



CANADIAN ELECTRICAL CODE, PART I

Consolidated Memorandum of Revisions to the 2024 (26th) 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.
Revisions are also subject to modification or deletion by subsequent revisions.*
4. *The revisions in this memorandum were approved by the Committee on the Canadian Electrical Code, Part I, and by the Regulatory Authority Committee as of the date below.
The revisions are for information only and are not effective until adopted, with or without change, by the authority having jurisdiction, after the twenty-seventh edition is published.*
5. *To obtain the latest edition of this memorandum, visit the [CE Code, Part I Portal](#).*

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July 2025

Revision history

Date	Change	Document
August 7 2024	MOR 26-1 Released	MOR 1-2024 CE Code
Nov 20 2024	Added Note under SN4852	MOR 1-2024 CE Code R1
July 21 2025	MOR 26-2 Released	MOR 2-2024 CE Code

<h1>SECTION 0</h1>	
<p>Add definition of Bonded to read:</p> <p><u>Bonded - See Bonding.</u></p>	SN4933
<p>Revise definition of Bonding to read:</p> <p>Bonding — a low impedance path obtained by permanently joining all non-current-carrying metal parts to ensure electrical continuity and having the capacity to conduct safely any current likely to be imposed on it <u>connected to establish electrical continuity and conductivity (See Appendix B).</u></p>	SN4933
<p>Note: This revision is on hold pending the approval of SN4868 or SN4869.</p> <p>Add definition of Cable cleat and Intermediate restraint to read:</p> <p><u>Cable cleat – a device with a means of attachment to a mounting surface that secures cables when installed at intervals along the length of the cables.</u></p> <p><u>Intermediate restraint – a cable retaining device intended to be used with cable cleats, without being attached to a mounting surface, to hold cables together in formation or to provide resistance to electromechanical forces, or both.</u></p>	SN4870
<p>Revise definition of Grounded to read:</p> <p>Grounded — connected effectively with the general mass of the earth through a grounding path of sufficiently low impedance and having an ampacity sufficient at all times, under the most severe conditions liable to arise in practice, to prevent any current in the grounding conductor from causing a harmful voltage to exist</p> <p>a) between the grounding conductors and neighbouring exposed conducting surfaces that are in good contact with the earth; or</p> <p>b) between the grounding conductors and neighbouring surfaces of the earth itself <u>(See Appendix B).</u></p>	SN4932
<p>Revise definition of Grounding to read:</p> <p>Grounding — a permanent and continuous conductive path to the earth with sufficient ampacity to carry any fault current liable to be imposed on it, and of a sufficiently low impedance to limit the voltage rise above ground and to facilitate the operation of the protective devices in the circuit <u>(See Appendix B).</u></p>	SN4932
<p>Add definition for Electric vehicle to read (relocated from Section 86):</p> <p><u>Electric vehicle — an automotive-type vehicle for use on public roads that</u></p> <p>a) <u>includes automobiles, buses, trucks, vans, low-speed vehicles, motorcycles, and similar vehicles powered by one or more electric motors that draw</u></p>	SN4801-0

<p><u>current from a fuel cell, photovoltaic array, rechargeable energy storage system (such as a battery or capacitor), or other source of electric current;</u></p> <p>b) <u>includes plug-in hybrid electric vehicles (PHEVs); and</u></p> <p>c) <u>excludes off-road electric vehicles, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, and mobility scooters for persons with disabilities.</u></p>	
<p><i>Delete definition of Panelboard, enclosed</i></p> <p>Panelboard, enclosed — an assembly of buses and connections, overcurrent devices and control apparatus with or without switches, or other equipment installed in a cabinet.</p>	SN4815

<h2>SECTION 2</h2>	
<p><i>Revise Subrule 2-310 2) to read:</i></p> <p>2-310 Entrance to, and exit from, working space (see Appendices B and G)</p> <p>.</p> <p>2) Where a room or space referred to in Subrule 1) contains equipment that has a rating on the equipment nameplate of 1200 A or more, or is rated over 750 <u>1000</u> V, such equipment shall be arranged so that, in the event of a failure in the equipment, it shall be possible to leave the room or space referred to in Subrule 1) without passing the failure point, except that where this cannot be done, the working space requirement of Rule 2-308 1) and 2) shall be not less than 1.5 m.</p>	SN4730-2

<h2>SECTION 4</h2>	
<p><i>Revise Subrule 4-004 17) to read:</i></p> <p>4-004 Ampacity of wires and cables (see Appendix B)</p> <p>.</p> <p>17) <u>Except as required by Rule 4-006,</u> Wwhere the lower ampacity portion of a cable <u>or conductor</u> installation consisting of not more than four conductors <u>per run</u> in total does not exceed 10% of the circuit length or 3 m, whichever is less, the higher ampacity shall be permitted.</p>	SN4739
<p><i>Revise Subrule 4-004 22) to read:</i></p> <p>4-004 Ampacity of wires and cables (see Appendix B)</p> <p>.</p>	SN4850

<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"> i) the value as specified in Tables 1 and 3; and ii) the value as specified in Table 12E when Type DLO cable is marked Type TC and is used in accordance with Rule 4-034 2); and b) for multi-conductor cables, the value as specified in Tables 2 and 4 multiplied by the correction factor from Table 5C for the number of conductors in each cable. 	
<p><i>Revise Subrule 4-006 6) to read:</i></p> <p>4-006 Temperature limitations (see Appendix B)</p> <p>6) Where the conductor ampacity is selected from Tables D8A to D11B, <u>or</u> Tables D17A to D17N, or Table 12E, Subrules 1) and 2) shall apply.</p>	SN4850
<p><i>Revise Rule 4-022 to read:</i></p> <p>4-022 Installation of <u>insulated neutral and</u> identified conductors (see Appendix B)</p> <p>1) Where a service, feeder, or branch circuit requires an identified <u>or a neutral</u> conductor, it shall be installed</p> <ul style="list-style-type: none"> a) in all separately enclosed switches and circuit breakers; b) in all centres of distribution associated with the circuit; <u>and</u> c) with all connections to the identified conductor being made in the enclosures and centres; and d) in such a manner that any identified conductor can be disconnected without disconnecting any other identified conductor. <p>2) The identified conductor shall be installed at each location of a manual or automatic control device for the control of permanently installed luminaires at a branch circuit outlet.</p> <p><u>3) The continuity of the neutral conductor of a multi-wire branch circuit shall be independent of device connections, such as connections for lampholders, receptacles, ballasts, etc., so that the devices can be disconnected without interrupting its continuity.</u></p>	SN4779
<p><i>Revise Rule 4-026 to read:</i></p> <p>4-026 Identification of insulated neutral conductors larger than No. 2 AWG copper or aluminum</p> <p><u>1) Except as required by Subrule 2),</u> Ffor insulated neutral conductors other than those mentioned in Rule 4-024 1), identification shall either be continuous, as for No. 2 AWG and smaller, or else each continuous length of conductor insulation shall be suitably labeled or otherwise clearly marked at each end at the time of installation, so that it can be readily identified.</p> <p><u>2) Insulated neutral conductors used in a consumer's service in accordance with Sections 6 and 36 of this Code shall be identified by a white covering or by three</u></p>	SN4792

continuous white stripes along the entire length of the conductor.	
<p><i>Revise Rule 4-030 to read:</i></p> <p>4-030 Use of identified conductors</p> <p>1) An identified conductor shall not be used as a conductor for which identification is not required by these Rules; however, in armoured cable, aluminum-sheathed cable, copper-sheathed cable, an non-metallic-sheathed cable work, the identified conductor shall be permitted to be rendered permanently unidentifiable by painting or other suitable means at every point where the separate insulated conductors have been rendered accessible and visible by removal of the outer covering of the cable.</p> <p>2) Where armoured cable, aluminum-sheathed cable, copper-sheathed cable, or non-metallic- sheathed cable containing an identified conductor is used for single-pole, three-way, or four-way switch loops, it shall not be necessary to render the identified conductor permanently unidentified at the switch if the connections are made so that an unidentified conductor is the return conductor from the switch to the outlet.</p> <p>3) Where armoured cable, aluminum-sheathed cable, copper-sheathed cable, or non-metallic- sheathed cable is used so that the identified conductor forms no part of the circuit, the identified conductor shall be cut off short or other suitable means shall be employed to indicate clearly that the identified conductor does not form part of the circuit; this shall be done at every point where the separate conductors have been rendered accessible and visible by removal of the outer covering of the cable.</p> <p>4) Where conductors of a multi-wire branch circuit are installed, employing an identified conductor, the continuity of the identified conductor shall be independent of device connections, such as connections for lampholders, receptacles, ballasts, etc., so that the devices can be disconnected without interrupting the continuity of the identified conductor.</p>	SN4779
<p><i>Revise Subrule 4-032 3) to read:</i></p> <p>4-032 Identification of insulated conductors</p> <p>.</p> <p>3) Where colour-coded circuits are required, the following colour coding shall be used, except in the case of service entrance cable and when Rules 4-026, 4-028, and 6-308 modify these requirements:</p> <p>a) 1-phase ac or dc (2-wire) — 1 black and 1 red or 1 black and 1 white* (where an identified conductor is required);</p> <p><u>b) 2-wire dc circuit –</u></p> <p>i) <u>1 red for positive and 1 black for negative; or 1 red for positive and 1 white* (where an identified conductor is required);</u></p> <p>ii) <u>insulated conductors, other than green or white, with permanent marking at terminations and splices in accordance with Item i); or</u></p> <p>iii) <u>insulated conductors manufactured with permanent surface printing indicating the polarity on the insulated conductor</u></p> <p>bc) 1-phase ac or dc (3-wire) — 1 black, 1 red, and 1 white*; and</p> <p><u>d) 3-wire dc circuit (bipolar).</u></p> <p>i) <u>1 red for positive, 1 black for negative, white or white with a coloured stripe for the mid-wire (identified as the centre tap),</u></p> <p>ii) <u>insulated conductors, other than green or white, with permanent marking at terminations and splices in accordance with Item i); or</u></p>	SN4937

<p>iii) insulated conductors manufactured with permanent surface printing indicating the polarity on the conductor insulation; and</p> <p>ee) 3-phase ac — 1 red (phase A), 1 black (phase B), 1 blue (phase C), and 1 white (where a neutral is required).</p> <p>* Or white with a coloured stripe (see Rule 4-024).</p>	
<p>Revise Rule 4-034 to read:</p> <p>4-034 Ampacity of portable power cable</p> <p>1) The maximum current that one or more copper conductors of a given size contained in a portable power cable are permitted to carry shall be as specified in Table 12A.</p> <p>2) When Type DLO cable is used as fixed wiring in cable tray in accordance with Rule 12-406 4), its ampacity shall be determined in accordance with Table 12E and Rule 4-004.</p> <p>3) Conductors used for bonding equipment to ground, and a conductor used as a neutral that carries only the unbalanced current from other conductors as in the case of a normally balanced circuit of three or more conductors, are not counted in determining ampacities.</p>	SN4850

SECTION 6	
<p>Revise Rule 6-000 to read:</p> <p>6-000 Scope</p> <p>This Section applies to services, service equipment, and metering equipment for</p> <p>a) installations operating at voltages of 750 V 1000V or less; and</p> <p>b) installations operating at voltages in excess of 750 V 1000V except as modified by the requirements of Section 36.</p>	SN4730-6
<p>Add new terminology to Rule 6-100 to read:</p> <p>6-100 Special terminology (see Appendix B)</p> <p>Meter-mounted transfer switch – a transfer switch that is mounted between the jaws of the meter mounting device and the supply authority meter.</p>	SN4604
<p>Revise Rule 6-200 to read:</p> <p>6-200 Service equipment (see Appendix B)</p> <p>1) Except as provided in Subrule 2), each consumer's service shall be provided with a single service box.</p> <p>2) More than one service box shall be permitted to be connected to a single consumer's service, provided that</p>	SN4604

<p>a) the subdivision is made in a multiple or dual lug meter mounting device rated at not more than 600 A and 150 volts-to-ground; and</p> <p>b) the meter mounting device is located outdoors.</p> <p>3) For the application of Rule 6-104, each subdivision of the meter mounting device shall be considered a consumer's service.</p> <p>4) <u>Meter-mounted transfer switches shall be permitted to be connected on the line side of the service box provided that the</u></p> <p><u>a) meter-mounted transfer switch is rated for the calculated load in accordance with Rule 8-104;</u></p> <p><u>b) meter mounting device is rated not more than 200 A and installed in accordance with Rule 6-402 2); and</u></p> <p><u>c) installation includes a caution label on the meter mounting device or the meter-mounted transfer switch indicating that the generator shall not contain a system bonding jumper.</u></p>	
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SECTION 8

Revise Subrule 8-110 to read:

SN4953

8-110 Determination of areas

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

- a) 100% of the area on the ground floor and above the ground floor used for living purposes; and
- ~~b) 100% of the areas above the ground floor used for living purposes; and~~
- ~~c) b)~~
 - i) 75% of ~~only~~ those areas below the ground floor that exceeds 1.8 m in height, measured from the lowest part of the ceiling assembly to the ground or other surface below it; or
 - ii) 100% of those areas below the ground floor that are used or are intended to be used as a separate dwelling unit.

