connections for solidly grounded separately derived ac systems (see Appendix B)</p> <p>1) Except as permitted by Subrule 23), the grounded conductor of a solidly grounded separately derived ac system shall</p> <ul style="list-style-type: none"> a) be connected to the equipment bonding terminal by a system bonding jumper <ul style="list-style-type: none"> i) at the <u>point of termination to each</u> source; ii) at the first switch controlling the system; or iii) at the tie point, where two or more systems terminate at a tie point; b) be connected to a grounding conductor at the same point on the separately 	SN4319

<p>derived system where the system bonding jumper is connected; and</p> <p>c) have no other connection to the non-current-carrying conductive parts of electrical equipment on the supply side or the load side of the grounding connection.</p> <p><u>2) Where more than one source of supply exists that are intended to be solidly grounded, the connection required by item 1) shall be permitted to be made to a single grounding conductor.</u></p> <p><u>32)</u> A separately derived ac system operating at 750 V or less shall be permitted to be grounded by the system bonding jumper that is connected to the bonding conductor included in the primary supply.</p>	
<p><i>Revise Rule 10-616 to read:</i></p> <p>10-616 Size of system bonding jumper or bonding conductor (see Appendix B)</p> <p>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.</p> <p>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.</p> <p>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</p> <ul style="list-style-type: none"> 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. <p>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.</p> <p>5) Notwithstanding Subrules 2), 3), and 4), the bonding conductor shall not be required to be larger than the current-carrying conductors.</p> <p>6) A metal raceway that is permitted to be used as a bonding conductor shall be considered to meet the requirements of this Rule.</p> <p>7) A bonding means that is integral to a cable assembly shall be considered to meet the requirements of this Rule.</p>	SN4628-10

<h2>SECTION 12</h2>	
<p><i>Add new Rule 12-002 to read:</i></p> <p><u>12-002 Special terminology</u></p> <p><u>In this Section, the following definitions shall apply:</u></p>	SN4644

<p><u>Grade level in-ground enclosure – a housing the top of which is installed flush with the ground, and which provides access to equipment located therein through a secured cover.</u></p>	
<p><i>Revise Subrule 12-012 12), add new Subrules 13) and 14), and renumber Subrule 13) as 15):</i></p> <p>12-012 Underground installations (see Appendix B)</p> <p>12) Where underground raceways, or cables, <u>or grade level in-ground enclosures</u> are subject to movement by settlement or frost, provision shall be made for the prevention of damage to the conductors, conductor insulation, or the electrical equipment.</p> <p><u>13) Grade level in-ground enclosures shall be used in accordance with the manufacturers' design class (tier).</u></p> <p><u>14) Except for splicing installed in accordance with Rule 12-112, devices such as receptacles and switches shall not be permitted in grade level in-ground enclosures.</u></p> <p>13) <u>15)</u> For installations not covered by the foregoing requirements of this Rule, the requirements of CSA C22.3 No. 7, or the applicable standard, whichever is more stringent, shall apply.</p>	SN4644
<p><i>Revise Rule 12-112 to read:</i></p> <p>12-112 Conductor joints and splices (see Appendix B)</p> <p>1) Conductors shall be spliced or joined with splicing devices or by brazing, welding, or soldering with a fusible metal or alloy.</p> <p>2) Soldered splices shall first be spliced or joined so as to be mechanically and electrically secure without solder and then be soldered.</p> <p>3) Joints or splices shall be covered with an insulation equivalent to that on the conductors being joined.</p> <p>4) Joints or splices in conductors and cables shall be accessible.</p> <p><u>5) Joints or splices in conductors and cables in grade level in-ground enclosures shall be in accordance with Subrule 6) b) and suitable for wet locations.</u></p> <p>5) <u>6)</u> Splices in underground runs of cable, if required due to damage to the original installation, shall be permitted to be made</p> <ul style="list-style-type: none"> a) in junction boxes suitably protected from mechanical damage that are located at least 1 m above grade and secured to buildings or to stub poles; or b) notwithstanding the requirements of Subrule 4), by means of splicing devices or materials (kits) for direct earth burial; <u>or</u> <u>c) in grade level in-ground enclosures intended for the purpose and not subject to vehicular traffic, by means of splice connectors suitable for wet locations.</u> 	SN4644
<p>Note: This revision is contingent on approval of related changes to Section 76.</p> <p><i>Add new Rule 12-124 to read:</i></p> <p>12-124 Temporary Installation of Single Conductor Cables <u>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.</u></p>	SN4148-12

<p><i>Revise Subrule 12-930 1) to read:</i></p> <p>12-930 Raceways installed underground or where moisture may accumulate (see Appendix B)</p> <p>1) The requirements for Category 1 locations as specified in Section 22 shall be complied with where raceways are installed</p> <ul style="list-style-type: none"> a) underground; b) in concrete slabs or other masonry in direct contact with the earth; or <u>c) in the portion of masonry in direct contact with the earth; or</u> e) d) in other locations where the conductors are subject to moisture. 	SN4274
<p><i>Revise Rule 12-2252 to read:</i></p> <p>12-2252 Use of cablebus (see Appendix B)</p> <p>1) Class A cablebus shall be permitted for installations</p> <ul style="list-style-type: none"> a) accessible to the public; or b) where Class B cablebus is permitted. <p>2) Class B cablebus shall be permitted only for installations <u>provided that</u></p> <ul style="list-style-type: none"> a) <u>the installation is serviced</u> accessible <u>only to authorized by qualified</u> persons; <u>and</u> b) <u>the installation is inaccessible to the public</u> isolated by elevation or by barriers; and c) serviced by qualified electrical maintenance personnel. 	SN4682
<p><i>Revise Subrule 12-2258 2) to read:</i></p> <p>12-2258 Provisions for bonding (see Appendix B)</p> <p>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.</p> <p>2) Where the conditions of Subrule 1) do not apply, the metal cablebus shall be adequately bonded</p> <ul style="list-style-type: none"> 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

<p><i>Revise Subrule 14-104 1) to read:</i></p> <p>14-104 Rating of overcurrent devices (see Appendix B)</p>	SN4628-14

<p>1) The rating or setting of overcurrent devices shall not exceed the allowable ampacity of the conductors that they protect, except</p> <ul style="list-style-type: none"> 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. 	
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SECTION 16	
<p><i>Revise Subrule 16-222 2) to read:</i></p> <p>16-222 Equipment located on the load side of overcurrent protection, transformers, or devices having class 2 outputs</p> <p>2) Notwithstanding Subrule 1) a), lighting products, electromedical equipment, equipment for hazardous locations, and thermostats incorporating heat anticipators <u>and the field installed insulated conductors and cables, connected to these products,</u> shall comply with Rule 2-024(1).</p>	SN4630

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 Rule 18-052 to read:

SN4687

18-052 Marking (see Appendices B and J)
Electrical equipment installed in hazardous locations shall have markings that are suitable for the Zone or Zones in which the equipment is installed.

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 20

Revise Subrule 20-004 8) and add new Subrule 11) to read:

SN4693

<p>20-004 Hazardous areas (see Appendix B)</p> <p>8) <u>Except as permitted by Subrule 11), Electrical wiring and equipment, any portion of which is below the surface of areas defined as Zone 1 or Zone 2 in Subrule 1), 4), 6), or 7), shall be considered conform to the requirements for to be within a Zone 1 location that extends at least to the point of emergence above grade.</u></p> <p>“</p> <p>“</p> <p><u>11) Non-metallic conduit shall be permitted where at least 600mm below the surface areas defined as Zone 1 or Zone 2 in Subrule 1), 4), 6), or 7) provided:</u></p> <p><u>a) The last 600mm to the point of emergence above grade or finished floor is threaded rigid metal conduit; and</u></p> <p><u>b) A Flammable fluid migration seal is located above grade or finished floor with no box, coupling, or fitting in the conduit run between the seal and non-metallic conduit</u></p>	
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<h2>SECTION 24</h2>	
<p><i>Add new Rule 24-101 to read:</i></p> <p><u>24-101 Panelboards supplying circuits in patient care areas</u> (see Appendix B)</p> <p><u>1) Panelboards supplying circuits in patient care areas, shall be</u></p> <p><u>a) secured;</u></p> <p><u>b) accessible only to authorized personnel; and</u></p> <p><u>c) except as provided by Subrule 2), outside patient care areas.</u></p> <p><u>2) Panelboards supplying circuits described in Subrule 24-302 1), shall be permitted to be located in patient care areas.</u></p> <p><u>3) Panelboards installed in basic or intermediate care areas in accordance with Subrule 2), shall supply only circuits located within those patient care areas.</u></p> <p><u>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.</u></p>	SN4571
<p><i>Add new Subrule 24-102 9) to read:</i></p> <p><u>9) all branch circuits supplying loads within patient care environments, other than those supplying multi-phase equipment, shall be 2-wire circuits.</u></p>	SN4633
<p><i>Revise Rule 24-104 to read:</i></p> <p>24-104 Bonding to ground in basic care areas (see Appendix B)</p> <p>1) Bonding conductors shall be insulated unless they are</p>	SN4494