Revise Subrule 8-200 1) to read:

SN4767-R

8-200 Single dwellings (see Appendix B)

1) The calculated load for the service or feeder supplying a single dwelling shall be based on the greater of Item a) or b):

- a)
 - .
 - .
 - ~~v) any electric tankless water heaters or electric water heaters for steamers, swimming pools, hot tubs, or spas with a demand factor of 100%; plus~~
 - v) except for electric storage-tank water heaters for domestic service, any electric water heaters with a demand factor of 100%; plus
 - vi) except as permitted by Rule 8-106 11), any electric vehicle supply equipment loads with a demand factor of 100%; plus

<p>vii) any loads, <u>including electric storage-tank water heaters for domestic service</u>, provided for that have a rating in excess of 1500 W, in addition to those outlined in Items i) to vi), at</p> <p>A) 25% of the rating of each load, if an electric range has been provided for; or</p> <p>B) 100% of the combined load up to 6000 W, plus 25% of the combined load that exceeds 6000 W, if an electric range has not been provided for; or</p>	
<p><i>Revise Subrule 8-202 to read:</i></p> <p>8-202 Apartment and similar buildings (see Appendix B)</p> <p>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> <ul style="list-style-type: none"> i) a basic load of 3500 W for the first 45 m² of living area (see Rule 8-110); plus ii) an additional 1500 W for the second 45 m² or portion thereof; plus iii) an additional 1000 W for each additional 90 m² or portion thereof in excess of the initial 90 m²; plus iv) any electric space-heating loads provided for with demand factors as permitted in Section 62 plus any air-conditioning loads with a demand factor of 100%, subject to Rule 8-106 3); plus v) any electric range load provided for as follows: 6000 W for a single range plus 40% of any amount by which the rating of the range exceeds 12 kW; plus vi) any electric tankless water heaters or electric water heaters for steamers, swimming pools, hot tubs, or spas with a demand factor of 100%; plus <u>vi) except for electric storage-tank water heaters for domestic service, any electric water heaters with a demand factor of 100%; plus</u> 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) any loads, <u>including electric storage-tank water heaters for domestic service</u>, provided for, in addition to those outlined in Items i) to vi), at <ul style="list-style-type: none"> 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 <p>b) 60 A.</p> <p>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.</p> <p>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:</p> <ul style="list-style-type: none"> a) excluding any electric vehicle supply equipment loads, electric space-heating loads and any air-conditioning loads, the load shall be considered to be <ul style="list-style-type: none"> 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; 	<p>SN4767-R SN4936</p>

<p>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);</p> <p>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);</p> <p>d) except as permitted by Rule 8-106 10) or Rule 8-106 11), any electric vehicle supply equipment loads 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 of 100%; and</p> <p>e) in addition, any lighting, heating, and power loads not located in dwelling units shall be added with a demand factor of 75%.</p> <p>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.</p>	
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SECTION 10	
<p><i>Revise Subrule 10-212 3) to read:</i></p> <p>10-212 Grounding connections for solidly grounded separately derived ac systems (see Appendix B)</p> <p>.</p> <p>.</p> <p>3) A separately derived ac system operating at 750 V <u>1000 V</u> 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>	SN4730-10
<p><i>Revise Subrule 10-612 6) to read:</i></p> <p>10-612 Installation of bonding conductors</p> <p>.</p> <p>.</p> <p>6) Where a separate bonding conductor is run with single-conductor cables, it shall follow the same route as the cables <u>and shall not be encircled by magnetic material except where it is</u> <u>a) encircled together with the circuit conductors; or</u> <u>b) required for termination to electrical equipment.</u></p>	SN4754
<p><i>Revise Rule 10-708 to read:</i></p> <p>10-708 Equipotential bonding conductor size</p> <p>1) Except as permitted by Subrule 2) or 3), <u>the size of an equipotential bonding conductor installed as exposed wiring where not subject to mechanical damage</u></p>	SN4828

<p>shall be</p> <p>a) not smaller than a) No. 6 AWG <u>or larger</u> if of copper; or b) No. 4 AWG <u>or larger</u> if of aluminum <u>when installed as exposed wiring</u>;</p> <p>2) The size of an equipotential bonding conductor installed as concealed wiring, or provided with mechanical protection shall be permitted to be a minimum</p> <p>ab) No. 10 AWG <u>or larger</u> if of copper; or b) No. 8 AWG <u>or larger</u> if of aluminum <u>when installed as concealed wiring or provided with mechanical protection; or</u></p> <p>3c) The size of an equipotential bonding conductor shall be permitted to be as prescribed by Rule 10-616 when installed in accordance with Item 10-702 3).</p>	
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<h2>SECTION 12</h2>	
<p><i>Revise Subrule 12-012 6) to read:</i></p> <p>12-012 Underground installations (see Appendix B)</p> <p>6) <u>Notwithstanding Rule 12-910 2) w</u>here cables rise for terminations or splices or where access is otherwise required, they shall be protected from mechanical damage by location or by rigid conduit terminated vertically in the trench and including a bushing or bell end fitting, or other acceptable protection, at the bottom end from 300 mm above the bottom of the trench to at least 2 m above finished grade, and beyond that as may be required by other Rules of the Code, and with sufficient slack provided in the cables at the bottom end of the conduit so that the cables enter the conduit from a vertical position.</p>	SN4810
<p><i>Revise Subrule 12-016 to read:</i></p> <p>12-016 Lightning down conductors</p> <p>Where lightning down conductors are installed, electrical wiring shall, where practicable, be kept at least 2 m from such conductors, except where bonding is provided in accordance with Rule 10-104.</p>	SN4941
<p><i>Revise Subrule 12-108 1) to read:</i></p> <p>12-108 Conductors in Parallel (See Appendix B)</p> <p>1) Ungrounded and grounded circuit conductors of similar conductivity in sizes No. 1/0 AWG and larger, copper or aluminum, shall be permitted to be installed in parallel sets provided that each parallel phase or grounded conductor set individually consists of conductors that</p> <ul style="list-style-type: none"> a) are free of splices throughout the total length; b) have the same circular mil area; c) have the same type of insulation; d) are terminated in the same manner; e) are of the same conductor material; and f) are the same length <u>have a difference in length of not more than 3%, based on the shortest conductor in the parallel set.</u> 	SN4882

<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>5) Joints or splices in conductors and cables in grade level in-ground enclosures shall be in accordance with Subrule 6) b) by means of splicing devices for direct earth burial and suitable for wet locations.</p> <p>6) 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; b) notwithstanding the requirements of Subrule 4), by means of splicing devices or materials (kits) for direct earth burial; or c) in grade level in-ground enclosures intended for the purpose and not subject to vehicular traffic, by means of splice splicing devices for direct earth burial, and connectors suitable for wet locations. 	SN4938
<p><i>Note: This revision is on hold pending approval of related changes to Section 76.</i></p> <p><i>Add new Rule 12-124 to read:</i></p> <p>12-124 Temporary Installation of Single Conductor Cables Except as provided for by other Rules of this Code, single conductor cables terminated into single-pole connectors for single-conductor cables shall only be installed in accordance with Rule 76-100.</p>	SN4148-12
<p><i>Revise Subrule 12-406 4) to read:</i></p> <p>12-406 Uses of portable power cable (see Appendix B)</p> <p>.</p> <p>.</p> <p>4) Notwithstanding Subrule 3) a), Type DLO cable in sizes 1/0 or larger shall be permitted to be used in permanent installations in cable tray, provided that the cable</p> <ul style="list-style-type: none"> a) is marked as Type TC cable; b) conforms with the conditions of use for Type TC cable in accordance with Rule 12-2202 and as listed in Table 19; c) terminates in <ul style="list-style-type: none"> i) connectors marked for use with fine-strand conductors; or ii) standard connectors with the use of ferrules; and d) has an ampacity rating as described in Table 12E and Rule 4-004. 	SN4852
<p><i>Revise Subrule 12-602 4) to read:</i></p> <p>12-602 Use (see Appendix B)</p> <p>.</p>	SN4810

<p>4) Armoured Cable <u>having metal armour or metal sheath</u> with <u>an</u> overall jacket shall be permitted for use in a raceway when it is installed in accordance with Rule 12-902 <u>12-910 6)</u>.</p>	
<p><i>Revise Subrule 12-902 to read:</i></p> <p>12-902 Types of insulated conductors and cables (see Appendix B)</p> <p>1) Insulated conductors and cables shall be of types suitable for use in raceways as indicated in Table <u>19</u>.</p> <p>2) Notwithstanding Subrule 1), armoured cables as described in Rule <u>12-602 6)</u> shall be permitted to be installed in a conduit or tubing, provided that</p> <p style="padding-left: 40px;">a) the installation will not result in a greater fill than that specified in Table <u>8</u>; and</p> <p style="padding-left: 40px;">b) the installation conforms to one of the following conditions:</p> <p style="padding-left: 80px;">i) the length of cable pulled into the conduit or tubing does not result in the calculated maximum pulling tension or the calculated maximum sidewall bearing pressure being exceeded; or</p> <p style="padding-left: 80px;">ii) the run of conduit or tubing between draw-in points does not have more than the equivalent of two 90° bends with minimum radii of not less than 0.944 m for cable rated 1000 V or less and 1.524 m for cable rated in excess of 1000 V, and is limited to a maximum of</p> <p style="padding-left: 80px;">A) 15 m for a three-conductor copper cable;</p> <p style="padding-left: 80px;">B) 45 m for a single-conductor copper cable;</p> <p style="padding-left: 80px;">C) 35 m for a three-conductor aluminum cable; or</p> <p style="padding-left: 80px;">D) 100 m for a single-conductor aluminum cable.</p>	SN4810
<p><i>Revise Subrule 12-910 to read:</i></p> <p>12-910 Conductors and cables in conduit and tubing (see Appendix B)</p> <p>1) Conduit and tubing shall be of sufficient size to permit the conductors <u>or cables</u> to be drawn in and withdrawn without damage to the <u>cables</u>, conductors, or conductor insulation.</p> <p>2) Subrules 3), 4), <u>5)</u> and 5) <u>6)</u> shall apply only to complete systems and not to short <u>straight</u> sections of conduit and tubing <u>of 1 m or less</u> used for the protection of portions of <u>blue</u> open wiring that would otherwise be exposed to mechanical damage.</p> <p>3) The maximum number of conductors in one conduit or tubing shall not exceed 200.</p> <p>4) The maximum number of insulated conductors or multi-conductor cables in one conduit or tubing shall be such that the insulated conductors or cables and their coverings will not result in a greater fill than that specified in Table 8, and in this determination,</p> <p style="padding-left: 40px;">a) the usable interior cross-sectional area for allowable fill for various sizes of conduit and tubing shall be as specified in Tables 9A to 9H;</p> <p style="padding-left: 40px;">b) notwithstanding Item a), the interior cross-section of raceways shall be permitted to be derived from their measured internal dimensions or from the manufacturer's listed specifications;</p>	SN4810

<p>c) the diameters and cross-sectional areas of insulated single conductors and cables shall be as indicated in Tables 6A to 6K, or as obtained by field measurement for the constructions identified in Tables 6A to 6K;</p> <p>d) the dimensions of uninsulated single conductors shall be permitted to be obtained from Table D5, or from field measurement; and</p> <p>e) the diameters and cross-sectional areas of Type DLO cables shall be as indicated in Table 10D or as obtained by field measurement.</p> <p>5) Notwithstanding Subrule 4), the maximum permitted number of conductors shall be determined by the summation of the cross-sectional areas of all conductors, the value of which shall not exceed the limits set out in Tables 9A to 9H for the specified conduit and tubing.</p> <p><u>6) Notwithstanding Rule 12-902, cable as described in Rule 12-602 -4) shall be permitted to be installed in a conduit or tubing, provided that</u></p> <p><u>a) the installation will not result in a greater fill than that specified in Table 8; and</u></p> <p><u>b) the installation conforms to one of the following conditions:</u></p> <p><u>i) the length of cable pulled into the conduit or tubing does not result in the calculated maximum pulling tension or the calculated maximum sidewall bearing pressure being exceeded; or</u></p> <p><u>ii) the run of conduit or tubing between draw-in points does not have more than the equivalent of two 90° bends with minimum radii of not less than 0.944 m for cable rated 1000 V or less and 1.524 m for cable rated in excess of 1000 V, and is limited to a maximum of</u></p> <p><u>A) 15 m for a three-conductor copper cable;</u></p> <p><u>B) 45 m for a single-conductor copper cable;</u></p> <p><u>C) 35 m for a three-conductor aluminum cable; or</u></p> <p><u>D) 100 m for a single-conductor aluminum cable.</u></p>	
<p><i>Revise Rule 12-2014 to read:</i></p> <p>12-2014 Length of busways used as branch circuits</p> <p>1) Busways that are used as branch circuits, and that are designed so that loads can be connected at any point, shall be limited to lengths such that the circuits will not be overloaded in normal use.</p> <p>2) In general, the length of such a run in metres should <u>shall</u> not exceed the ampere rating of the branch circuit.</p>	SN4939
<p><i>Revise Subrule 12-2020 to read:</i></p> <p>12-2020 Circuit restrictions in splitters</p> <p>Splitters shall be used only for the purpose of making connections to the <u>its</u> busbars or terminal blocks and shall not be used as a pull box <u>or as a junction box</u> for the insulated conductors that are of other circuits not connected to the main distribution terminals within the <u>splitter</u> box.</p>	SN4958

SECTION 14

Revise Subrule 14-010 to read:

SN4809

14-010 Protective and control devices required (see Appendix B)

Except as otherwise provided for in ~~this Section or in other Sections dealing with specific equipment~~ other parts of this Code, electrical equipment ~~apparatus~~ and ungrounded conductors shall be provided with

- a) devices for the purpose of automatically opening the electrical circuit ~~thereto~~,
 - i) if the current reaches a value that will produce a dangerous temperature in the equipment ~~apparatus~~ or conductors; ~~and~~
 - ii) in the event of a fault due to any current in excess of the rated current of the equipment or the ampacity of a conductor ~~ground fault, in accordance with Rule 14-102~~; ~~or~~
 - iii) in the event of a ground fault, in accordance with Rule 14-102;
- b) manually operable control devices that will safely disconnect all ungrounded conductors of the circuit at the point of supply simultaneously, except for multi-wire branch circuits that supply only fixed lighting loads or non-split receptacles, and that have each lighting load or receptacle connected to the neutral and one ungrounded conductor; and
- c) devices that, when necessary, will open the electrical circuit thereto in the event of failure of voltage in such a circuit.

Revise Rule 14-012 to read:

SN4730-14

14-012 Ratings of protective and control equipment (see Appendix B)

In circuits of ~~750 V~~ 1000 V and less,

- a) electrical equipment required to interrupt fault currents shall have ratings sufficient for the voltage employed and for the fault current that is available at the terminals; and
- b) electrical equipment required to interrupt current at other than fault levels shall have ratings sufficient for the voltage employed and for the current it must interrupt.

Revise Rule 14-100 to read:

SN4730-14
SN4890-R

14-100 Overcurrent protection of conductors (see Appendix B)

1) Each ungrounded conductor shall be protected by an overcurrent device at the point where it receives its supply of current and at each point where the size of conductor is decreased, except that such protection shall be permitted to be omitted in each of the following cases:

- a) {no change}
- b) {no change}
- c) {no change}
- d) where the conductor

<p>i) forms part of the only circuit supplied from a power or distribution transformer <u>with</u> rated <u>primary voltage</u> over 750 V <u>1000 V</u> with primary protection in accordance with Rule 26-250 1), 2), and 3), and that supplies only that circuit;</p> <p>ii) terminates at a single overcurrent device with a rating not exceeding the ampacity of the conductor (s) in the circuit; and</p> <p>iii) is protected from mechanical damage;</p> <p>e) {no change}</p> <p>f) {no change}</p> <p>g) where the smaller conductor</p> <p>i) is supplied by a circuit at not more than 750 V <u>1000 V</u>;</p> <p>ii) is supplied from an overhead or underground circuit and is run overhead or underground except where it enters a building;</p> <p>iii) is installed in accordance with the requirements of Section 6; and</p> <p>iv) terminates in service equipment in accordance with Section 6.</p> <p>2) {no change}</p>	
<p><i>Revise Subrule 14-102 1) to read:</i></p> <p>14-102 Ground fault protection (see Appendix B)</p> <p>Ground fault protection shall be provided to de-energize all normally ungrounded conductors of a faulted circuit that are downstream from the point or points marked with an asterisk in Diagram 3 in the event of a ground fault in those conductors as follows:</p> <p>a) for circuits of solidly grounded systems rated more than 150 volts-to-ground, less than 750-1000 V phase-to-phase, and 1000 A or more; and</p> <p>b) for circuits of solidly grounded systems rated 150 V or less to ground and 2000 A or more.</p>	SN4730-14
<p><i>Revise Rule 14-504 to read:</i></p> <p>14-504 Maximum rating of switches</p> <p>Unless of special design, knife switches rated at more than 600 A at 750 V <u>1000 V</u> or less shall be used only as isolating switches.</p>	SN4730-14

<h2>SECTION 18</h2>	
<p><i>Revise Rule 18-074 to read:</i></p> <p>18-074 Equipotential Bonding in hazardous locations of extra-low voltage equipment (see Appendix B)</p> <p>1)—Exposed non-current-carrying metal parts of electrical <u>extra-low voltage</u> equipment <u>shall be made equipotential with nearby conductive parts by a</u></p>	SN4851

<p><u>permanent conductive connection between them</u>, including the frames or metal exteriors of motors, fixed or portable lamps or other utilization equipment, luminaires, cabinets, cases, and conduit, shall be bonded to ground using</p> <p>a) bonding conductors sized in accordance with Rule 10-616; or</p> <p>b) rigid metal conduit with threaded couplings and threaded bosses on enclosures with joints made up tight.</p> <p>2) Notwithstanding Subrule 1), where raceways or cables incorporate an internal bonding conductor, box connectors with standard locknuts shall be permitted to bond the metallic armour or raceway.</p>	
<p>Revise Rule 18-076 to read:</p> <p>18-076 Uninsulated exposed parts</p> <p>There shall be no uninsulated exposed parts of an electrical installation or of electrical equipment such as electrical conductors, buses, terminals, or components unless they are <u>Uninsulated and exposed energized parts shall be</u></p> <p>a) additionally protected by <u>supplied by an extra-low voltage circuit and provided with a</u> type of protection “ia”, “ib”, “ic”, or “nA” as suitable for the location and operate at less than</p> <p>i) 15 V in wet locations; and</p> <p>ii) 30 V in other than wet locations; or</p> <p>b) installed as provided for in Rule 18-250 2) for electric cranes, hoists, and similar equipment in a Zone 22 location.</p>	SN4926
<p>Revise Subrule 18-250 3) to read:</p> <p>18-250 Equipment, Zone 22 locations</p> <p>3) Notwithstanding Subrule 1), totally enclosed pipe-ventilated (TEPV), totally enclosed non-ventilated (TENV), and totally enclosed fan-cooled (TEFC) motors and generators shall be permitted to be installed in Zone 22 Group IIIA and IIIB locations provided <u>that the expected maximum external surface temperature under normal operating conditions is less than the minimum ignition temperature defined in the area classification</u></p> <p>a) they are equipped with integral overheating protection in accordance with Rule 28-314; and</p> <p>b) drain holes and other openings are suitably closed.</p>	SN4928

SECTION 20

<p>Revise Rule 20-000 to read:</p> <p>20-000 Scope (see Appendices G and J)</p> <p>1) This Section supplements or amends the general requirements of this Code and Section 18 and applies to installations as follows:</p> <p>a) gasoline dispensing and service stations — Rules 20-002 to 20-014<u>20-008</u>;</p>	SN4899

<p>b) propane vehicle fuel dispensers, container filling, and storage — Rules 20-030 to 20-04220-036;</p> <p>c) compressed natural gas refuelling stations, compressors, and storage facilities — Rules 20-060 to 20-07020-064;</p> <p>d) commercial repair garages — Rules 20-100 to 20-11220-108;</p> <p>e) bulk storage plants — Rules 20-200 to 20-21220-206;</p> <p>f) finishing processes — Rules 20-300 to 20-314; and</p> <p>g) aircraft hangars — Rules 20-400 to 20-42220-418.</p> <p>2) For additions, modifications, or renovations to, or operation and maintenance of, existing facilities employing the Division system of classification for Class I locations, the continued use of the Division system of classification shall be permitted.</p> <p>3) 2) Where the Division system of classification is used for Class I locations, as permitted by Subrule 2) Rule 18-004, the Rules for Class I locations found in Annex J20 of Appendix J shall apply.</p> <p>4) 3) The definitions stated in Rule 18-002 shall also apply to Section 20.</p>	
<p><i>Revise Rule 20-002 to read:</i></p> <p>20-002 General</p> <p>1) Rules 20-004 to 20-014 20-008 apply to electrical apparatus and wiring installed in gasoline dispensing and service stations and other locations where gasoline or other similar volatile flammable liquids are dispensed or transferred to the fuel tanks of self-propelled vehicles.</p> <p>2) Other areas used as lubritoriums, service rooms, repair rooms, offices, salesrooms, compressor rooms, and similar locations shall conform to Rules 20-100 to 20-11220-108 with respect to electrical wiring and equipment.</p>	SN4899
<p><i>Revise Rule 20-006 to read:</i></p> <p>20-006 Wiring and equipment within hazardous areas</p> <p>1) Electrical wiring and equipment within the hazardous areas defined in Rule 20-004 shall conform to Section 18 requirements.</p> <p>2) 1) Where dispensers are supplied by rigid metal conduit, a union and a flexible fitting shall be installed between the conduit and the dispenser junction box in addition to any sealing fittings required by Section 18.</p> <p>3) 2) The flexible metal fitting required by Subrule 1) 2) shall be installed in a manner that allows relative movement of the conduit and the dispenser.</p> <p>4) 3) Where dispensers are supplied by a cable, provision shall be made to separate the cable from the dispenser junction box without rendering ineffective the explosion-proof cable seal.</p>	SN4899
<p><i>Revise Rule 20-008 to read:</i></p> <p>20-008 Wiring and equipment above hazardous areas</p> <p>Wiring and equipment above hazardous areas shall conform to Rules 20-10620-104 and 20-11020-106.</p>	SN4899
<p><i>Delete Rule 20-010</i></p> <p>20-010 Circuit disconnects</p> <p>Each circuit leading to or through a dispensing pump shall be provided with a switching means that will disconnect simultaneously all ungrounded conductors of the circuit from the source of supply.</p>	SN4899

<p><i>Delete Rule 20-012</i></p> <p>20-012 Sealing 1) Seals as required by Section 18 shall be provided in each conduit run entering or leaving a dispenser or any cavities or enclosures in direct communication with a dispenser., 2) Additional seals shall be provided in conformance with Rules 18-104 and 18-154, and the requirements of Rules 18-104 and 18-154 shall include horizontal and vertical boundaries.</p>	SN4899
<p><i>Delete Rule 20-014</i></p> <p>20-014 Bonding All non-current-carrying metal parts of dispensing pumps, metal raceways, and other electrical equipment shall be bonded to ground in accordance with Section 10.</p>	SN4899
<p><i>Revise Rule 20-030 to read:</i></p> <p>20-030 Scope Rules 20-032 to 20-04220-036 apply to locations in which propane is dispensed or transferred to the fuel tanks of self-propelled vehicles or to portable containers and to locations in which propane is stored or transferred from rail cars or tanker vehicles to storage containers.</p>	SN4899
<p><i>Delete Definition of Vehicle fuel dispenser</i></p> <p>20-032 Special terminology In this Subsection, the following definitions shall apply:</p> <p>Vehicle fuel dispenser — a propane dispenser, specifically for the dispensing of liquid propane (by volume) into containers.</p>	SN4899
<p><i>Revise Rule 20-036 to read:</i></p> <p>20-036 Wiring and equipment in hazardous areas 1) All electrical wiring and equipment in the hazardous areas referred to in Rule 20-034 shall conform to the requirements of Section 18. 2) Where dispensing devices are supplied by rigid metal conduit, the requirements of Rule 20-006 2)1) and 3)2) shall be met.</p>	SN4899
<p><i>Delete Rule 20-038</i></p> <p>20-038 Sealing 1) Seals shall be installed as required by Section 18 and the requirements shall be applied to horizontal as well as vertical boundaries of the defined hazardous locations. 2) Seals for dispensing devices shall be provided as required by Rule 20-012.</p>	SN4899
<p><i>Delete Rule 20-040</i></p> <p>20-040 Circuit disconnects</p>	SN4899

Each circuit leading to or through a propane vehicle fuel dispenser or pump shall be provided with a switching means that will disconnect simultaneously all ungrounded conductors of the circuit from the source of supply.	
Delete Rule 20-042 20-042 Bonding All non-current-carrying metal parts of equipment and raceways shall be bonded to ground in accordance with Section 10.	SN4899
Revise Rule 20-060 to read: 20-060 Scope (see Appendix B) 1) Rules 20-062 to 20-070 20-064 apply to locations in which compressed natural gas is dispensed to the fuel tanks of self-propelled vehicles and to associated compressors and storage facilities. 2) The Rules in this Subsection do not apply to vehicle refuelling appliances required to be installed in accordance with CSA B149.1 or CSA B108.1 . installed in accordance with CSA B149.1 that do not have storage facilities.	SN4747 SN4899
Revise Rule 20-064 to read: 20-064 Wiring and equipment in hazardous areas 1) All electrical wiring and equipment in the hazardous areas defined in Rule 20-062 shall comply with the requirements of Section 18. 2) Where dispensing devices are supplied by rigid metal conduit, the requirements of Rule 20-006 2)1) and 3)2) shall be met.	SN4899
Delete Rule 20-066 20-066 Sealing 1) Seals shall be installed as required by Section 18, and the requirements shall be applied to horizontal as well as vertical boundaries of the defined hazardous locations. 2) Seals for dispensing devices shall be provided as required by Rule 20-012.	SN4899
Delete Rule 20-068 20-068 Circuit disconnects Each circuit leading to a compressor or a dispensing device shall be provided with a switching means that will disconnect simultaneously all ungrounded conductors of the circuit from the source of supply.	SN4899
Delete Rule 20-070 20-070 Bonding All non-current-carrying metal parts of equipment and raceways shall be bonded to ground in accordance with Section 10.	SN4899
Revise Rule 20-100 to read: 20-100 Scope (See Appendix B)	SN4899