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| <p>a) installed in non-metallic conduit; or</p> <p>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.</p> <p>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:</p> <p>a) each multi-wire branch circuit shall be provided with its own equipment bonding conductor;</p> <p>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;</p> <p>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</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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</p> <p>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</p> <p>b) incorporated into the assembly of the cable supplying that panelboard.</p> <p>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.</p> <p>7)6) Each item of three-phase equipment shall be bonded to ground with a copper equipment bonding conductor that is</p> <p>a) sized in accordance with Rule 10-616 Table 16, but is in no case smaller than No. 12 AWG; and</p> <p>b) connected to its own terminal at the equipment and the panelboard.</p> <p>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</p> <p>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</p> <p>b) connection to an equipment bonding conductor or bonding busbar for that patient care environment as identified in Subrule 3).</p> <p>9)8) If they could become energized, exposed non-current-carrying metal parts of</p> | |
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<p>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).</p> <p>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.</p>	
<p><i>Add new Subrule 24-106 8) to read:</i></p> <p>24-106 Receptacles in basic care areas (see Appendix B)</p> <p><u>8) All receptacles of CSA configuration 5-15R and 5-20R installed in areas designated by the health care facility administration as being intended primarily for the provision of diagnosis, therapy, or care to children, other than receptacles dedicated for stationary appliances such that the receptacle is rendered inaccessible, and receptacles located above 2 m from the floor, shall be tamper-resistant receptacles and shall be so marked.</u></p>	SN4572

<h2>SECTION 26</h2>	
<p><i>Revise Subrule 26-246 3) to read:</i></p> <p>26-246 Dry-core, open-ventilated-type transformers</p> <p>3) Notwithstanding Subrule 1), where the adjacent surface is the wall on which the transformer is mounted, the minimum permissible separation between the enclosure and the mounting wall shall be 6.5 mm if the adjacent surface is made of</p> <ul style="list-style-type: none"> a) non-combustible material; b) combustible material adequately protected by non-combustible heat insulating material other than sheet metal; or c) combustible material shielded by grounded sheet metal with an air space of not less than 50 mm between the sheet metal and the combustible material. 	SN4732
<p><i>Revise Rule 26-256 to read:</i></p> <p>26-256 Conductor size for transformers (see Appendix B)</p> <p>1) The conductors supplying transformers shall have an ampacity rating</p> <ul style="list-style-type: none"> 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. <p>2) The secondary conductors connected to transformers shall have an ampacity rating</p>	SN4628-26

<p>a) not less than 125% of the rated secondary current of the transformer for a single transformer; or</p> <p>b) not less than 125% of the sum of the rated secondary currents of all the transformers operated in parallel.</p> <p>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.</p> <p>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.</p> <p>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.</p>	
<p><i>Revised Subrule 26-600 1) to read:</i></p> <p>26-600 Location of panelboards (see Appendix <u>Appendices B and G</u>)</p> <p>1) Panelboards shall not be located in coal bins, clothes closets, bathrooms, stairways, high-ambient rooms <u>or spaces with high ambient temperatures</u>, dangerous or hazardous locations, nor in any similar undesirable places.</p>	<p>SN4575 SN4705</p>
<p><i>Revise Rule 26-724 to read:</i></p> <p>26-724 <u>Outdoor and garage R</u>eceptacles for single dwellings (see Appendices B and G)</p> <p>Receptacles for single dwellings only shall meet the following requirements:</p> <p>a1) Except as permitted by Subrule 2), for each single dwelling, at least one two duplex receptacles, <u>readily accessible from ground or grade level</u> shall be installed outdoors so as to be readily accessible from ground or grade level for the use of appliances that need to be used outdoors;</p> <p><u>a) on two opposite sides of the single dwelling; or</u></p> <p><u>b) where the single dwelling configuration does not have opposite sides, installed on adjacent sides of the single dwelling and separated from each other by no less than one half of the width of the longest side.</u></p> <p><u>2) At least one duplex receptacle shall be installed on single dwellings having a continuous perimeter at grade level of 20 m or less.</u></p> <p>b3) aAt least one duplex receptacle readily accessible from floor or grade level shall be provided for each car space in a garage or carport of a single dwelling. and</p> <p>e4) eOne receptacle shall be provided in a garage for each cord-connected overhead garage door opener and shall be located within 1 m of the overhead door opener.</p>	<p>SN4602</p>

SECTION 28

Revise Rule 28-706 to read:

SN4628-28

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.

SECTION 30

Revise Rule 30-310 to read:

SN4659

30-310 Luminaire as a raceway

1) Insulated branch circuit conductors run through a luminaire shall be contained in a raceway that is an integral part of the luminaire and that meets the requirements for a surface raceway, except that the insulated conductors of a 2-wire, 3-wire, or 4-wire branch circuit supplying the luminaires shall be permitted to be carried through luminaires marked as suitable for continuous row mounting.

2) Ballasts located within the luminaires referred to in Subrule 1) shall be deemed to be sources of heat and the conductors supplying the luminaires shall

- a) have a voltage rating not less than 600 V;
- b) have an insulation temperature rating not less than 90 °C; and
- c) be ~~either of a type~~
 - i) ~~a type~~ selected in accordance with Rule 12-102 3) as being suitable for use in raceways; or
 - ii) ~~selected in accordance with Rule 12-402 1) as being suitable for use in accordance with this Rule, Type GTF, REW, TEW, TBS, SIS, SEW-2, or SEWF-2 equipment wire installed in a raceway,~~ provided that the insulated conductors are not smaller than No. 14 AWG and do not extend beyond the luminaires through raceways more than 2 m long.

3) Notwithstanding Subrule 2), non-metallic-sheathed cable shall be permitted to be used for supplying the luminaires, provided that it has a temperature rating of 90 °C.

Revise Rule 30-1116 to read:

SN4660

30-1116 Use of messenger cables

- 1) Messenger cables shall be used to support the insulated conductors
 - a) if lampholders having permanently attached leads are used, and the span exceeds 12 m; and
 - b) in all cases where lampholders having terminals that puncture the insulation

are used. <u>2) Messenger cable shall be installed in accordance with Rule 12-320.</u> 2) Messenger cables shall be securely attached at each end of the run and shall be grounded in accordance with Section 10. 3) Insulated conductors shall be permanently attached to the messenger.	
Delete Rule 30-1118: 30-1118 Construction of messenger cables 1) Messenger cables shall be of galvanized steel, copper coated steel, or stainless steel, and shall be of stranded construction with not less than seven strands. 2) Galvanized steel shall have a coating of not less than 45 g/m². 3) The effective ultimate strength of a messenger cable shall be not less than three times the calculated maximum working load, including loading due to ice loads and wind loads, and the individual strands shall in no case be less than a) 1.17 mm in diameter in the case of galvanized or copper coated wire; or b) 1.11 mm in diameter in the case of stainless steel wire.	SN4660

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; <u>and</u> <u>c) extra-hard usage flexible cords as listed in Table 11 shall be permitted as flexible connections on escalator or moving walk controllers and disconnecting means installed in conformance with Rules 38-005 2)a).</u>	SN4532

SECTION 42

Revise Subrules 42-008 2) and 3) to read:

SN4628-42
SN4723

42-008 Overcurrent protection for transformer arc welders and inverter welders

2) Each ungrounded conductor supplying a transformer arc welder and inverter welder shall have overcurrent protection rated or set at not more than 200% of the ~~allowable~~ ampacity of the insulated conductor as specified in Table 1, 2, 3, or 4, except that the next higher rating or setting shall be permitted to be used where

- a) the nearest standard rating of the overcurrent device is less than the rating or setting otherwise required by this Rule; or
- b) the rating or setting otherwise required by this Rule results in too frequent opening of the overcurrent device.

3) The maximum rating or setting of an overcurrent device protecting a feeder supplying a group of transformer arc welders shall not exceed a value calculated by determining the maximum rating or setting of overcurrent device permitted by Subrules 1) and 2) for the welder allowed the highest overcurrent protection and adding to this value the sum of ampacities as calculated by Rule 42-006 [1\)](#) for all other welders in the group.

Revise Subrule 42-016 2) to read:

SN4628-42

42-016 Overcurrent protection

2) Every ungrounded conductor of a resistance welder shall have overcurrent protection rated or set at not more than 300% of the ~~allowable~~ ampacity of the insulated conductor as specified in Table 1, 2, 3, or 4, except that the next higher rating or setting shall be permitted to be used where

- a) the nearest standard rating of the overcurrent device is less than the rating or setting required by this Rule; or
- b) the rating or setting required by this Rule results in too frequent opening of the overcurrent device.

SECTION 58

Revise Rule 58-012 to read:

SN4646

58-012 Grounding of circuits ~~of less than 50 V~~

Circuits ~~of less than 50 volts to ground~~ shall be grounded ~~in accordance with Rule 10-206 3)~~; except that

<p>a) ungrounded isolated haul ropes shall be permitted <u>to be used</u> for <u>safety</u>, communication, control, remote control, monitoring, supervision, and signal circuits; and</p> <p>b) <u>extra-low-voltage safety</u>, communication, control, remote control, monitoring, supervision, and signal circuits shall be permitted to be isolated, ungrounded <u>provided that they are grounded</u> in accordance with Rule 10-212 <u>10-400 4</u>).</p>	
<p><i>Revise Rule 58-014 to read:</i></p> <p>58-014 Voltage limitations</p> <p>1) Voltages for <u>safety</u>, communication, control, remote control, monitoring, supervision, and signal circuits shall not exceed 48 <u>V volts-to-ground (nominal)</u>, with the exception of except circuits for hand-crank-type telephone signal bells.</p> <p><u>2) Only safety, communication, control, remote control, monitoring, supervision and signal circuits shall be carried between towers that support the passenger ropeway.</u></p> <p>3) 2) Voltages for motors, <u>motor controllers</u>, machine brakes, motor-generator sets, floodlighting, and heaters, <u>and air conditioners</u> shall not exceed 750 <u>V ac or 1060 V dc volts-to-ground</u>.</p> <p>4) 3) Voltages for motor control circuits <u>of motor controllers</u> shall not exceed 120 <u>V nominal volts-to-ground (nominal)</u>.</p> <p>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.</p> <p>5) Voltages for all other circuits shall not exceed 300 <u>V volts-to-ground</u>.</p>	<p>SN4574 SN4666</p>

<h2>SECTION 62</h2>	
<p><i>Revise Rule 62-102 definition of Heating device to read:</i></p> <p>Heating device – any form of electrical heater, including trace heaters, fixtures, <u>water heaters</u>, and panels</p>	<p>SN4691-R</p>
<p><i>Revise Subrules 62-114 2), 3), and 8) to read:</i></p> <p>62-114 Overcurrent protection and grouping (see Appendix B)</p> <p>2) <u>For dwelling units</u> 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</p>	<p>SN4621 SN4628-62</p>

<p>overcurrent devices are rated or set at not more than 30 A.</p> <p>3) For In other than <u>dwelling units</u> buildings for residential occupancy,</p> <ul style="list-style-type: none"> 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. <p>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.</p>	
<p><i>Revise Rule 62-124 to read:</i></p> <p>62-124 Installation of series trace heater sets</p> <p>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.</p> <p>2) <u>Except as provided for in Subrule 3),</u> the the entire length of the heating portion, including connections to non-heating leads, shall be installed within the heating area.</p> <p><u>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.</u></p>	SN4607
<p><i>Revise Rule 62-130 to read:</i></p> <p>62-130 Heater controls installed in proximity to sinks, tubs, or shower stalls (see Appendix B)</p> <p>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 <u>entrance</u>, this distance being measured horizontally between the control and the sink, tub, or shower stall <u>entrance</u> without piercing a wall, partition, or similar obstacle.</p> <p>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 <u>entrance</u>, provided that it is</p> <ul style="list-style-type: none"> 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
<p><i>Revise Rule 62-132 to read:</i></p> <p>62-132 Heating devices installed in proximity to sinks, tubs, or shower stalls (see Appendix B)</p>	SN4567

<p>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, 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.</p> <p>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.</p>	
<p><i>Note: This revision is suspended pending approval of the corresponding revision to Standards CSA C22.2 No. 130.</i></p> <p><i>Revise Rule 62-216 to read:</i></p> <p>62-216 Trace heater sets and heating panel sets in gypsum board and other cementitious for ceiling and wall installations (see Appendix B)</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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</p> <p style="padding-left: 20px;">a) for walls, provided they are</p> <p style="padding-left: 40px;">i) mechanically protected;</p> <p style="padding-left: 40px;">ii) installed up to a maximum height of 1.2 m above the finished floor; and</p> <p style="padding-left: 40px;">iii) protected by a ground fault circuit interrupter of the Class A type; and</p> <p style="padding-left: 20px;">b) for ceilings, provided they are</p> <p style="padding-left: 40px;">i) mechanically protected; or</p> <p style="padding-left: 40px;">ii) protected by a ground fault circuit interrupter of the Class A type.</p> <p>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.</p>	SN4568

SECTION 64

Revise Subrule 64-202 5) to read:

SN4668

64-202 Voltage of solar photovoltaic systems (see Appendix B)

5) Photovoltaic source and output circuits, and equipment connected to or within ~~these~~ these circuits, with maximum voltages ~~higher than 750 V dc but~~ not exceeding 1500 V dc shall not be required to comply with Rules 36-204, 36-208, and 36-214, provided that

- a) the installation is serviced only by qualified persons;
- b) the part of the installation where high voltage is present ~~exceeding 750 V dc~~ is inaccessible to the public; and
- c) enclosures in which photovoltaic source and output circuits exceeding 750 V dc are present are marked with the word "DANGER" followed by the maximum rated photovoltaic circuit voltage of the equipment.

Revise Rule 64-210 5) to read:

SN4587

64-210 Wiring method (see Appendix B)

5) Where the dc arc-fault protection ~~referred to in Rule 64-216~~ is not ~~located at an~~ integral part of the module, photovoltaic source and output circuit insulated conductors and cables installed on or above a building ~~and installed in accordance with Subrules 1), 2), and 3)~~ shall be provided with mechanical protection in the form of an enclosed raceway or other acceptable material to protect against damage from rodents.

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

<p>Appendix B)</p> <p>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.</p> <p>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.</p>	
<p><i>Revise Subrule 64-506 1) to read:</i></p> <p>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.</p>	SN4628-64
<p><i>Revise Subrule 64-606 1) to read:</i></p> <p>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.</p>	SN4628-64
<p><i>Revise Item 64-710 c) to read:</i></p> <p>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:</p> <p>c) stationary fuel cell systems shall not be located in: clothes closets, bathrooms, stairways, <i>i) spaces with</i> high ambient rooms <i>temperatures;</i> <i>ii) storage areas for flammable, combustible, or hazardous materials;</i> <i>iii) hazardous, corrosive or wet</i> locations, <i>unless suitably rated;</i> or <i>iv) any similar undesirable places; and</i></p>	SN4610
<p>Revise Rule 64-812 to read</p> <p>64-812 Battery interconnections (see Appendix B) 1) Insulated conductors and cables used to terminate to battery terminals shall be of a fine strand <i>the flexible fine strand</i> type.</p> <p>2) The connection method between batteries shall be permitted to be insulated or bare busbars.</p> <p>3) Flexible metal raceways shall not be permitted for battery interconnections.</p>	SN4626

4) Conductors shall have sufficient ampacity for the maximum load.

5) Insulated flexible conductor and cable terminations to a battery terminal or associated equipment, as well as interconnections between battery strings, shall be secured to minimize the movement of cables due to short-circuit forces and at intervals of not more than 1.5 m throughout the run.

SECTION 68

Add new rule 68-072 to read:

SN3864

68-072 Disconnecting means for pool pumps, spas, and hot tubs

A disconnecting means rated to interrupt the connected load shall be provided for each permanently connected pool pump, spa, and hot tub, and shall be

- a) located not closer than 1.5 m to the inside walls of a pool, spa and hot tub unless behind a permanent barrier that will prevent the occupant of the pool, spa, or hot tub from contacting the device;
- b) located outside when the equipment is located outside at a dwelling unit;
- c) readily accessible; and
- d) lockable when not within sight of the pool pump, spa, and hot tub.

SECTION 86

Revise Rule 86-102 to read:

SN4477

86-102 Voltages in electric vehicle supply equipment installations

~~The nominal ac system voltages used to supply equipment covered in this Section shall not exceed 750 V.~~

- 1) The nominal ac system voltages used to supply equipment covered in this section shall not exceed 1000 V.
- 2) The maximum voltage in electric vehicle supply equipment circuits shall not exceed 1060 V dc.
- 3) The maximum voltage in electric vehicle supply equipment circuits installed in a

<p><u>dwelling unit shall comply with Rule 2-110.</u></p> <p><u>4) Notwithstanding Subrule 2), the maximum voltage in electric vehicle supply equipment circuits shall be permitted to be higher than 1060 V dc but not exceeding 1500 Vdc, provided that</u></p> <p><u>a) the installation is serviced only by qualified persons;</u></p> <p><u>b) the part of the installation exceeding 1060 V dc is inaccessible to the public; and</u></p> <p><u>c) enclosures in which electric vehicle supply equipment and output circuits exceeding 1060 V dc are present are marked with the word "DANGER" followed by the maximum rated electric vehicle supply equipment circuit voltage of the equipment.</u></p> <p><u>5) The installations described in Subrule 4), shall not be required to comply with Section 36.</u></p>	
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Tables	
<p><i>Revise Title of Table 1 to read:</i></p> <p style="text-align: center;">Table 1 Allowable Ampacities for... <i>[no change to remainder of title]</i></p>	SN4628-4
<p><i>Revise Table 1, header for temperature columns, to read:</i></p> <p style="text-align: center;">Allowable-a Ampacity †</p>	SN4628-4
<p><i>Revise Title of Table 2 to read:</i></p> <p style="text-align: center;">Table 2 Allowable Ampacities for... <i>[no change to remainder of title]</i></p>	SN4628-4
<p><i>Revise Table 2, header for temperature columns, to read:</i></p> <p style="text-align: center;">Allowable-a Ampacity †,††</p>	SN4628-4

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

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	
		Copper, AWG or kcmil	Aluminum, AWG or kcmil	Copper, mm ²	Aluminum, mm ²
Not exceeding					

No change to content of Table 16

Revise Table 18 to read:

SN4640
SN4677**Table 18****Equipment suitable for explosive atmospheres**

(See Rules 18-090, 18-100, 18-150, 18-190, 18-200, 18-250, J18-100, J18-150, J18-200, J18-250, J18-300, and J18-350.)