Rules 20-102 to 20-112 20-108 apply to commercial garages where vehicles powered by gasoline, propane, or other flammable fuels are serviced or repaired.	
<p><i>Delete Rule 20-104</i></p> <p>20-104 Wiring and equipment in hazardous areas Within hazardous areas as defined in Rule 20-102, wiring and equipment shall conform to the applicable requirements of Section 18.</p>	SN4899
<p><i>Renumber Rule 20-106 as follows:</i></p> <p>20-10620-104 Wiring above hazardous areas</p>	SN4899
<p><i>Delete Rule 20-108</i></p> <p>20-108 Sealing 1) Seals shall be installed as required by Section 18, and the requirements of Rule 18-154 1) b) shall include horizontal and vertical boundaries. 2) Raceways embedded in a floor or buried beneath a floor shall be considered to be within the hazardous area above the floor if any connections or extensions lead into or through such an area.</p>	SN4899
<p><i>Renumber Rule 20-110 as follows:</i></p> <p>20-11020-106 Equipment above hazardous areas</p>	SN4899
<p><i>Renumber Rule 20-112 as follows:</i></p> <p>20-11220-108 Battery charging equipment</p>	SN4899
<p><i>Revise Rule 20-200 to read:</i></p> <p>20-200 Scope Rules 20-202 to 20-21220-206 apply to locations where gasoline or other similar volatile flammable liquids are stored in tanks having an aggregate capacity of one carload or more, and from which such products are distributed (usually by tank truck).</p>	SN4899
<p><i>Delete Rule 20-204</i></p> <p>20-204 Wiring and equipment in hazardous areas All electrical wiring and equipment in the hazardous areas defined in Rule 20-202 shall conform to the requirements of Section 18.</p>	SN4899
<p><i>Renumber and Revise Rule 20-206 to read:</i></p> <p>20-20620-204 Wiring and equipment above hazardous areas 1) Wiring installed above a hazardous location shall conform to the requirements of Section 12 and be suitable for the type of building and the occupancy. 2) Fixed equipment that may produce arcs, sparks, or particles of hot metal, such as lamps and lampholders, cut-outs, switches, receptacles, motors, or other equipment having make-and-break or sliding contacts, shall be of the totally enclosed type or constructed to prevent the escape of sparks or hot metal particles.</p>	SN4899

<p>3) Portable lamps or utilization equipment and the flexible cords supplying them shall conform to the requirements of Section 18 for the class of location above which they are connected or used.</p>	
<p><i>Delete Rule 20-208</i></p> <p>20-208 Sealing 1) Seals shall be installed in accordance with Section 18 and shall be applied to horizontal as well as vertical boundaries of the defined hazardous locations. 2) Buried raceways under defined hazardous areas shall be considered to be within such areas.</p>	SN4899
<p><i>Renumber and Revise Rule 20-210 to read:</i></p> <p>20-21020-206 Gasoline dispensing Where gasoline dispensing is carried on in conjunction with bulk station operations, the applicable provisions of Rules 20-002 to 20-01420-008 shall apply.</p>	SN4899
<p><i>Delete Rule 20-212</i></p> <p>20-212 Bonding All non-current-carrying metal parts of equipment and raceways shall be bonded to ground in accordance with Section 10.</p>	SN4899
<p><i>Revise Rule 20-306 to read:</i></p> <p>20-306 Wiring and equipment in hazardous areas 1) All electrical wiring and equipment within the hazardous areas as defined in Rule 20-302 shall conform to the requirements of Section 18. 2)1) Unless designed for use in both areas with readily ignitable deposits and areas with flammable vapour, no electrical equipment shall be installed or used where it may be subject to a hazardous accumulation of readily ignitable deposits or residue. 3)2) Illumination of readily ignitable areas through panels of glass or other transparent or translucent materials shall be permitted only where a) fixed lighting units are used as the source of illumination; b) the panel is non-combustible and effectively isolates the hazardous area from the area in which the lighting unit is located; c) the panel is of a material or is protected so that breakage is unlikely; and d) the arrangement is such that normal accumulations of hazardous residue on the surface of the panel will not be raised to a dangerous temperature by radiation or conduction from the source of illumination. 4)3) Portable electric lamps or other utilization equipment shall a) not be used within a hazardous area during operation of the finishing process; and b) meet the requirements for Zone 2 locations when used during cleaning or repairing operations. 5)4) Notwithstanding Subrule 2)1), a) totally enclosed and gasketed lighting shall be permitted to be used on the ceiling of a spray room where adequate ventilation is provided; and b) infrared paint drying units shall be permitted to be used in a spray room if the controls are interlocked with those of the spraying equipment so that both operations cannot be performed simultaneously, and if portable, the paint drying unit shall not be brought into the spray room until spraying operations have ceased.</p>	SN4899

<p><i>Revise Rule 20-312 to read:</i></p> <p>20-312 Wiring and equipment above hazardous areas 1) All fixed wiring above hazardous areas shall conform to Section 12. 2) Equipment that may produce arcs , sparks, or particles of hot metal, such as lamps and lampholders for fixed lighting, cut-outs, switches, receptacles, motors, or other equipment having make-and- break or sliding contacts, where installed above a hazardous area or above an area where freshly finished goods are handled, shall be of the totally enclosed type or constructed to prevent the escape of sparks or hot metal particles.</p>	SN4899
<p><i>Revise Rule 20-400 to read:</i></p> <p>20-400 Scope Rules 20-402 to 20-422<u>20-418</u> apply to locations used for storage or servicing of aircraft in which gasoline, jet fuels or other volatile flammable liquids, or flammable gases are used, but shall not include those locations used exclusively for aircraft that have never contained such liquids or gases, or that have been drained and properly purged.</p>	SN4899
<p><i>Revise Rule 20-404 to read:</i></p> <p>20-404 Wiring and equipment in hazardous areas 1) All fixed and portable wiring and equipment that is or may be installed or operated within any of the hazardous locations defined in Rule 20-402 shall conform to the requirements of Section 18. 2) <u>1)</u> Wiring systems installed in pits, or other spaces in or under the hangar floor, shall be provided with adequate drainage and shall not be placed in the same compartment with any other service except piped compressed air. 3) <u>2)</u> Attachment plugs and receptacles in hazardous locations shall be explosion-proof, or shall be designed so that they cannot be energized while the connections are being made or broken.</p>	SN4899
<p><i>Delete Rule 20-412</i></p> <p>20-412 Sealing 1) Seals shall be installed in accordance with Section 18 and shall apply to horizontal as well as to vertical boundaries of the defined hazardous areas. 2) Raceways embedded in a masonry floor or buried beneath a floor shall be considered to be within the hazardous area above the floor when any connections or extensions lead into or through the hazardous area.</p>	SN4899
<p><i>Renumber Rule 20-414 as follows:</i></p> <p>20-414<u>20-412</u> Aircraft electrical systems</p>	SN4899
<p><i>Renumber Rule 20-416 as follows:</i></p> <p>20-416<u>20-414</u> Aircraft battery charging and equipment</p>	SN4899
<p><i>Renumber Rule 20-418 as follows:</i></p>	SN4899

20-418 <u>20-416</u> External power sources for energizing aircraft	
Renumber Rule 20-420 as follows:	SN4899
20-420 <u>20-418</u> Mobile servicing equipment with electrical components	
Delete Rule 20-422	SN4899
20-422 Bonding All metal raceways, and all non-current-carrying metal portions of fixed or portable equipment, regardless of voltage, shall be bonded to ground in accordance with Section 10.	

SECTION 22	
Revise Rule 22-200 to read: 22-200 Wiring method in Category 1 locations 1) Where insulated conductors or cables are exposed to moisture in a Category 1 location, they shall a) if used in exposed wiring, be of the types selected in accordance with Rule 12-102 <u>3)-12-100 1)</u> and rated i) for exposed wiring in wet locations; or ii) for exposed wiring where exposed to the weather, provided that they are located more than 1.5 m horizontally or 2.5 m vertically from floors, decks, balconies, or stairs; and b) if used in a raceway, be of the types selected in accordance with Rule 12-102 3) for use in raceways in wet locations. 2) Non-metallic-sheathed cable of the NMW or Type NMWU type shall be permitted to be used in a Category 1 location. 3) Armoured cable, aluminum-sheathed cable, and copper-sheathed cable installed in a Category 1 location shall be of the type selected in accordance with Rule 12-102 3) for direct earth burial. 4) Split knobs or cleats shall not be used in a Category 1 location. 5) Mineral-insulated cable shall be permitted to be used in a Category 1 location, but if the cable is secured to walls, it shall be spaced at least 6 mm from the wall at each point of support. 6) Aluminum conductors shall not be used in Category 1 locations unless the termination or joint is adequately sealed against ingress of moisture.	SN4493
Revise Rule 22-202 to read: 22-202 Wiring method in Category 2 locations 1) Where insulated conductors or cables are exposed to corrosive liquids or vapours in a Category 2 location, they shall a) if used in exposed wiring, be of a type with corrosion-resistant protection and be located more than 1.5 m horizontally or 2.5 m vertically from floors, decks, balconies, or stairs; and b) if used in conduit, be of a type with corrosion-resistant protection.	SN4493

<p>2) Non-metallic-sheathed cable of the NMW or <u>Type</u> NMWU type shall be permitted to be used in a Category 2 location.</p> <p>3) Surface metal raceways, underfloor raceways, bare conductors, armoured cable except where permitted in Table 19 in accordance with Rule 12-102 3) for exposure to corrosive action, wireways, busways, and split knobs shall not be used in Category 2 locations.</p> <p>4) Mineral-insulated cable shall be permitted to be used in a Category 2 location if the corrosive action is not of such a nature as to cause deterioration of the outer sheath.</p> <p>5) Aluminum-sheathed cable and copper-sheathed cable shall be permitted to be used in a Category 2 location, provided that they have suitable corrosion-resistant protection where necessary.</p> <p>6) Aluminum conductors shall not be used in Category 2 locations unless the termination or joint is adequately sealed against ingress of corrosive liquids or vapours.</p>	
<p><i>Revise Rule 22-204 to read:</i></p> <p>22-204 Rinks</p> <p>1) Insulated conductors run as open wiring in accordance with Rules 12-200 and 12-206 shall be permitted to be used for the lighting of curling or skating rink areas that are subject to condensation, provided that the insulated conductors are suitable for wet locations as selected in accordance with Rule 12-102 3).</p> <p><u>12)</u> The wiring method used in waiting rooms and other portions of rinks shall be in accordance with Section 12 based on the area and moisture conditions involved.</p> <p><u>23)</u> Rink areas that are provided with positive mechanical ventilation capable of changing the air at least three times per hour shall be permitted to be regarded as dry locations.</p>	<p>SN4493 SN4475</p>
<p><i>Revise Rule 22-300 to read:</i></p> <p>22-300 Drip loops <u>(see Appendix B)</u></p> <p>Where exposed insulated conductors <u>cables</u> or non-metallic <u>jacketed</u> sheathed cables enter into or issue from a Category 1 or Category 2 location, the insulated conductors or cables shall pass through the wall of the location in an upward direction from the Category 1 or Category 2 location, and in the case of exposed insulated conductors or cables, shall be in non-combustible, non-absorptive insulating <u>sleeves</u>tubes.</p>	<p>SN4150-D</p>
<p><i>Revise Subrule 22-708 5) to read:</i></p> <p>22-708 Electrical equipment</p> <p>5) Areas provided with continuous positive pressure ventilation shall be interlocked to de-energize all electrical equipment not marked <u>not suitable</u> for use in an explosive gas atmosphere <u>in accordance with Table 18, when</u> in case the ventilating equipment is inoperative.</p>	<p>SN4724</p>

SECTION 26

Revise Rule 26-222 to read:

SN4730-26

26-222 Drainage of stored charge of capacitors

- 1) Capacitors shall be provided with a means of draining the stored charge.
- 2) The draining means shall be such that the residual voltage will be reduced to 50 V or less after the capacitor is disconnected from the source of supply
 - a) within 1 min in the case of capacitors rated at ~~750 V~~ 1000V or less; and
 - b) within 5 min in the case of capacitors rated at more than ~~750 V~~ 1000V.
- 3) The discharge circuit shall be
 - a) permanently connected to the terminals of the capacitor bank; or
 - b) provided with automatic means of connecting it on removal of voltage from the line.
- 4) The discharge circuit shall not be switched or connected by manual means.
- 5) Motors, transformers, or other electrical equipment capable of constituting a suitable discharge path, connected directly to capacitors without the interposition of a switch or overcurrent device, shall be considered to constitute a suitable discharge path.

Revise title of Rule 26-250 to read:

SN4730-26

26-250 Overcurrent protection for power and distribution transformer circuits rated over ~~750 V~~ 1000V

Revise title of Rule 26-252 to read:

SN4730-26

26-252 Overcurrent protection for power and distribution transformer circuits rated ~~750 V~~ 1000V or less, other than dry-type transformers

Revise title of Rule 26-254 to read:

SN4730-26

26-254 Overcurrent protection for dry-type transformer circuits rated ~~750 V~~ 1000V or less (see Appendix B)

Revise Subrule 26-256 1) to read:

SN4858
SN4925

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

- 1) The conductors supplying transformers shall have an ampacity
 - 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, not less than 125% of the rated

<p><u>primary current of the largest transformer and the sum of the remaining primary rated currents of all transformers in the group.</u></p> <p>2) The secondary conductors connected to transformers shall have an ampacity</p> <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), <u>and 5)</u> primary and secondary conductors shall be permitted to have an ampacity 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 not less than 125% of the rated primary and secondary current of the transformer at the utilization voltage.</p>	
<p><i>Revise Subrule 26-654 f) to read:</i></p> <p>26-654 Branch circuits for residential occupancies <u>(See Appendix B)</u></p> <p>Branch circuits for all residential occupancies (including dwelling units and single dwellings) shall meet the following requirements:</p> <p>.</p> <p>.</p> <p>f) a separate branch circuit shall be provided solely to supply power to each receptacle described in Rule 26-720 m).</p> <p><u>f) where required by the National Building Code of Canada, applicable provincial legislation or local by-laws, a dedicated branch circuit shall be provided with an outlet located within 2 metres of each applicable parking space for future permanently connected or cord connected electric vehicle supply equipment in accordance with Rule 86-104.</u></p>	SN4983
<p><i>Add new Subrule 26-700 9)</i></p> <p>26-700 General (see Appendix B)</p> <p>.</p> <p>.</p> <p><u>9) Receptacles in proximity to electrical heating devices shall have minimum clearances as specified in Table 67.</u></p>	SN4837
<p><i>Add new Rule 26-719 (to be inserted before Rule 26-720) to read:</i></p> <p>26-719 Special terminology</p> <p><u>In this Subsection, the following definitions shall apply:</u></p> <p><u>a) "finished wall" shall mean any wall finished to within 450 mm of the floor with drywall, wood panelling, or like material; and</u></p> <p><u>b) a "controlled outlet duplex receptacle" shall mean an outlet that has an integral</u></p>	SN4838

switching means to allow remote switching of the connected load;	
<p>Revise Rule 26-720 to read:</p> <p>26-720 General (see Appendices B and G) Receptacles for all residential occupancies (including dwelling units and single dwellings) shall meet the following requirements:</p> <p>a) for the purposes of this Rule, i) “finished wall” shall mean any wall finished to within 450 mm of the floor with drywall, wood panelling, or like material; and ii) a controlled outlet duplex receptacle shall mean an outlet that has an integral switching means to allow remote switching of the connected load; <u>ba)</u> for the purposes of this Rule, all receptacles shall be CSA configuration 5-15R or 5-20R (see Diagram 1);</p> <p>Renumber remaining items and delete item n)</p> <p>.</p> <p>.</p> <p>n) where required by the National Building Code of Canada, receptacles for use with electric vehicle supply equipment as specified in Rule 86-306 shall be provided for car spaces in a garage or carport serving buildings of residential occupancies.</p>	<p>SN4838 SN4983</p>
<p>Revise Subrule 26-744 10) to read:</p> <p>26-744 Supply connections for appliances (see Appendix B)</p> <p>.</p> <p>.</p> <p>10) A permanently or cord connected electric heating and cooking appliance provided with multiple points of connection shall be permitted to be supplied from more than one branch circuit, provided that</p> <p>a) the appliance is marked accordingly; and</p> <p>b) connection to the different branch circuits conforms to Rule 14-414</p>	<p>SN4804</p>

<h2>SECTION 28</h2>	
<p>Revise Rule 28-010 to read:</p> <p>28-010 Special Terminology In this Section, the following definitions shall apply:</p> <p>Locked rotor current rating — a current rating marked on electric equipment or, where not marked, deemed to be equal to six times the full load current rating from the nameplate of the equipment or from Table 44 or 45 for ac motors, or ten times the full load current from the nameplate of the equipment or from Table D2 for dc motors, as applicable.</p> <p>Semiconductor soft-start motor controller – an ac semiconductor motor controller, in which the starting function is limited to a voltage and/or current ramp</p>	<p>SN4886 SN4959</p>

<u>which may include controlled acceleration, and where the additional control function is limited to providing full on.</u>	
<p><i>Revise Rule 28-102 to read:</i></p> <p>28-102 Portable motors Connections to portable motors shall be permitted using flexible cord that has an-a serviceability not less than that of Type S-cord <u>extra-hard usage rating and is selected in accordance with Rule 12-102 4)</u>, unless the motor forms part of a motor-operated device.</p>	SN4824

SECTION 30	
<p><i>Revise Rule 30-310 to read:</i></p> <p>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.</p> <p>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</p> <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> i) a type selected in accordance with Rule 12-102 3) as being suitable for use in raceways; or ii) 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. <p>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.</p>	SN4833
<p><i>Revise Rule 30-912 to read:</i></p> <p>30-912 Wiring of recessed fluorescent luminaires Where a recessed fluorescent luminaire is installed in a suspended ceiling that creates a plenum or hollow space, wiring to the luminaire shall not be required to be in accordance with Rule 12-010 3), provided that</p> <ul style="list-style-type: none"> a) the luminaire is supplied by a flexible cord not exceeding 3 m in length and terminated with an attachment plug; 	SN4730-30

b) the flexible cord is rated for at least 90 °C; and c) the flexible cord is selected in accordance with Rule 12-402 1) for i) hard usage where the supply voltage does not exceed 300 V; and ii) extra-hard usage where the supply voltage does not exceed 750 V 1000V.	
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SECTION 34	
Revise Rule 34-102 to read: 34-102 Rating of disconnecting means and control devices Switches, flashers, and similar devices controlling neon supplies, transformers, and ballasts, and other power supply equipment shall be either designed for the purpose or have a current rating not less than twice the current rating of the neon supply, transformer, or ballasts. <u>the sign or outline lighting</u>	SN4909
Revise Rule 34-108 to read: 34-108 Supporting means 1) Poles, masts, standards, or devices designed as mechanical supports or used as electrical raceways shall be suitable <u>for the purpose, and insulated conductors and cables contained within shall be installed in a manner that prevents undue strain or damage where they enter or exit.</u> 2) <u>Electrical wiring connections and terminations inside poles, masts or standards shall be accessible.</u>	SN4910
Revise Rule 34-112 to read: 34-112 Protection of sign leads 1) Sign leads that pass through the surfaces, <u>walls</u> or partitions of the sign structures shall be protected by non-combustible moisture-absorption-resisting bushings <u>or sleeves.</u> 2) <u>Sign leads that penetrate through walls or roofs of buildings shall be sealed to prevent moisture infiltration in accordance with Rule 12-018.</u>	SN4910
Add new Rule 34-116 to read: <u>34-116 Conductors, cables and wiring for Signs and outline lighting circuits in ducts and plenum chambers</u> <u>Conductors, cables and wiring for signs and outline lighting shall not be placed in ducts or plenum chambers except as permitted by Rules 2-130 and 12-010</u>	SN4911
Revise Rule 34-200 to read: 34-200 Enclosures (see Appendix B) Neon supplies, switches, timers, relays, sequencing units, and other similar devices <u>All signs and outline lighting components</u> shall form part of an assembly or be enclosed in a suitable electrical enclosure.	SN4910

SECTION 42

Revise Rule 42-004 to read:

SN4789

42-004 Receptacles and attachment plugs (see Appendix B)

- 1) Where a welder is cord-connected, the rating of the receptacle and attachment plug shall be permitted to be less than the rating of the overcurrent devices protecting them, but not less than the rated primary current of the cord-connected welder.
- 2) Where a welder receptacle is installed, it shall be labelled to indicate
 - a) the receptacle is intended for welder connection use only;
 - b) the receptacle ~~supply~~ insulated branch circuit conductor AWG size;
 - c) the ~~supply~~ insulated branch circuit conductor composition (i.e., "Cu" or "Al");
 - d) the ~~supply~~ insulated branch circuit conductor insulation designation and its temperature rating; and
 - e) the ampere rating of the overcurrent device protecting the receptacle ~~supply~~ insulated branch circuit conductors based on the duty rating of the overcurrent device (i.e., 80% or 100%).

Revise Rule 42-006 to read:

SN4789

42-006 ~~Supply conductors~~ Conductor size for transformer arc welders and inverter welders

- 1) The insulated ~~supply~~ branch circuit conductors for an individual transformer arc welder or individual inverter welder shall have an ampacity of not less than the value obtained by multiplying the rated primary current of that welder in amperes by the applicable factor from Table 42A.
- 2) The insulated ~~supply~~ feeder conductors or branch circuit conductors for ~~a group of two or more~~ transformer arc welders or inverter welders shall have an ampacity not less than the sum of the currents determined for each welder in the group in accordance with Subrule 1) multiplied by a demand factor of
 - a) 100% of the two largest calculated currents of the welders in the group; plus
 - b) 85% of the third largest calculated current of the welders in the group; plus
 - c) 70% of the fourth largest calculated current of the welders in the group; plus
 - d) 60% of the calculated currents of all remaining welders in the group.
- ~~3) Lower values than those given in Subrule 2) shall be permitted in cases where the work is such that a high operating duty cycle for individual welders is impossible.~~
- 3) Where the installation is such that the sum of the currents of all welders that may operate at the same time is limited to a value less than that as calculated by Subrule 2), this value shall be permitted to be used to determine the ampacity of the

<p><u>insulated feeder and branch circuit conductors provided the calculated sum of the currents of all welders that may operate at the same time is based on their highest duty cycle rating.</u></p>	
<p><i>Revise Rule 42-008 to read:</i></p> <p>42-008 Overcurrent protection for transformer arc welders and inverter welders</p> <p>1) Each transformer arc welder and <u>or</u> inverter welder shall have overcurrent protection rated or set at not more than 200% of the rated primary current of the welder, unless the overcurrent device protecting the insulated supply <u>branch circuit</u> conductors meets this requirement.</p> <p>2) Each ungrounded conductor supplying a transformer arc welder and <u>or</u> 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</p> <ul style="list-style-type: none"> 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. <p>3) The maximum rating or setting of an overcurrent device, protecting a <u>a</u> feeder <u>conductors</u> supplying a group <u>two or more</u> of transformer arc welders and <u>or</u> inverter 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 42-008 <u>42-006 1)</u> for all other welders in the group.</p>	SN4789
<p><i>Revise Rule 42-012 to read:</i></p> <p>42-012 Conductors, protection, and control of motor-generator arc welders</p> <p>1) The Rules of Sections 4 and 28 shall apply to motor-generator arc welders, except that</p> <ul style="list-style-type: none"> a) the motors shall be permitted to be marked in amperes only; and b) where the controller is built in as an integral part of the motor-generator set, the controller need not be separately marked, provided that the necessary data are on the motor nameplate. <p>2) The insulated supply <u>branch circuit</u> conductors for an individual motor-generator arc welder shall have an ampacity of not less than the value obtained by multiplying the rated primary current of that welder in amperes by the applicable factor from Table 42B.</p> <p>3) The insulated supply <u>feeder or branch circuit</u> conductors for a group of <u>two or more</u> motor-generator arc welders shall have an ampacity not less than the sum of the currents determined for each welder in the group in accordance with Subrule 2) multiplied by a demand factor of</p> <ul style="list-style-type: none"> a) 100% of the two highest calculated currents of the welders in the group; plus 	SN4789

<p>b) 85% of the third largest calculated current of the welders in the group; plus c) 70% of the fourth largest calculated current of the welders in the group; plus d) 60% of the calculated currents for all remaining welders in the group.</p> <p>4) Lower values than those given in Subrule 3) shall be permitted in cases where the work is such that a high operating duty cycle for individual welders is impossible.</p>	
<p><i>Revise Rule 42-014 to read:</i></p> <p>42-014 Supply conductors <u>Conductor size</u> for resistance welders The ampacity of insulated supply <u>branch circuit</u> conductors shall be as follows:</p> <p>a) where an individual seam resistance welder or an individual automatically fed resistance welder is operated at different times at different values of primary current or duty cycle, the insulated supply <u>branch circuit</u> conductors shall have an ampacity of not less than 70% of the rated primary current of the welder;</p> <p>b) where an individual manually operated non-automatic resistance welder is operated at different times at different values of primary current or duty cycle, the ampacity of the insulated supply <u>branch circuit</u> conductors shall be not less than 50% of the rated primary current of the welder;</p> <p>c) where an individual resistance welder operates at known and constant values of actual primary current and duty cycle, the insulated supply <u>branch circuit</u> conductors shall have an ampacity of not less than the value obtained by multiplying the actual primary current by the applicable factor from Table 42C; and</p> <p>d) where insulated <u>feeder or branch circuit</u> conductors supply two or more resistance welders, the insulated conductors shall have an ampacity of not less than the sum of</p> <p>i) the value for the welder having the largest conductor ampacity as calculated from Items a), b), and c); and</p> <p>ii) 60% of the <u>calculated</u> conductor ampacities obtained for all the other welders.</p>	SN4789
<p><i>Revise Rule 42-016 to read:</i></p> <p>42-016 Overcurrent protection</p> <p>1) Every resistance welder shall have overcurrent protection rated or set at not more than 300% of the rated primary current of the welder unless the overcurrent device protecting the insulated supply <u>branch circuit</u> conductors gives equivalent protection.</p> <p>2) Every ungrounded conductor of a resistance welder shall have overcurrent protection rated or set at not more than 300% of the 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</p> <p>a) the nearest standard rating of the overcurrent device is less than the rating or setting required by this Rule; or</p> <p>b) the rating or setting required by this Rule results in too frequent opening of the overcurrent device.</p>	SN4789