Area classification	Type (Level) of protection	
	Description	Marking
Zone 0	Intrinsic safety (Group II)	ia
	Encapsulation (Group II)	ma
	Flameproof (Group II)	da*
	Equipment assemblies	60079-46, with EPL Ga**
	Inherently safe optical radiation	op is, with EPL Ga**
	Optical system with interlock	op sh, with EPL Ga**
	Intrinsically safe	Intrinsically safe, IS, I.S., Exi, Exia, for Class I
Zone 1	EPL††	Ga
	Equipment suitable for use in Zone 0	
	Equipment suitable for use in Class I, Division 1	
	Flameproof (Group II)	d, db
	Intrinsic safety (Group II)	ib
	Increased safety (Group II)	e, eb
	Pressurized enclosure (Group II)	p, px, pxb, py, pyb

	Encapsulation (Group II)	m, mb
	Powder filling (Group II)	q, qb
	Liquid immersion (Group II)	o, ob
	Electrical resistance trace heating	60079-30-1, with EPL Gb**
	Skin effect trace heating	CSA G22.2 No. 293.1, with EPL Gb**
	Equipment Assemblies	60079-46, with EPL Gb**
	Inherently safe optical radiation	op is, with EPL Gb**
	Optical system with interlock	op sh, with EPL Gb**
	Protected optical radiation	op pr, with EPL Gb**
	EPL††	Gb
Zone 2	Equipment suitable for use in Zone 0	
	Equipment suitable for use in Zone 1	
	Equipment suitable for use in Class I, Division 1	
	Equipment suitable for use in Class I, Division 2	
	Type of Protection “n” (Group II)	nA, nC, nL, nR
	Pressurized enclosure (Group II)	pz, pzc
	Intrinsic safety (Group II)	ic
	Flameproof (Group II)	dc
	Increased safety (Group II)	ec
	Liquid immersion (Group II)	oc
	Encapsulation (Group II)	mc
	Electrical resistance trace heating	60079-30-1, with EPL Gc**
	Skin effect trace heating	CSA G22.2 No. 293.1, with EPL Gc**
	Impedance heating	CSA G22.2 No. 293.3, with EPL Gc**
	Equipment assemblies	60079-46, with EPL Gc**
	Inherently safe optical radiation	op is, with EPL Gc**
Zone 20	Optical system with interlock	op sh, with EPL Gc**
	Protected optical radiation	op pr, with EPL Gc**
	EPL††	Gc
	Other electrical apparatus‡	
	Equipment suitable for use in Class II, Division 1	
	Intrinsic safety (Group III)	ia
	Intrinsically safe	Intrinsically safe, IS, I.S., Exi, Exia, for Class II
	Protection by enclosure (Group III)	ta
	Encapsulation (Group III)	ma
	Equipment assemblies	60079-46, with EPL Da**
Group IIIA only	Inherently safe optical radiation	op is, with EPL Da**
	Optical system with interlock	op sh, with EPL Da**
	EPL††	Da
	Equipment suitable for use in Class III, Division 1	

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

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

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

Optical system with interlock	op sh, with EPL Da, Db, or Dc**
Protected optical radiation	op pr, with EPL Db or Dc**
<u>Equipment assemblies</u>	<u>60079-46, with EPL Da, Db, or Dc**</u>
Other electrical apparatus†	

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

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

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

a) have ignition-capable hot surfaces; or

b) produce incandive arcs or sparks.

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

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

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

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

Group IIIA equipment is not suitable for use in Class II locations.

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

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

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

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

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.]

Revise Table 60 to read:

SN4590
SN4594
SN4628-16
SN4608

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			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	1.0	1.0	0.7	0.8	1.0	0.5	0.6	0.7	0.4	0.5	0.6	0.4	0.5	0.6			
				1.00	1.23	1.42	0.71	0.87	1.02	0.55	0.68	0.78	0.46	0.57	0.67	0.45	0.55	0.64			
24	2.0	2.0	2.0	1.0	1.4	1.6	0.8	1.0	1.1	0.6	0.7	0.9	0.5	0.6	0.7	0.4	0.5	0.6	0.3	0.4	0.5
				1.19	1.46	1.69	0.81	1.01	1.17	0.63	0.78	0.91	0.55	0.67	0.78	0.46	0.56	0.65	0.40	0.48	0.55
23	2.5	2.5	2.5	1.2	1.5	1.7	0.8	1.1	1.2	0.6	0.8	0.9	0.5	0.7	0.8	0.5	0.7	0.8	0.4	0.5	0.6
				1.24	1.53	1.78	0.89	1.11	1.28	0.77	0.95	1.10	0.66	0.80	0.93	0.58	0.71	0.82	0.45	0.55	0.63
22	3.0	3.0	3.0	1.4	1.8	2.1	1.0	1.2	1.4	0.7	0.9	1.1	0.6	0.8	0.9	0.6	0.8	0.9	0.5	0.6	0.7
				1.50	1.86	2.16	1.04	1.28	1.49	0.77	0.95	1.11	0.66	0.82	0.96	0.62	0.77	0.89	0.53	0.63	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.

Revise Table 61 to read:

SN4430

Table 61
Minimum horizontal separations from pools for Direct Buried Underground Cables, and Insulated Conductors in Raceways
 (See Rule 68-056.)

Type of installation	Minimum horizontal separation, m	
	Direct buried unjacketed cables with a bare neutral or cables with a semi-conducting jacket	Cables with a non-conducting jacket or insulated conductors in non-conducting raceways
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 is measured from the nearest edge of the raceway to the inside wall of the pool.

Revise Table 65 as shown:

Note: All “x” entries are replaced with “✓”.

SN4624

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

Add Appendix B Note for definition of Suite to read:

SN4569

Suite

Refer to note A-1.4.1.2 (1) in the National Building Code of Canada for additional explanatory material concerning the definition of suite.

Add Appendix B Note for Rule 2-100 1)n) to read:

SN4611

Rule 2-100 1)n)

Altitude is an example of other markings that may be necessary on some equipment. Installation of electrical equipment at altitudes exceeding 1000 m may need to have reduced voltage and current ratings. Correction factors or tables are provided by the equipment manufacturer for equipment that may be affected.

Revise Appendix B Note for Rule 2-306 to read:

SN4623

Rule 2-306

CSA Z462 provides assistance in determining the severity of potential exposure, planning safe work practices, and selecting personal protective equipment to protect against shock and arc flash hazards.
ANSI/NEMA Z535.4 provides guidelines for the design of safety signs and labels for application to products.

IEEE 1584 provides assistance in determining the arcing fault current, the arc flash ~~hazard distance~~ boundary and the incident energy that workers may be exposed to from electrical equipment.

The applicable documentation could include manufacturer's instructions, schematics and single line drawings.

See CSA Z462 Annex O Safety-related design for methods of reducing the arcing fault duration.

Revise Appendix B Note for Rules 2-328 and 64-918 7) to read:

SN4505
SN4712

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 flammable ~~combustible~~ gas relief discharge device or vent are as follows:

- a) 1 m for natural gas as specified in CSA B149.1; ~~and~~
- b) 0.3 m for natural gas if an ANSI Z21.80/CSA 6.22 certified overpressure protection device is used as specified in CSA B149.1; and

<p>c) 3 m for propane gas as specified in CSA B149.2.</p> <p>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.</p>	
<p><i>Revise Appendix B Note for Rule 4-004 to read:</i></p> <p>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).</p>	SN4628-4
<p><i>Revise Appendix B Note for Rule</i></p> <p>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.</p> <p>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.</p> <p>This Rule is not intended to address conductor allowable ampacity (see Rule 4-004).</p> <p>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.</p>	SN4628-4
<p><i>Add Appendix B Note for Rule 6-402 2)b) to read:</i></p> <p><u>Rule 6-402 2) b)</u> This Subrule refers to equipment conforming to CSA C22.2 No. 115.</p>	SN4512
<p><i>Add Appendix B Note for Rule 6-408 1)d) to read:</i></p> <p><u>Rule 6-408 1) d)</u> It should be noted that in accordance with C22.2 No. 115, meter-mounting devices are tested at temperatures up to 35C.</p>	SN4576
<p><i>Revise Appendix B Note for Rules 8-104 5)b) and 6)b) to read:</i></p>	SN4628-8

<p>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.</p>	
<p><i>Revise Appendix B Note for Rule 10-004, definition for System bonding jumper, to read:</i></p> <p>System bonding jumper This term describes the connection between the point of an electrical system to be solidly grounded and the non-current-carrying conductive parts of the electrical equipment supplied by that system to establish a complete circuit for ground fault currents. The system bonding jumper establishes a solidly grounded system and extends the bonding conductor to the grounded point of the system. See Figure B10-3 showing the point of an electrical system to be solidly grounded.</p>	SN4320
<p><i>Revise Appendix B Note for Rule 10-614 3)b) to read:</i></p> <p>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.</p>	SN4628-10
<p><i>Revise Appendix B Note for Rule 10-700 to read:</i></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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,</p>	SN4605

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 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 12-100, 12-102 4), 5), and 6), 12-122, 12-402, and 12-406

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

SN4627

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.

Add Appendix B Note for Rule 12-112 13) to read:

SN4644

Rule 12-112 13)

Grade level in-ground enclosures may be square, rectangular or cylindrical in shape. The intent of this subrule is that these enclosures be used within the manufacturer's specified load design classes as indicated in Table B12-X. Applications listed are for guidance only and may include other applications not indicated, at the discretion of authority having jurisdiction.