3) The maximum rating or setting of an overcurrent device protecting a feeder supplying a group of <u>two or more</u> resistance 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 42-014 <u>a), b), and c)</u> for all other welders in the group.	
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SECTION 52	
<p><i>Revise Rule 52-000 to read:</i></p> <p>52-000 Scope (See Appendix B)</p> <p>1) This Section applies to the installation of X-ray and other diagnostic imaging equipment operating at any frequency and supplements or amends the general requirements of this Code.</p> <p>2) Nothing in this Section shall be construed as specifying safeguards against direct, stray, or secondary radiation emitted by the equipment.</p>	SN4295

SECTION 54	
<p><i>Revise item 54-700 f) to read:</i></p> <p>54-700 Direct buried systems</p> <p>Where community antenna distribution cables are direct buried, the sheath shall be suitable for direct burial and the cables shall be</p> <p>.</p> <p>f) equipped with a metal shield when placed in a common trench involving random separation with power supply cables or wiring operations at 750 V <u>1000 V</u> or less, in which case the community antenna distribution conductors shall not cross under the supply cables.</p>	SN4730-54

SECTION 56	
<p><i>Revise Rule 56-200 to read:</i></p> <p>56-200 Non-conductive optical fiber cables (see Appendix B)</p>	SN4730-56

<p>1) Non-conductive optical fiber cables shall not occupy the same raceway with insulated conductors of electric lighting, power, or Class 1 circuits, unless</p> <ul style="list-style-type: none"> a) the non-conductive optical fiber cables are functionally associated with the electric lighting, power, or Class 1 circuit not exceeding 750 V 1000 V; and b) the number and size of non-conductive optical fiber cables and other types of insulated conductors in the raceway meet with the applicable requirements for the electrical wiring method. <p>2) Non-conductive optical fiber cables shall not occupy the same cabinet, panel, outlet box, or similar enclosure housing the electric terminals of a lighting, power, or Class 1 circuit, unless</p> <ul style="list-style-type: none"> a) the non-conductive optical fiber cables are functionally associated with the lighting, power, or Class 1 circuit not exceeding 750 V 1000 V, and the number and size of non-conductive optical fiber cables and other types of insulated conductors in the enclosure meet with the applicable requirements for the electrical wiring method; or b) the non-conductive optical fiber cables are factory assembled in the enclosure. <p>3) Notwithstanding Subrules 1) and 2), for industrial establishments only, where conditions of maintenance and supervision ensure that only authorized persons service the installation, non-conductive optical fiber cables shall be permitted to occupy the same raceway, cabinet, panel, outlet box, or similar enclosure as electric power, control, or instrumentation cables.</p>	
<p><i>Revise Rule 56-204 to read:</i></p> <p>56-204 Hybrid cables</p> <p>1) Optical fibers shall be permitted within the same hybrid cable for electric lighting, power, or Class 1 circuit conductors not exceeding 750 V 1000 V, or within the same hybrid cable for Class 2, communications, community antenna, or radio and television circuit conductors, provided that the functions of the optical fibers and the insulated conductors are associated.</p> <p>2) Hybrid cables shall be classed as cables in accordance with the type of circuit in the insulated conductors and shall be installed in accordance with the Code Rules applicable to the insulated circuit conductors.</p>	SN4730-56
<h2>SECTION 60</h2>	
<p><i>Revise Rule 60-322 to read:</i></p> <p>60-322 Type CFGC <u>CMUC</u> under-carpet wiring system Rules</p> <p>Rules 60-324 to 60-334 apply to the installation of communication flat <u>under-carpet</u> cable type (CFGC <u>CMUC</u>) systems.</p>	SN4898
<p><i>Revise Rule 60-324 to read:</i></p>	SN4898

<p>60-324 Use permitted</p> <p>Type GFCCMUC system wiring shall be permitted to be used</p> <ul style="list-style-type: none"> a) only under carpet squares not exceeding 750 mm, and any adhesive used shall be of the release type; b) as an extension of conventional wiring to serve areas or zones, and each run of wiring from the transition point shall not exceed 15 m; c) on hard, smooth, continuous floor surfaces made of concrete if sealed, ceramic, composition flooring, wood, or similar materials; d) in dry or interior damp locations; and e) on floors heated in excess of 30 °C when the Type GFCCMUC system is marked for that purpose. 	
<p><i>Revise Rule 60-326 to read:</i></p> <p>60-326 Use prohibited</p> <p>Type GFCCMUC system wiring shall not be used</p> <ul style="list-style-type: none"> a) outdoors or in wet locations; b) where subject to corrosive vapours or liquids; c) in hazardous locations; d) in dwelling units; e) in hospitals or institutional buildings except in office areas; f) on walls except when entering the transition point; or g) under permanent-type partitions or walls. 	SN4898
<p><i>Revise Rule 60-328 to read:</i></p> <p>60-328 Floor protective coverings</p> <p>Type GFCCMUC system wiring shall be covered with abrasion-resistant tape, secured to the floor, so that all cables, corners, and bare conductor ends are completely covered.</p>	SN4898
<p><i>Revise Rule 60-330 to read:</i></p> <p>60-330 Coverings</p> <p>Type GFCCMUC system wiring shall be permitted to cross over or under each other, and over or under power supply Type FCC system wiring, provided that there is a layer of grounded metal shielding between the FCC and GFCCMUC system cables as required in Rule 12-820.</p>	SN4898
<p><i>Revise Rule 60-332 to read:</i></p> <p>60-332 System height</p> <p>Type GFCCMUC system wiring shall not be stacked on top of each other except as required to enter the transition point.</p>	SN4898
<p><i>Revise Rule 60-334 to read:</i></p> <p>60-334 Grounding of shields</p> <p>Type GFCCMUC system wiring equipped with a metal shield shall be grounded.</p>	SN4898
<p><i>Revise Subrule 60-510 2) to read:</i></p>	SN4730-60

<p>2) Where the light or power conductors are bare, the communication cables shall be in the lower position and, in order to provide adequate working space, the clearance given in Subrule 1) shall be increased to a minimum of 600 mm from a conductor operating at 750 V <u>1000 V</u> or less.</p>	
<p><i>Revise item 60-600 f) to read:</i></p> <p>Where communication cables are direct buried, they shall be suitable for direct burial and</p> <p>f) not be placed in a common trench involving random separation with power supply conductors operating at over 750 V <u>1000 V</u>, except when the applicable requirements of CSA C22.3 No. 7 are adhered to and the operating voltage of the power supply cables does not exceed 22 kV line-to-ground; and</p>	<p>SN4730-60</p>

<h2>SECTION 62</h2>	
<p><i>Revise Rule 62-126 to read:</i></p> <p>62-126 Field repair, modification, or assembly of series trace heater sets (see Appendix B)</p> <p>1) Notwithstanding Rule 62-124 1), series trace heater sets shall be permitted to be altered or repaired as described in Subrules 2) and 3) by qualified persons trained by the manufacturer.</p> <p>2) For applications at industrial establishments where conditions of maintenance and supervision ensure that the work is completed by qualified persons, field repairs, splices, modifications, or assemblies shall be permitted, provided that</p> <p>a) <u>field assembly component</u> repair, splice, and termination kits used are supplied by <u>marked for use with</u> the original manufacturer of the trace heater <u>set</u>;</p> <p>b) for field repairs,</p> <p>i) the total length of the heating portion of the series trace heater set, or the sum total length of the heat-ing portion of all series trace heater sets connected in series, is not changed by more than 3% of the</p> <p>A) original length; or</p> <p>B) length that has been modified as permitted in Item c);</p> <p>ii) a permanent record of all repairs is retained by the owner; and</p> <p>iii) tests for insulation resistance are made; and</p> <p>c) for field modifications or assembly,</p> <p>i) a permanent tag with the new design information is installed in addition to the original tag;</p> <p>ii) a permanent record of the new design information is retained in addition to the original design;</p>	<p>SN4970</p>

<ul style="list-style-type: none"> iii) tests for insulation resistance and verification of the finished trace heater set resistance are made; iv) the design, or modifications to the design, are done by a qualified person and reviewed by the trace heater manufacturer; and v) the electrical rating is permanently marked <ul style="list-style-type: none"> A) in or on the junction box that is provided as part of the system; B) on the trace heater; or C) on a permanent tag within 75 mm of a power connection or power connection fitting. <p>3) For other than industrial establishments, repairs of series trace heater sets shall be permitted for embedded applications such as concrete, mortar, or asphalt, provided that</p> <ul style="list-style-type: none"> a) the total installed length of the heating portion of the series trace heater set, or the sum total length of the heating portion of all series trace heater sets connected in series, is not changed by more than 3% from its original installed value; b) <u>field assembly component</u> they are repaired with repair kits supplied by are marked for use with the original manufacturer the trace heater set; c) repair tags are supplied by the original manufacturer <u>of the field assembly component kits that are used for the repair;</u> d) the repair tag has the revised series trace heater set's specifications, ratings, and date of repair permanently marked, and it is attached beside the original tags; e) the original tags and subsequent repair tags remain attached; f) a permanent record of all repairs is retained by the owner; and g) tests for insulation resistance are made. 	
<p><i>Revise Rule 62-216 to read:</i></p> <p>62-216 Trace heater sets and heating panel sets for ceiling and wall installations (see Appendix B).</p> <ul style="list-style-type: none"> 1) Trace heater sets and heating panel sets shall be installed parallel to the joists, studs, or nailing strips, with clearance not less than 13 mm on each side of the joist, stud, or nailing strip. 2) After the trace heater sets and heating panel sets are installed, the heater surface facing the space to be heated shall be covered with gypsum board or acceptable cementitious materials not exceeding 13 mm in thickness. 3) Trace heater sets shall be permitted to cross at the ends of the joists and studs, no further than 150 mm from the ends of the joists or studs. 4) Trace heater sets and heating panel sets shall be permitted for installation less than 50 mm from the wall or ceiling finished surface <u>provided they meet the requirements of Table 67.</u> <ul style="list-style-type: none"> a) for walls, provided they are <ul style="list-style-type: none"> i) marked "mechanically protected"; ii) installed up to a maximum height of 1.2 m above the finished floor; and iii) protected by a ground fault circuit interrupter of the Class A type; and b) for ceilings, provided they are <ul style="list-style-type: none"> i) marked "mechanically protected"; or ii) protected by a ground fault circuit interrupter of the Class A type. 5) Notwithstanding Subrule 2), trace heater sets and heating panel sets shall be permitted to be installed without gypsum board or cementitious materials when provided with mechanical protection. 	SN4927

SECTION 64	
<p><i>Revise Rule 64-064 to read:</i></p> <p>64-064 Wiring methods</p> <p>1) Except as provided for by Rule 64-210, insulated conductors between dc renewable energy sources and an inverter, installed inside a building or structure, shall be contained in metallic raceways, metal enclosures, or cables with a metal armour or metal sheath.</p> <p>2) Wiring methods as required by Subrule 1) shall be provided from the point of penetration of the surface of the building or structure to the first readily accessible disconnecting means.</p>	SN4903
<p><i>Revise Subrules 64-210 to read [re-arrange Subrules 7) and 8) and revise 9)]:</i></p> <p>64-210 Wiring method (see Appendix B) Subrules 1) through 6) remain unchanged</p> <p>.</p> <p>.</p> <p>78) Type RPV conductors installed in a raceway shall be permitted for the interconnection of the solar photovoltaic system.</p> <p>87) Cables used for solar photovoltaic installations on or above a building shall meet the flame spread requirements of the National Building Code of Canada or local building legislation.</p> <p>9) Type RPV insulated conductors and Type RPVU cables installed inside a building or structure shall be contained in a <u>metal</u> raceways.</p>	SN4903
<p><i>Revise Rule 64-1000 to read:</i></p> <p>64-1000 Scope (see Appendix B) Rules 64-1002 to 64-1004 apply to the installation of energy storage systems utilizing batteries with a storage capacity exceeding 1 kWh.</p>	SN4930

SECTION 76	
<p><i>Revise Rule 76-002 to read:</i></p> <p>76-002 Conductors <u>and cables</u></p> <p>1) Conductors <u>and cables</u> shall be</p> <p>a) of a type in accordance with Section 12; or</p> <p>b) power supply cable or flexible cord of the outdoor type suitable for extra-hard usage as selected in accordance with Rule 12-402 1) or 12-406 (1).</p>	SN3961-76

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| <p>2) Conductors shall be insulated except as permitted by Rules 6-308, 10-112, and 10-116.</p> <p>3) Service conductors <u>and cables</u> shall be installed in accordance with Sections 6, 10, and 36.</p> <p>4) Overhead conductors <u>cables</u> shall be aially supported on poles or other equally substantial means with the spacing of supports not to exceed the maximum span length allowable for the type of conductors <u>cables</u> used.</p> | |
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SECTION 86

Delete definition of Electric vehicle (relocated to Section 0)

SN4801-86

~~**Electric vehicle** — an automotive-type vehicle for use on public roads that~~

~~a) — includes automobiles, buses, trucks, vans, low-speed vehicles, motorcycles, and similar vehicles powered by one or more electric motors that draw current from a fuel cell, photovoltaic array, rechargeable energy storage system (such as a battery or capacitor), or other source of electric current;~~

~~b) — includes plug-in hybrid electric vehicles (PHEVs); and~~

~~c) — excludes off-road electric vehicles, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, and mobility scooters for persons with disabilities.~~

Tables	
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Revise Table 1 to read:

SN4889
SN4394-4

Table 1

Ampacities for single copper conductors, bare, covered, or insulated, rated not more than 5000 V and unshielded, in free air (based on an ambient temperature of 30 °C*)
(See Rules 4-004, 4-006, 26-142, 42-008, and 42-016 and Tables 5A, 5B, and 19.)

Size AWG or kcmil	Ampacity†						
	60 °C‡	75 °C‡	90 °C‡§	105 °C‡ See Note (3)	110 °C‡ See Note (3)	125 °C‡ See Note (3)	200 °C‡ See Note (3)
14**	25	30	35	40	40	40	50
12**	30	35	40	45	45	45	55
10**	40	50	55	65	65	65	80
8	60	70	80	90	90	95	115
6	80	95	105	115	120	130	155
4	105	125	140	155	160	170	205
3	120	145	165	180	185	195	240
2	140	170	190	210	215	230	280
1	165	195	220	240	245	265	320
0	195	230	260	285	290	310	375
00	220	265	300	325	335	355	435
000	260	310	350	380	390	420	510
0000	300	360	405	445	455	485	590

250	340	405	455	495	510	545	—		
262	355	420	475	515	530	570	=		
300	370	445	500	545	560	600	—		
313	385	460	520	570	585	620	=		
350	425	505	570	625	640	680	—		
373	450	535	605	665	680	725	=		
400	455	545	615	675	690	735	—		
444	490	585	660	720	740	790	=		
500	520	620	700	765	785	835	—		
535	545	650	735	805	825	880	=		
600	580	690	780	850	870	930	—		
646	610	725	820	895	920	980	=		
700	630	755	850	930	955	1020	—		
750	655	785	885	965	990	1060	—		
777	675	805	910	995	1020	1090	=		
800	680	815	920	1005	1030	1100	—		
900	730	870	980	1075	1100	1175	—		
929	745	890	1005	1095	1125	1200	=		
1000	785	935	1055	1150	1180	1260	—		
1111	825	985	1110	1215	1245	1325	=		
1250	890	1065	1200	1310	1345	—	—		
1500	985	1175	1325	1450	1485	—	—		
1750	1070	1280	1445	1580	1620	—	—		

2000	1160	1385	1560	<u>1705</u>	1750	—	—
Col. 1	Col. 2	Col. 3	Col. 4	<u>Col. 5</u>	<u>Col. 6</u> Col. 5	<u>Col. 7</u> Col. 6	<u>Col. 8</u> Col. 7

* See Table 5A for the correction factors to be applied to the values in Columns 2 to 7 for ambient temperatures over 30 °C.

† The ampacity of single-conductor aluminum-sheathed cable is based on the type of insulation used on the copper conductor.

‡ These are maximum allowable conductor temperatures for single insulated conductors run in free air and may be used in determining the ampacity of other insulated conductor types listed in Table 19 that are run in free air, as follows: From Table 19 determine the maximum allowable conductor insulation temperature for that particular type, then from this Table determine the ampacity under the column of corresponding temperature rating.

§ These ratings are based on the use of 90 °C insulation on the emerging conductors and for sealing. Where a deviation has been allowed in accordance with Rule 2-030, mineral-insulated cable may be used at a higher temperature without a decrease in the allowable ampacity, provided that the insulation, sealing material, and any jacketing material are suitable for the higher temperature.

~~** See Rule 14-104.2)~~

Notes:

- 1) The ratings of this Table may be applied to a conductor mounted on a plane surface of masonry, plaster, wood, or any material having a conductivity not less than 0.4 W/(m °C).
- 2) See Table 5B for correction factors where from two to four insulated conductors are present and in contact.
- 3) These ampacities apply to bare conductors or under special circumstances where the use of insulated conductors having this temperature rating is acceptable.

Revise Table 2 to read:

SN4394-4

Table 2
Ampacities for not more than three insulated copper conductors, rated not more than 5000 V and unshielded, in raceway or cable (based on an ambient temperature of 30 °C*)
(See Rules 4-004, 26-142, 42-008, and 42-016 and Tables 5A, 5C, 19, and D3.)

Size AWG or kcmil	Ampacity†,††						
	60 °C‡	75 °C‡	90 °C‡**	105 °C‡ See Note	110 °C‡ See Note	125 °C‡ See Note	200 °C‡ See Note
14§	15	20	25	25	25	30	35
12§	20	25	30	30	30	35	40
10§	30	35	40	45	45	45	60
8	40	50	55	65	65	65	80
6	55	65	75	80	80	90	110
4	70	85	95	100	105	115	140
3	85	100	115	120	125	135	165
2	95	115	130	140	145	155	190
1	110	130	145	160	165	175	215
0	125	150	170	185	190	200	245
00	145	175	195	215	220	235	290
000	165	200	225	250	255	270	330
0000	195	230	260	285	290	310	380
250	215	255	290	310	320	345	—

	262	225	270	305	330	340	365	—		
	300	240	285	320	350	360	385	—		
	313	245	295	330	360	370	395	—		
	350	260	310	350	380	390	420	—		
	373	280	335	375	410	420	450	—		
	400	280	335	380	415	425	450	—		
	444	300	360	405	445	455	485	—		
	500	320	380	430	470	480	510	—		
	535	335	400	450	495	505	540	—		
	600	350	420	475	515	530	565	—		
	646	370	445	500	545	560	600	—		
	700	385	460	520	565	580	620	—		
	750	400	475	535	585	600	640	—		
	777	410	490	550	600	615	660	—		
	800	410	490	555	605	620	660	—		
	900	435	520	585	640	655	700	—		
	929	440	530	595	650	665	710	—		
	1000	455	545	615	675	690	735	—		
	1111	470	565	635	690	710	755	—		
	1250	495	590	665	725	745	—	—		
	1500	525	625	705	770	790	—	—		
	1750	545	650	735	800	820	—	—		

2000	555	665	750	820	840	—	—
Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6 Col. 5	Col. 7 Col. 6	Col. 8 Col. 7

* See Table 5A for the correction factors to be applied to the values in Columns 2 to 7 for ambient temperatures over 30 °C.

† The ampacity of aluminum-sheathed cable is based on the type of insulation used on the copper conductors.

‡ These are maximum allowable conductor temperatures for one, two, or three insulated conductors run in a raceway, or two or three insulated conductors run in a cable, and may be used in determining the ampacity of other conductor types listed in Table 19, which are so run, as follows: From Table 19 determine the maximum allowable conductor insulation temperature for that particular type, then from this Table determine the ampacity under the column of corresponding temperature rating.

§ See Rule 14-104 2).

** For mineral-insulated cables, these ratings are based on the use of 90 °C insulation on the emerging conductors and for sealing. Where a deviation has been allowed in accordance with Rule 2-030, mineral-insulated cable may be used at a higher temperature without a decrease in the allowable ampacity, provided that the insulation, sealing material, and any jacketing material are suitable for the higher temperature.

†† See Table 5C for the correction factors to be applied to the values in Columns 2 to 7 where there are more than three insulated conductors in a run of raceway or cable.

Note:

These ampacities apply to bare conductors or under special circumstances where the use of insulated conductors having this temperature rating is acceptable.

Revise notes to Table 3 to read:

~~§ See Rule 14-104 2)~~

SN4889

Revise Table 18 to read:

SN4972

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*
	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, Exi
	EPL††	Ga
Zone 1	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 C22.2 No. 293.1, with EPL Gb**
	Inherently safe optical radiation	op is, with EPL Gb**

	Optical system with interlock Protected optical radiation EPL††	op sh, <i>with EPL Gb**</i> op pr, <i>with EPL Gb**</i> 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) 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 EPL†† Other electrical apparatus‡	nA, nC, nL, nR pz, pzc ic dc ec oc mc 60079-30-1, <i>with EPL Gc**</i> CSA C22.2 No. 293.1, <i>with EPL Gc**</i> CSA C22.2 No. 293.3, <i>with EPL Gc**</i> op is, <i>with EPL Gc**</i> op sh, <i>with EPL Gc**</i> op pr, <i>with EPL Gc**</i> Gc	
Zone 20	Equipment suitable for use in Class II, Division 1 Intrinsic safety (Group III) Intrinsically safe	ia Intrinsically safe, IS, I.S., Exi, Exia, <i>for Class II</i>	

	Protection by enclosure (Group III)	ta	
	Encapsulation (Group III)	ma	
	Inherently safe optical radiation	op is, with EPL Da**	
	Optical system with interlock	op sh, with EPL Da**	
	EPL††	Da	
<hr/>			
Group IIIA only	Equipment suitable for use in Class III, Division 1		
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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**	
	Inherently safe optical radiation	op is, with EPL Db**	
	Optical system with interlock	op sh, with EPL Db**	
	Protected optical radiation	op pr, with EPL Db**	
	EPL††	Db	
<hr/>			
Group IIIA only	Equipment suitable for use in Class III, Division 1		
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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		
	Equipment in Dust Protected Enclosures		

	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 EPL†† Other electrical apparatus‡	ic tc pz, pzc mc 60079-30-1, <i>with EPL Dc**</i> CSA C22.2 No. 293.1, <i>with EPL Dc**</i> CSA C22.2 No. 293.3, <i>with EPL Dc**</i> op is, <i>with EPL Dc**</i> op sh, <i>with EPL Dc**</i> op pr, <i>with EPL Dc**</i> Dc	
Group IIIA only	Equipment suitable for use in Class III, Division 2		
Class I, Division 1	Equipment marked for use in Class I, Division 1† Intrinsically safe Purged equipment to NFPA 496 Purged equipment to NFPA 496 Equipment suitable for use in Zone 0 Intrinsic safety (Group II) Encapsulation (Group II) Flameproof (Group II) Inherently safe optical radiation Optical system with interlock	Intrinsically safe, IS, I.S., Exi, Exia, <i>for Class I</i> Type X, <i>for Class I</i> Type Y, <i>for Class I</i> ia ma da* op is, <i>with EPL Ga**</i> op sh, <i>with EPL Ga**</i>	

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

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

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

	<p>Impedance heating</p> <p>Inherently safe optical radiation</p> <p>Optical system with interlock</p> <p>Protected optical radiation</p> <p>Other electrical apparatus†</p>	<p>CSA C22.2 No. 293.3, with EPL Dc**</p> <p>op is, with EPL Da, Db, or Dc**</p> <p>op sh, with EPL Da, Db, or Dc**</p> <p>op pr, with EPL Db or Dc**</p>	
<p>* “da” is limited to sensors of portable combustible gas detectors.</p> <p>†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.</p> <p>‡ “Other electrical apparatus” means electrical apparatus complying with the requirements of a recognized Standard for industrial electrical apparatus that does not in normal service</p> <p>a) have ignition-capable hot surfaces; or</p> <p>b) produce incendive arcs or sparks.</p> <p>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).</p> <p>§ For use in Class II and Class III, such (Zone acceptable) equipment is subject to the limitation of</p> <p>a) Rules J18-054 2) and J18-054 3) for Class II; and</p> <p>b) Rule J18-054 4) for Class III.</p> <p>Group IIIA equipment is not suitable for use in Class II locations.</p> <p>** Equipment marked with these types of protection is available in multiple levels of protection that are not specifically identified within the Ex marking.</p> <p>†† 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.</p> <p>‡‡ 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.</p> <p>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.</p>			

Revise Table 11A to read:

SN4878

Table 11A
Conditions of use, voltage, and temperature ratings of flexible cords, heater cords, equipment wire, portable power cables, elevator cables, stage lighting, and festoon cables
 (See Rule 12-102.)