Table B12-X

<u>Class (tier)</u>	<u>Typical Application</u>	<u>Design Load - Vertical</u>	
		<u>kN</u>	<u>Lbf</u>
<u>2</u>	<u>Light duty (i.e. pedestrian traffic)</u>	<u>8.9</u>	<u>2000</u>
<u>5</u>	<u>Light duty with a safety factor for occasional, non-deliberate vehicular traffic</u>	<u>22.2</u>	<u>5000</u>
<u>8</u>	<u>Medium duty with a safety factor for non-deliberate vehicular traffic</u>	<u>35.6</u>	<u>8000</u>
<u>15</u>	<u>Medium duty, driveway, parking lot, and off-roadway applications subject to occasional non-deliberate vehicular traffic</u>	<u>66.7</u>	<u>15000</u>

22	Heavy duty, driveway, parking lot, and off-roadway applications subject to non-deliberate heavy vehicular traffic	100.1	22500	
<p>Add an Appendix B Note for Rule 12-402 1) to read:</p> <p>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.</p>				SN4656
<p>Add Appendix B Note for Rule 12-930 1)b) and c) to read:</p> <p>Rule 12-930 1) b) and c) The intent of Items b) and c) is to ensure the integrity of the installation is maintained where raceways are installed in concrete slabs or masonry construction that are in direct contact with the earth. It is not intended that these items apply to raceways installed in concrete and masonry construction that is above grade and not in contact with the earth.</p>				SN4274
<p>Revise Appendix B Note for Rule 12-2252 to read:</p> <p>Rule 12-2252 CSA C22.2 No. 273 defines Class A and Class B cablebus as follows:</p> <p>Class A cablebus — cablebus that provides protection from contact with [insulated] conductors [or cables] by design and construction of the enclosure.</p> <p>Class B cablebus — cablebus that does not provides limited protection from contact with [insulated] conductors [or cables] by design and construction of the enclosure.</p> <p>Cablebus not marked as Class A is considered to be Class B.</p> <p>Cablebus can be made inaccessible to the public by use of barrier (such as fencing) around the area of the cablebus, or by elevation from the ground.</p>				SN4682
<p>Revise Appendix B Note for Rule 14-104 to read:</p> <p>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).</p>				SN4628-14

<p><i>Add an Appendix B Note for Rule 16-330 3)a) to read:</i></p> <p><u>Rule 16-330 3)a)</u> <u>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.</u></p>	SN4593
<p><i>Revise heading and third paragraph of Appendix B note for Rules 18-090, 18-100 and 18-150 to read:</i></p> <p>Rules <u>18-052</u>, 18-090, 18-100, and 18-150</p> <p>“</p> <p>“</p> <p>In some cases, equipment may be installed on the boundary of Zone 0 and Zone 1 (<u>as provided for by Rule 18-052</u>) and may have two types of protection, with the appropriate type of protection for each side of the boundary identified and connected by a “/”. For example, an intrinsic safety device installed on the wall of a flammable liquid storage tank (Zone 0 inside) having a flameproof “d” or flameproof “db” termination compartment on the tank exterior (Zone 1) would be marked Ex ia/db IIB T4 Ga/Gb. Equipment with a “/” marking accompanied by instructions for the user, specifying features and limitations of the separation element between the Ga and Gb equipment sections.</p> <p>“</p> <p>“</p>	SN4687

Revise Appendix B Note for Rules 18-102, 18-104, 18-152 1) b), 18-192 1) b), 18-202 1) b), and 18-252 1) b) to read:

Rules 18-102, 18-104, 18-152 1) b), 18-192 1) b), 18-202 1) b), and 18-252 1) b)
Cables meeting the requirements of CSA C22.2 No. 174 that are marked "HL" are acceptable for use in all hazardous locations [with some restrictions in 18-092 2) for Zone 0] and are marked "HL".

~~Cables marked for use in hazardous locations are suitable for all locations, but the termination fittings must be suitable for the particular hazardous location. For example, in a Zone 1 or Zone 2 hazardous location, a termination fitting entering an enclosure required to be explosion-proof, flameproof "d", or flameproof "db" must be a sealing-type termination fitting, whereas a termination fitting entering an enclosure not required to be explosion-proof, flameproof "d", or flameproof "db" in a Zone 2 hazardous location is not required to be marked for use in Zone 2 hazardous locations.~~ In Zone 1 hazardous locations, cables marked "HL" are acceptable and all cable glands are required to be suitable for the location and the equipment's Type of Protection that it is connected to. For example, in a Zone 1 hazardous location, cables entering an explosion-proof or flameproof ("d" or "db") enclosure are required to have an explosion seal. Explosion-proof enclosures require a Class I, Division 1 cable gland whereas flameproof ("d" or "db") enclosures require either a Class I, Division 1 or flameproof ("d" or "db") cable gland. Explosion seals are also required to be installed on cables entering enclosures marked as "Factory Sealed" or "Seals not Required" since cables are not tested to determine their ability to contain internal explosions to enclosures. For Increased Safety ("e" or "eb") enclosures, the use of Increased Safety ("e" or "eb") glands is required (see Rule 18-102 5)), which are not the same as explosion seals.

In Zone 2 hazardous locations, there are several cable types identified in Rule 18-152 and other similar constructions, that are acceptable for use, and all cable glands are required to be suitable for the location and the equipment's Type of Protection that it is connected to. For example, in a Zone 2 hazardous location, cables entering an enclosure required to be explosion-proof or flameproof ("d" or "db") are required to follow the same Rules as Zone 1 (see previous paragraph). However, cables entering enclosures marked as "Factory Sealed" or "Seals not Required" do not require an explosion seal. Cables entering an enclosure not required to be explosion-proof or flameproof ("d" or "db") in a Zone 2 location are permitted to use ordinary location cable glands. Cable glands marked Class I, Division 2 are not considered explosion seals.

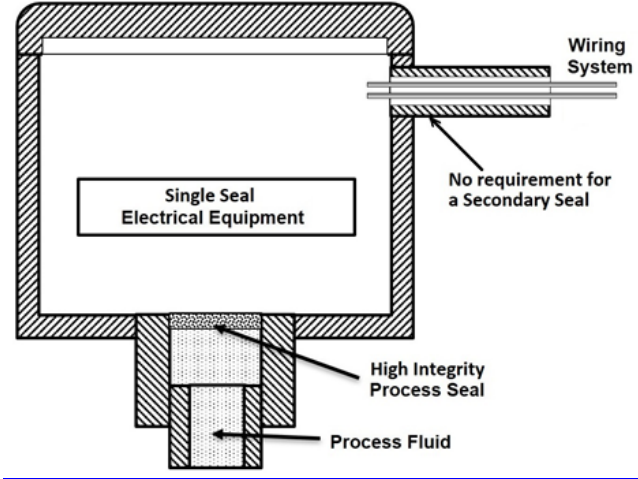
The requirements for cable glands also apply to cable transit devices.

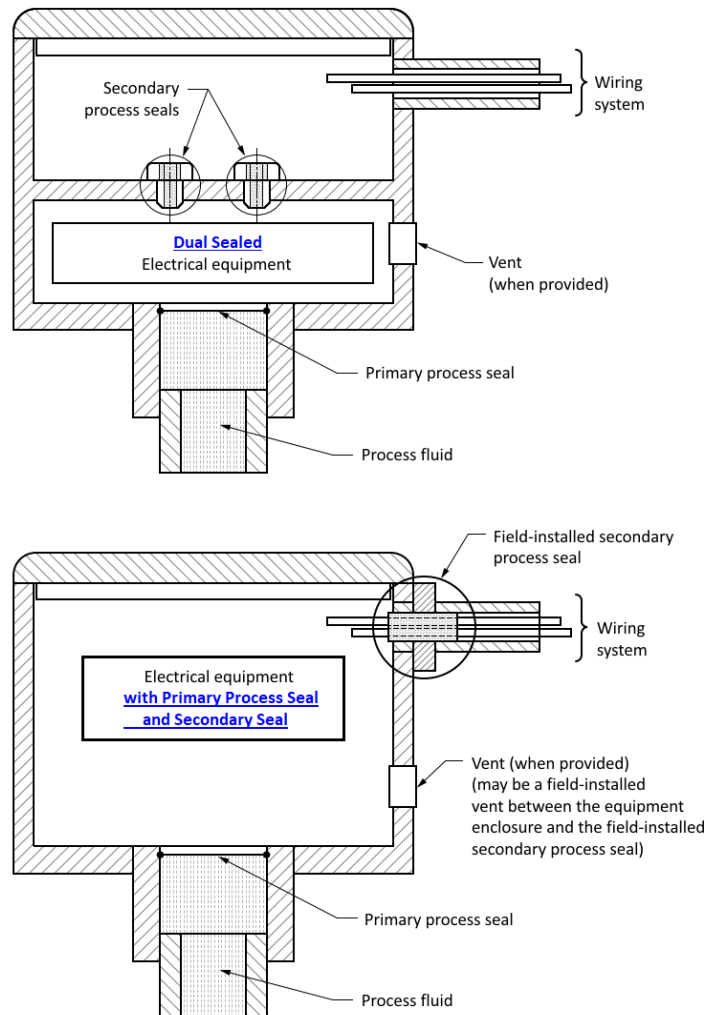
A Flammable Fluid Migration Seal is required at the first point of termination of a cable in Zone 1 or Zone 0 locations. Since Class I, Division 1, flameproof ("d" or "db") and Increased Safety ("e" or "eb") cable glands also meet the requirements of a flammable fluid migration seal, a separate fitting is not required where those glands are installed.

It is intended that cable glands ~~termination fittings~~ in all hazardous locations be compatible with the degree of protection and the ~~explosion type of~~ protection provided by the enclosure they enter. In general, the minimum requirement will be weatherproof cable glands ~~termination fittings~~.

For the application of Section 18, rigid metal couplings are not considered fittings. The CSA Standard for rigid metal conduit and couplings is CSA C22.2 No. 45.1. This Standard does not require hazardous location markings. Certified rigid metal conduit

and couplings are suitable for hazardous locations without specific area classification marking.			
Add new Appendix B Note for Rule 18-150 2)a)ii) to read:			SN4638
<p><u>Rule 18-150 2) a) ii)</u> <u>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.</u></p>			
Add new Appendix B Note for Rule 18-150 2)a)iii) to read:			SN4638
<p><u>Rule 18-150 2) a) iii)</u> <u>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.</u></p>			
Revise Appendix B Note for Rule 18-150 4) to read:			SN4688
<p>Rule 18-150 4) The evaluation process to determine if the sliding contact shaft bonding device is non-incendive is <u>the "motor bearing sparking – discharge energy calculation"</u> found in Annex H of CSA C22.2 No. 60079-0, <u>UL 1836, or IEEE 1349</u>. The potential energy calculation should be retained and available for review. The person taking responsibility for the calculation is normally an engineering professional or other individual permitted to practice engineering.</p>			
Add the following entry to Appendix B, Table B18-1:			SN4640
Equipment, equipment selection (Products)+	<u>UL</u>	<u>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</u>	
Delete reference to IEC TS 60079-40 from Table B18-1:			SN4715
<p style="text-align: center;">Table B18-1</p> <p>“</p>			

Equipment, equipment selection (products)†	IEC TS 60079-40, Explosive atmospheres — Part 40: Requirements for process sealing between flammable process fluids and electrical systems	
“		
Add new diagram to Figure B18-1 and modify the two existing diagrams:		SN4715
		



Revise the Appendix B Note for Rule 18-150 2)e) to read:

SN4522

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~~otating 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

<p><u>I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations".</u> 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.</p>	
<p><i>Add new Appendix B Note for Rule 18-250 to read:</i></p> <p><u>Rule 18-250</u> <u>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".</u></p>	SN4522
<p><i>Revise Appendix B Note for Rule 20-004 to read:</i></p> <p>Rule 20-004 For the purposes of Subrules 6) and 7), buildings such as kiosks, in which electrical equipment such as cash registers and/or self-service console controls are located, are considered to be buildings not suitably cut off.</p> <p><u>For the purposes of Subrule 11), if the threaded rigid metal conduit emerges in a Zone 1 location, Explosion seals required by section 18 will meet the requirements of a flammable fluid migration seal.</u></p>	SN4693
<p><i>Add new Appendix B Note for Rule 24-101 to read:</i></p> <p><u>Rule 24-101</u> <u>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.</u></p> <p><u>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.</u></p> <p><u>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 personnel to that particular critical care areas is allowed by the health care facility administration when required.</u></p> <p><u>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.</u></p>	SN4571

<p><i>Revise Appendix B Note for Rule 24-108 8) to read:</i></p> <p>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., <u>metal sinks not provided with line-connected equipment such as electrically operated faucets</u>, metal door frames, window frames, and soap dishes) be bonded to ground.</p>	<p>SN4606 SN4634</p>
<p><i>Add new Appendix B Note for Rule 24-106 8) to read:</i></p> <p><u>Rule 24-106(8)</u> <u>It is intended that Subrule 8) supplement the general provisions of Rule 26-706 for tamper-resistant receptacles for those areas in health care facilities covered by the scope of Section 24. Examples of areas designated by the health care facility administration as being intended primarily for the provision of diagnosis, therapy, or care to children would include but are not limited to pediatric units and examination rooms intended for children.</u></p>	<p>SN4572</p>
<p><i>Add new Appendix B Note for Subrule 26-600 1) to read:</i></p> <p><u>Rule 26-600 1)</u> <u>It should be noted that in accordance with C22.2 No. 29, panelboards are tested to operate normally at ambient temperatures up to 40C.</u></p>	<p>SN4575</p>
<p><i>Revise Appendix B Note for Rule 26-724 a) to read:</i></p> <p>Rule 26-724-a) <u>It is intended by this Rule to ensure sufficient availability and ready access to outdoor receptacles.</u></p> <p><u>Generally, single dwellings have two or more sides exposed to and accessible from the outdoors. It is intended that by having receptacles installed on opposite sides of a single dwelling, ready access to the outdoor receptacles is maximized. In rare occasions where a single dwelling does not have opposite sides, item 26-724 1) b) provides for alternate means to accommodate the two outdoor receptacles.</u></p> <p><u>For smaller single dwellings, having a perimeter of 20m or less, a minimum of one receptacle is deemed sufficient.</u></p> <p>For single dwellings of the detached, semi-detached, and row housing types, it is recommended that outdoor receptacle be placed at both the front and rear of the house and that these be controlled by a switch located inside the house.</p>	<p>SN4602</p>

<p><i>Revise portions of the Appendix B Section 28 “Example to determine motor insulated conductors and protection” where indicated:</i></p> <p style="text-align: center;">Section 28</p> <p>Example to determine motor insulated conductors and protection The following is an example calculation for determining copper conductor size, and overcurrent <u>rating</u>, and overload protection for one 100 hp, one 30 hp, and two 7 ½ hp motors, 575V, three phase, at full-voltage start.</p> <p>“</p> <p>“</p> <p>“</p> <p>Overcurrent protection Branch circuit overcurrent protection for each motor is determined by using Rule 28-200. For the purpose of the motors described, use Rule 28-200 a) and Table 29. Listed below are the actual currents with the standard size of protector <u>rating of overcurrent device</u> shown in brackets.</p> <p>“</p> <p>“</p> <p>“</p> <p>Note that Table D16 may be used to select the size <u>maximum rating</u> of the overcurrent devices in accordance with Rule 28-200, where the full load current rating of the motor is shown in the Table</p> <p>Feeder over current protection The maximum allowable feeder overcurrent protection for motors is determined from Rule 28-204.</p> <p>Using Rule 28-204 1) the ratings are as shown below with the standard size <u>rating</u> shown in parentheses:</p>	SN4733
<p><i>Revise Appendix B Note for Rule 28-308 c) to read:</i></p> <p>Rule 28-308 c) The intent of this Item is to allow motors that are designed, constructed, <u>and</u> certified to CSA C22.2 No. 77, and marked as impedance “ZP” and thermally “TP” protected <u>as</u> motors to <u>that can</u> be installed without the overload protection that is required by Rule 28-300. <u>Such motors have inherent overheating protection and are identified with one of the following markings:</u></p> <ul style="list-style-type: none"> <u>a) “THERMALLY PROTECTED”, or “TP”</u> <u>b) “IMPEDANCE PROTECTED”, or “ZP”</u> <u>c) “ELECTRONICALLY PROTECTED”, or “EP”</u> 	SN4595
<p><i>Add new Appendix B Note for Rules 62-124 2) and 3) to read:</i></p> <p><u>Rules 62-124 2) and 3)</u> <u>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.</u></p>	SN4607

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 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 °C.

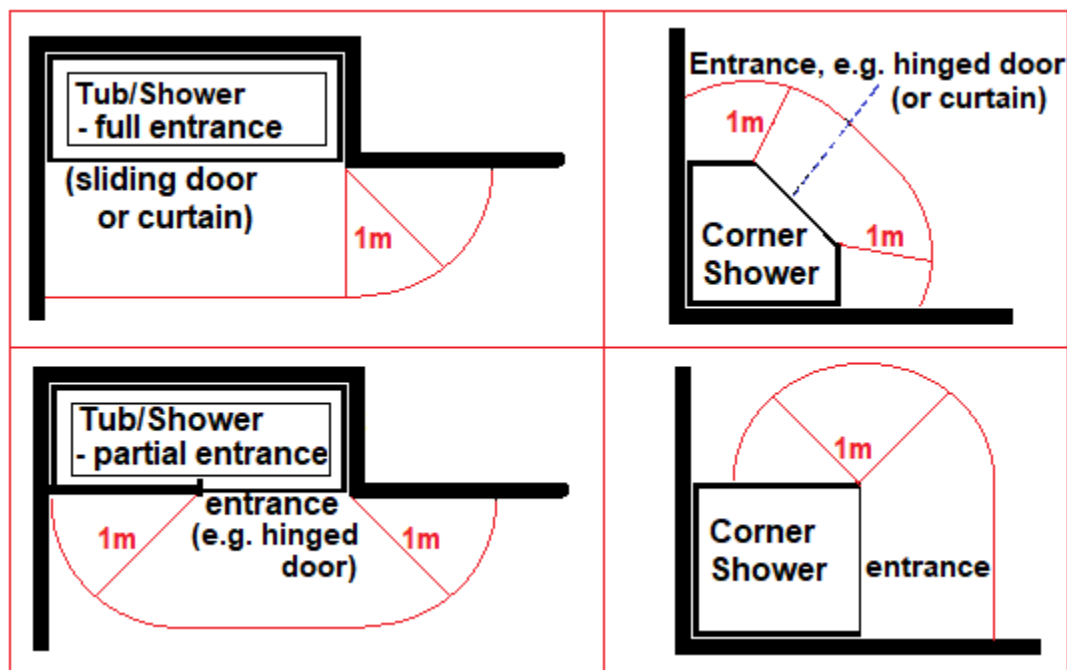
Add new Appendix B Note for Rules 62-130 and 62-132 to read:

SN4567

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



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

SN4568

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

Rule 62-216 1)

In Subrule 1), the 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

<p><u>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.</u></p> <p><u>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.</u></p> <p><u>Subrule 5) is intended to allow for alternative methods of installing trace heaters or panels without gypsum board when mechanical protection is provided.</u></p> <p><u>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.</u></p> <p><u>Standard C22.2 No. 130 contains the details for certifying products for installations requiring mechanical protection.</u></p>	
<p><i>Revise Appendix B Note for Rule 64-210 5) to read:</i></p> <p>Rule 64-210 5) The intent of this Subrule is to provide protection against damage from rodents by enclosing the photovoltaic source <u>and output</u> circuit insulated conductors and cables in material such as expanded metal, solid metal, and screening.</p>	SN4587
<p><i>Revise Appendix B Note for Rule 64-710 to read:</i></p> <p>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. <u>Other considerations for siting and location may be found in NFPA 853.</u></p>	SN4610

<h2>Appendix C</h2>	
<p><i>Add new Clauses C5.5.1 to C5.5.5 to read:</i></p> <p><u>C5.5.1</u> <u>Where it is intended to make parallel changes to Section 18 and Annex J18, separate companion proposals shall be submitted concurrently</u></p>	SN4377

<p><u>C5.5.2</u> 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.</p> <p><u>C5.5.3</u> 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.</p> <p><u>C5.5.4</u> 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.</p> <p><u>C5.5.5</u> Each proposal shall be processed in accordance with Clause C5.4.</p>	
<p>Revise Clause C9.9 to read:</p> <p>C9.9 <u>When</u> the the Section Subcommittee shall present a</p> <p><u>a) achieves consensus on an interpretation, the</u> recommended interpretation <u>shall be presented</u> to the Committee on Part I for vote. Voting shall be in accordance with Clause C7.1: <u>or</u></p> <p><u>b) cannot achieve consensus on an interpretation, the subcommittee shall, in consultation with the submitter and in accordance with Clause C6, create a request for amendment to address the ambiguity of the subject Rule.</u></p>	SN4625
<p>Revise Annex C to read:</p> <p style="text-align: center;">Annex C</p> <p style="text-align: center;">Guide to Subcommittee chairs for evaluation of proposals submitted in accordance with Clause C5.4.1 and for evaluation of Subcommittee reports required in accordance with Clause C5.4.5</p> <p>Note: <i>This Annex contains the suggested criteria for evaluating the feasibility of proposals for Code amendments and of reports provided by the Subcommittee on these proposals.</i></p> <p>1) The following are the basic principles for evaluating the submitted proposals. When a request is made to amend the Code, the following general criteria should be considered:</p> <ul style="list-style-type: none"> a) improvements to safety; b) clarification of the existing wording; c) correlation with product Standards requirements; d) technological changes; and e) correlation with the National Electrical Code, National Building Code of 	SN4398

~~Canada, and other relevant CSA, NFPA, or ULC Standards (CAN/CSA-B72, CSA C22.3 No. 1, CSA C22.3 No. 7, CSA C282, CSA Z32, NFPA 20, CAN/ULC-S524, etc.).~~ correlation with other relevant CSA, NFPA, NRC, IEC, UL, or ULC Codes and Standards

2) The Section Subcommittee that will be deliberating the proposed Code amendment should consider the following measurement points before accepting the submission for deliberation by the Subcommittee:

- a) Does the subject have relevance to the Code?
- b) Are the reasons and supporting information that are required to be submitted with the proposal deemed sufficient to meet all applied measurement points? (Frivolous proposals should not be accepted.)
- c) Does the subject try to do what has already been attempted? It may be necessary to research the topic to find out if it has been dealt with in previous years. If the issue was dealt with at a previous time, it should not be handled again unless there is reason to do so.
- d) For a proposed definition, does the term actually appear in the Code? Is a definition really required or is the terminology used in a dictionary sufficient? Is the definition necessary only in one Section of the Code or should it be in Section 0 (General Section)?
- e) Is it a safety issue? The CE Code is a safety Standard for installation and maintenance only, so convenience or other issues should not qualify for inclusion.
- f) Is the proposal technically sound?
- g) Is the proposal dealing with a very prescriptive method that would exclude other methods of achieving the same desired goal?
- h) Is it consistent with the language of the Code?
- i) Is this Rule enforceable (i.e., it is written in unambiguous language, using indisputable criteria)?

Note: *The Code user must also be able to determine compliance from a visual inspection of the installation on site and without the use of supplementary information or judgment. Rules that, in their wording, require a great deal of judgment on the part of the reader may not be consistently enforced and are a source of conflict and frustration to users of the Code.*

~~j) Is this proposal consistent with the National Electrical Code? If it is not, there should be sufficient reasons provided by the submitter.~~

~~k) l) Is the proposal in conflict with other CSA Standards (i.e., the CE Code, Part II Standards) or other Canadian safety Standards for electrical equipment?~~

Note: *The CE Code, Part I is not supposed to include CE Code, Part II (product design and construction) or other Canadian safety Standards for electrical equipment requirements, unless it is as an interim measure and is substantiated accordingly.*

~~h) k) l) Is the proposal in conflict with other relevant Codes, such as the National Building Code of Canada? Is the proposal in conflict with industry-specific Codes such as NFPA Codes that deal with specific occupancies, hazardous locations, Codes of practice (e.g., API), CE Code, Part III Standards, etc.?~~

~~m) l) If accepted, would this proposal have an impact on already certified products (i.e., would the existing products have to be recertified to meet this new requirement, and is such an approach justifiable)?~~

~~n) m) Does the subject impact on other Sections, Tables, and Appendices of the Code? If so, have the potential consequences been reviewed?~~

~~o) n) Does the document style conform with CSA editorial requirements (CSA Guidelines)?~~

~~p)~~ o) Does the proposal introduce amendments that will require new product Standards or changes to existing product Standards? If so, consideration should be given to including a statement in the proposal that the amendments, if approved, should be suspended until such time that the product requirements are in effect.

3) The following are the basic principles for evaluating the Subcommittee recommendation before reporting it to the Committee on Part I:

- a) Is the Subcommittee recommendation understandable and readable?
- b) Has the length of the Subcommittee recommendation been reduced to the absolute minimum necessary to convey the intent? It should be noted that the members of the Committee on Part I may not have the time to review long subjects when they come in the form of the Subcommittee recommendation. A suitable one-page summary should be made, especially for lengthy proposals. This would enable members of the Committee on Part I (who are not necessarily technical experts in the specific subject area) to understand the key issues, recommendations, and impacts of the proposal.
- c) Has the Subcommittee recommendation expanded to include issues other than that which the original proposal intended to cover? If so, is this expansion of the subject matter justifiable (i.e., it was discussed with the submitter and it is accepted by the submitter) or should it be more appropriately covered by a new subject?
- d) Does the Subcommittee recommendation address the issues of the original proposal and satisfy the submitter's intent or does it digress?

Appendix D

Revise Title of Table D3 to read:

SN4582

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.)

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:

SN4628-28

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

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 <u>bonding</u> 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 armour (present) are grounded at more than one point. The ampacities in the D17 series of Table have been adjusted to take into consideration the heating due to shield, ~~ground~~ bonding conductors 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	
<p>Add the following entry to Appendix I:</p> <p>Rule 4-004 7)b)iii)</p> <p>Question: Does the requirement of paragraph 4-004 7)b)iii) apply to 4 conductors described in Subrule 4-004 3)?</p> <p>Answer: No</p>	SN4713
<p>Add the following entry to Appendix I:</p> <p>Rule 8-106 11)</p> <p>Question: Do conditions listed in Subrule 8-106 11), allow to disregard electrical vehicle supply equipment loads connected to the distribution system panelboards, including the consumer's service, if an electric vehicle energy management system, described in Subrule 10) performs the functions of</p> <ul style="list-style-type: none"> (a) monitoring the consumer's service, feeders, and branch circuits; and (b) controlling these electric vehicle supply equipment loads in accordance with Rule 8-500? <p>Answer: Yes</p>	SN4734
<p>Add the following entry to Appendix I:</p> <p>Rule 10-708 2)</p> <p>Question: With regards to Rule 10-708 2), can a person run a #10AWG equipotential bonding conductor in the walls where it is concealed and has mechanical protection provided by location?</p> <p>Answer: Yes</p>	SN4676
<p>Add the following entry to Appendix I:</p> <p>Rule 62-102</p>	SN4691

<p><u>Question:</u> Is a storage-tank water heater considered a heating device?</p> <p><u>Answer:</u> Yes</p>	
<p><i>Add the following entry to Appendix I:</i></p> <p><u>Rule 68-058</u></p> <p><u>Question:</u> 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?</p> <p><u>Answer:</u> No</p>	SN4614A
<p><i>Add the following entry to Appendix I:</i></p> <p><u>Rule 68-058</u></p> <p><u>Question:</u> 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?</p> <p><u>Answer:</u> No</p>	SN4614B
<p><i>Add the following entry to Appendix I:</i></p> <p><u>Rule 68-058</u></p> <p><u>Question:</u> 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?</p> <p><u>Answer:</u> No</p>	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~~ 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:

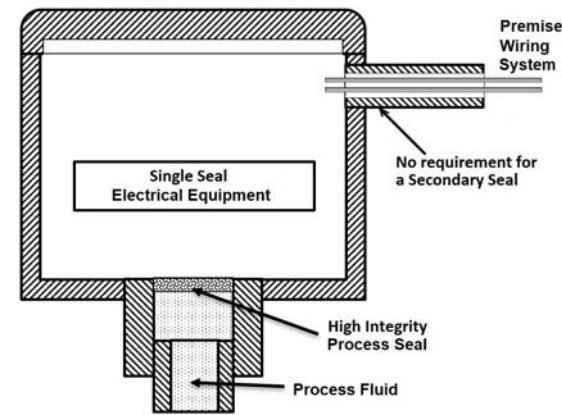
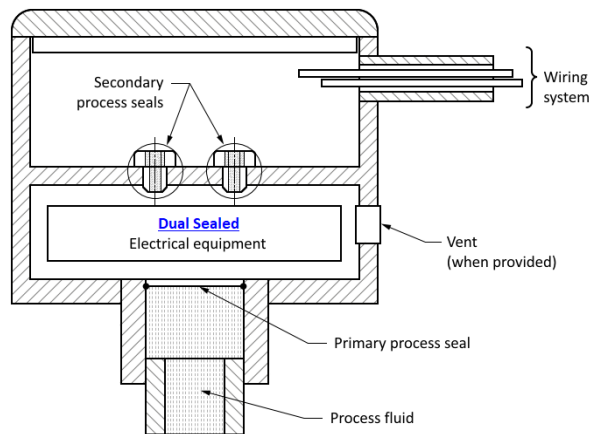
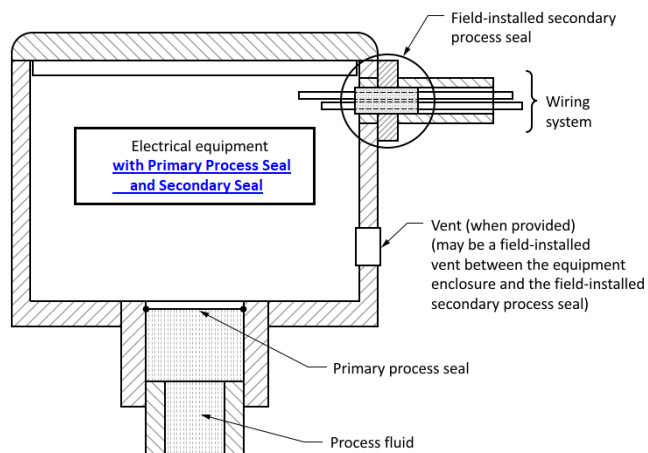
- a) ~~transformers, solenoids, coils, and similar electromagnetic devices~~ equipment that complies ~~comply~~ with the requirements of Rule J18-054 and is any of the following:
 - i) inductive devices, including transformers, solenoids, coils and similar equipment;
 - ii) capacitors that do not have 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

Revise Figure JB18-1 to read:

SN4715-J18



<p>Revise Annex JB Note for Rules J18-106, J18-108, J18-152, J18-204 1) b), J18-254 1) b), J18-304, and J18-354 to read:</p> <p>Rules J18-106, J18-108, J18-152, J18-204 1) b), J18-254 1) b), J18-304, and J18-354</p> <p>Cables meeting the requirements of CSA C22.2 No. 174 <u>that are marked “HL”</u> are acceptable for use in <u>all</u> hazardous locations and are marked “HL”.</p> <p>Cables marked for use in hazardous locations are suitable for all locations, but the termination fittings must be suitable for the particular hazardous location. For example, in a Zone 1 or Zone 2 hazardous location, a termination fitting entering an enclosure required to be explosion-proof, flameproof “d”, or flameproof “db” must be a sealing-type termination fitting, whereas a termination fitting entering an enclosure not required to be explosion-proof, flameproof “d”, or flameproof “db” in a Zone 2 hazardous location is not required to be marked for use in Zone 2 hazardous locations. <u>In Class I, Division 1 hazardous locations, explosion-proof enclosures require a Class I, Division 1 cable gland, which is an explosion seal. These seals are also required to be installed on cables entering enclosures marked as “Factory Sealed” or “Seals not Required” since cables are not tested to determine their ability to contain internal explosions to enclosures. Flameproof (“d” or “db”) glands are not acceptable for use with explosion-proof enclosures.</u></p> <p><u>In Class I, Division 2 hazardous locations, several cable types identified in Rule J18-152, and other similar constructions, are acceptable for use. Cable glands are required to be suitable for the equipment’s Type of Protection. For example, in a Class I, Division 2 hazardous location, cables entering an enclosure required to be explosion-proof are required to use Class I, Division 1 cable glands whereas cables entering a flameproof (“d” or “db”) enclosure, may use either Class I, Division 1 or flameproof (“d” or “db”) cable glands. However, cables entering enclosures marked as “Factory Sealed” or “Seals not Required” do not require an explosion seal. Cables entering an enclosure not required to be explosion-proof or flameproof (“d” or “db”) in a Division 2 location are permitted to use ordinary location cable glands.</u></p> <p><u>C22.2 No. 174 no longer permits Cable Glands to be marked with Class I Division 2. Cable Glands certified to earlier editions of CSA C22.2 No. 174 and marked Class I Division 2 do not meet the requirements for explosion seals.</u></p> <p><u>A Flammable Fluid Migration Seal is required at the first point of termination of a cable in Class I, Division 1 locations. Since Class I, Division 1 cable glands also meet the requirements of a flammable fluid migration seal, a separate fitting is not required where those glands are installed.</u></p> <p>It is intended that <u>cable glands</u> termination fittings in all hazardous locations be compatible with the degree of protection and the <u>type of</u> explosion protection provided by the enclosure they enter. In general, the minimum requirement will be weatherproof <u>cable glands</u> termination fittings.</p> <p>For the application of Annex J18, rigid metal couplings are not considered fittings. The CSA Standard for rigid metal conduit and couplings is CSA C22.2 No. 45.1. This Standard does not require hazardous location markings. Certified rigid metal conduit and couplings are suitable for hazardous locations without specific area classification marking.</p>	<p>SN4669-J18</p>
<p>Add new Annex JB Note for Rule J18-150 2)a)ii) to read:</p>	<p>SN4638-J18</p>

<p><u>Rule J18-150 2) a) ii)</u> <u>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.</u></p>	
<p><i>Add new Annex JB Note for Rule J18-150 2)a)iii) to read:</i></p> <p><u>Rule J18-150 2) a) iii)</u> <u>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.</u></p>	SN4638-J18
<p><i>Revise Annex JB Note for Rule J18-150 2)e) to read:</i></p> <p>Rule J18-150 2) e) See the Note to Rules J18-114 and J18-150. <u>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.</u> 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.</p> <p><u>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”.</u></p>	SN4522-J18
<p><i>Revise Annex JB Note for Rule J18-150 4) to read:</i></p> <p>Rule J18-150 4) The evaluation process to determine if the sliding contact shaft bonding device is non-incendive is <u>the “motor bearing sparking – discharge energy calculation”</u> found in Appendix A of <u>CSA C22.2 No. 60079-0, UL 1836, or IEEE 1349</u>. The potential energy calculation should be retained and available for review. The person taking responsibility for the calculation is normally an engineering professional or other individual permitted to practice engineering.</p>	SN4688-J18
<p><i>Add new Annex JB Note for Rule J18-250 to read:</i></p>	SN4522-J18

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".

Subjects incorporated into this Memorandum of Revisions						
MOR 25-1		MOR 25-2				
4148-12	4624	3864	4705			
4323-0	4627	4274	4712			
4323-10	4628-4	4319	4713			
4353	4628-8	4320	4715			
4356	4628-10	4398	4715-J18			
4377	4628-12	4430	4723			
4494	4628-14	4477	4729			
4502	4628-16	4512	4732			
4505	4628-26	4569	4733			
4509	4628-28	4572	4734			
4519	4628-62	4576				
4522	4628-64	4587				
4522-J18	4630	4591				
4532	4632	4602				
4533	4633	4611				
4555	4634	4623				
4565-0	4637	4625				
4565-18	4638	4626				
4565-J18	4638-J18	4628-42				
4567	4640	4635				
4568	4645	4644				
4571	4656	4646				
4574		4659				
4575		4660				
4582		4661				
4590		4666				
4593		4668				
4594		4669				
4595		4669-J18				
4601		4676				
4605		4677				
4606		4682				
4607		4683				
4608		4687				
4610		4688				
4614A		4688-J18				
4614B		4691-R				
4614C		4691				
4620-8		4693				
4621		4701				