(Note: This is not Table 11A in its entirety. Only affected columns of Table 11A are shown below)

Group or Classification (kind)		Portable power cables		
CSA Type designation		SH	SHD, SHD-GC, SHD-BGC and SHD-SP	SHD-R
Voltage ratings, V		5000, 8000, 15 000, 25 000, 35 000	2000, 5000, 8000, 15 000, 25 000, 35 000	2000
Temperature ratings, °C		90	90	90
Temperature ratings when exposed to oil, °C		-	-	-
Location	Dry	✓	✓	✓
	Damp	✓	✓	✓
	Wet	✓	✓	✓
	Exposed to oil	-	-	-
Where used	Not for hard usage	✓	✓	✓
	For hard usage	✓	✓	✓
	For extra-hard usage	✓	✓	✓
When	In a raceway Class 1 circuit (Section 16)	-	-	-
	Exposed to sunlight	-	-	-

Revise Table 29 to read:

SN4959

Table 29

Rating or setting of overcurrent devices for the protection of motor branch circuits

(See Rules 28-200, 28-206, 28-208, and 28-308 and Table D16.)

Type of motor	Full load current, %		
	Maximum fuse rating		Maximum setting inverse-time circuit breaker
	Time-delay* fuses	Non-time- delay	

Alternating current					
Single-phase all types	175	300	250		
Squirrel-cage and synchronous:					
Full-voltage, resistor and , reactor starting and semiconductor soft-starter motor controller starting	175	300	250		
Auto-transformer Autotransformer and star delta starting:					
Not more than 30 A	175	250	200		
More than 30 A	175	200	200		
Wound rotor	150	150	150		
Direct current	150	150	150		
<p>* Includes time-delay "D" fuses referred to in Rule 14-200.</p> <p>Notes:</p> <p>1) Synchronous motors of the low-torque, low-speed type (usually 450 rpm or lower), such as those used to drive reciprocating compressors, pumps, etc., and that start up unloaded, do not require a fuse rating or circuit breaker setting in excess of 200% of full load current.</p> <p>2) For the use of instantaneous-trip (magnetic only) circuit breakers in motor branch circuits, see Rule 28-210.</p>					

<p><i>Revise Title of Table 42A to read:</i></p> <p style="text-align: center;">Table 42A</p> <p style="text-align: center;">Multiplication factors to determine the size of insulated supply <u>branch circuit</u> conductors for individual transformer arc welders and inverter welders</p> <p style="text-align: center;">(See Rule 42-006.)</p>	SN4789
<p><i>Revise Title of Table 42B to read:</i></p> <p style="text-align: center;">Table 42B</p> <p style="text-align: center;">Multiplication factors to determine the size of insulated supply <u>branch circuit</u> conductors for individual motor-generator arc welders</p> <p style="text-align: center;">(See Rule 42-012.)</p>	SN4789
<p><i>Revise Title of Table 42C to read:</i></p> <p style="text-align: center;">Table 42C</p> <p style="text-align: center;">Multiplication factors to determine the size of insulated supply <u>branch circuit</u> conductors for individual resistance welders</p> <p style="text-align: center;">(See Rule 42-014.)</p>	SN4789

Revise Table 45 to read:

SN4862

Table 45
Single-phase ac motors
 (See Rules 28-010 and 28-704.)

Single-phase ac motors full load current, A
 [see Notes 1) to 43)]

hp rating	115 V	<u>200 V</u>	<u>208 V</u>	230 V
1/6	4.4	<u>2.5</u>	<u>2.4</u>	2.2
1/4	5.8	<u>3.3</u>	<u>3.2</u>	2.9
1/3	7.2	<u>4.1</u>	<u>4</u>	3.6
1/2	9.8	<u>5.6</u>	<u>5.4</u>	4.9
3/4	13.8	<u>7.9</u>	<u>7.6</u>	6.9
1	16	<u>9.2</u>	<u>8.8</u>	8
1-1/2	20	<u>11.5</u>	<u>11</u>	10
2	24	<u>13.8</u>	<u>13.2</u>	12
3	34	<u>19.6</u>	<u>18.7</u>	17
5	56	<u>32.2</u>	<u>30.8</u>	28
7-1/2	80	<u>46</u>	<u>44</u>	40
10	100	<u>57.5</u>	<u>55</u>	50

Notes:

~~1) For full load currents of 208 and 200 V motors, increase the corresponding 230 V motor full load current by 10 and 15%, respectively.~~

~~2)~~ These values of motor full load current are to be used as guides only. Where exact values are required (e.g., for motor protection), always use the values on the motor nameplate.

~~3)~~ These values of full load current are for motors running at their usual speeds and motors with normal torque characteristics. Motors built for especially low speeds or high torques may have higher full load currents, and multi-speed motors have full load current varying with speed, in which case the nameplate current ratings shall be used.

~~4)~~ The voltages listed are rated motor voltages. ~~Corresponding nominal system voltages are 120 and 240 V.~~ Refer to CSA C235.

Revise Table 50 to read:

SN4730-26

Table 50
Transformers rated over ~~750 V~~ 1000V having primary
and secondary overcurrent protection
 (See Rule 26-250.)

Transformer rated impedance	Maximum setting or rating of overcurrent device as a percentage of rated current of transformer				
	Primary side		Secondary side		
	Over 750 V 1000V		Over 750 V 1000V		750 V 1000V or less
	Circuit breaker setting, %	Fuse rating, %	Circuit breaker setting, %	Fuse rating, %	Circuit breaker setting or fuse rating, %
Not more than 7.5%	600	300	300	150	250
More than 7.5% and not more than 10%	400	200	250	125	250

Revise Table 65 to read:

SN4836

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								Submersible	
	1	2	5	12* ^{††}	12K [†] ^{††}	13 ^{††}	3 ^{††}	3X ^{††}	3R ^{††}	3RX ^{††}	3S ^{††}	3SX ^{††}	4 ^{††}	4X ^{††}	6 ^{††}	6P ^{††}
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	—	—	—	—	—	—	—	—	—	—	—	—	X	X	✓	✓
Corrosive agents	—	—	—	—	—	—	—	✓	—	✓	—	✓	—	✓	—	✓
Occasional temporary submersion	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓	✓
Occasional prolonged submersion	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	✓
Oil and coolant seepage	—	—	—	✓	✓	✓	—	—	—	—	—	—	—	—	—	—
Oil or coolant spraying and splashing	—	—	—	—	—	✓	—	—	—	—	—	—	—	—	—	—
Rain, snow and sleet, and external formation of ice [‡]	—	—	—	—	—	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rain, snow and sleet and 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.

^{††} In addition to the Type designation, enclosures may have an optional ancillary marking "PW" denoting the enclosure is suitable for exterior cleaning with high-pressure power washers. (Example 4X-PW)

Revise Table 67 to read:

SN4927
SN4969

Table 67
Clearance requirements for installed space heating systems
 (See Rule 62-200.)

Heating system type and location	Minimum Distance, mm	Clearance Details
All systems, including heating fixtures; trace heater sets; heating panel sets; heating device sets	100	From protruding water pipes and ducts
	200	From electrical outlets to which a luminaire or other heat-producing equipment is liable to be connected. From receptacles* and switches (see note) . From other heating devices, unless otherwise rated.
Floor systems above sub-floors, for trace heater sets or heating panel sets	50	From walls, partitions, and permanently fixed Cabinetry.
Floor systems under sub-floors, for trace heating sets or heating panel sets	50	Air gap between bottom of subfloor and heating device sets, unless otherwise rated.
Wall systems for trace heater sets or heating panel sets	0	From the finished wall surface if located not more than 1.2 m above the floor , provided it is marked "Mechanically Protected" and protected by a Class A GFCI.
	50	From the top and side surfaces of permanently fixed cabinetry. <u>From the floor in shower stalls.</u> From Behind the a finished wall surface (both sides of wall) .
	150	From ceiling, floor (other than in shower stalls) , and other wall corners. From partitions, bottom surfaces of permanently fixed cabinetry, door and window frames, or other thermal obstructions, unless otherwise rated.

Ceiling systems for trace heater sets or heating panel sets	0	From the finished ceiling surface, provided it is marked "mechanically protected" or protected by a Class A GFCI.
	50	From glass walls and window walls. From Above the finished ceiling surface.
	150	From corners, partitions, and adjacent surfaces, and not overlapping permanently fixed cabinetry or other thermal obstructions, unless otherwise rated.
<p>Note* Surface mounted electric heaters such as baseboard heaters, shall have a minimum clearance of 1.2 m below receptacles, however if the heaters are guarded to prevent direct contact with hot surfaces, then only the 200 mm clearance is required.</p>		

Revise Table 5D to read:

Table 5D
Current rating correction factors where spacings are maintained
(in ventilated and ladder-type cable trays)
 (See Rule 4-004 ~~and Table 12E.~~)

Number of insulated conductors or cables horizontally	1	2	3	4	5	6 <u>or more</u>
Number vertically (layers)						
1	1.00	0.93	0.87	0.84	0.83	0.82
2	0.89	0.83	0.79	0.76	0.75	0.74

SN4860
 SN4850

Revise Table 12 to read:

SN4893

Table 12
Ampacity of flexible insulated copper conductor cord and equipment wire
(based on an ambient temperature of 30 °C)
(See Rules 4-012 and 4-014.)

NOTE: Content of Table 12 to be revised (only the column affected are included in this document)

Size, AWG or kcmil	Ampacity	
	Flexible cord	
	Types NISPT-1, NISPT-2, SV\$, SVO\$, SVEO\$, SVOO\$, SVEOO\$, SJ†\$, SJE†\$, SJEW†\$, SJO†\$, SJEO†\$, SJOO†\$, SJEOO†\$, SJOW\$, SJEOW\$, SJOOW\$, SJEOOW\$, S†, SE†, SEW†, SO†, SEO†, SEOW†, SOO†, SEOO†, SEOOW†, SOW, SOOW, SPT-1, SPT-2, SPT-3, SVT\$, SVTO\$, SVTOO\$, SJT†\$, SJTO†\$, SJTOO†\$, ST†, STO†, STOO†, SJTW\$, SJTOW\$, SJTOOW\$, STW, STOW, STOOW, NISPE-1 , NISPE-2 , NISP-1 , NISP-2	
	2 current-carrying conductors	3 current-carrying conductors
27	-	-
26	-	-
24	-	-
22	-	-
20	2††	-
18	10	7
17	12	9
16	13	10
15	16	12
14	18	15
13	21	17
12	25	20
11	27	23
10	30	25
9	34	29
8	40	35
7	47	40
6	55	45
5	62	52
4	70	60
3	82	70
2	95	80

~~Delete Table 12E~~

SN4850

~~Table 12E~~~~Ampacities for Type DLO cables in a permanent installation in cable tray
[See Rules 4-006 6) and 12-406 4) and Tables 5D, 12B, and 12C.]~~

Size, AWG or kcmil	Ampacity, A
1/0	260
2/0	300
3/0	350
4/0	405
262	475
313	520
373	605
444	660
535	735
646	820
777	910
929	1005
1111	1110

Notes:

- ~~1) The ampacity values are based on a single isolated cable in air at an ambient temperature of 30 °C. For cables operating at a different ambient temperature, the ampacity shall be obtained by multiplying the appropriate value from this Table by the correction factor for that ambient temperature as given in Table 12B.~~
- ~~2) The ampacity values are based on a conductor insulation temperature of 90 °C. For conductor insulation temperatures other than 90 °C, the ampacity of a given insulated conductor type shall be obtained by multiplying the appropriate value from this Table by the correction factor for that insulation conductor temperature as given in Table 12C.~~
- ~~3) When cables are used with more tray layers, the appropriate correction factors are shown in Table 5D.w~~

Appendix A

The list of Canadian Standards for electrical equipment developed by CSA Group and other accredited Standards development organizations will be reinstated in Annexes A.1 and A.2. of Appendix A in the published Code. The list will be a snapshot of the online version of Appendix A as at May 11th, 2023.

Appendix B

<p>Add Appendix B note for the definition of Bonding to read:</p> <p><u>Bonding</u> Refer to Appendix B notes to Rules 10-000 b), 10-000 c), 10-002 d), and 10-002 e).</p>	SN4933
<p>Add Appendix B note for the definition of Grounding to read:</p> <p><u>Grounding</u> Refer to Appendix B notes to Rules 10-000, 10-004, 10-100, and 10-114.</p>	SN4932
<p>Add Appendix B note for the definition of Grounded to read:</p> <p><u>Grounded</u> Refer to Appendix B notes to Rules 10-000, 10-004, 10-100, and 10-114.</p>	SN4932
<p>Revise footnotes in Appendix B note to Rule 2-130 to read:</p> <p>* Communication and optical fiber cables marked CMP, CMR, CMG, CM, CMX, CMH, OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, OFC, OFNH, OFCH, and communication and optical fiber cables marked FT4 have been found to meet the standard criteria for FT1.</p> <p>† Communication and optical fiber cables marked CMP, CMR, CMG, OFNP, OFCP, OFNR, OFCR, OFNG, and OFCG have been found to meet the standard criteria for FT4.</p> <p>‡ Communication and optical fiber cables marked CMP, OFNP, and OFCP have been found to meet the standard criteria for FT6.</p>	SN4769
<p>Revise Appendix B note to Rule 4-004 1) d) and 2) d) to read:</p> <p>Rule 4-004 1) d) and 2) d) The ampacities shown in Tables D8A to D11B have been determined using the Neher-McGrath methodology, as applied in IEEE 835, for the cable and insulated conductor arrangements shown in Diagrams D8, D9, D10, and D11.</p> <p><u>Variations in any of the parameters that are specified in Diagrams D8 to D11 will impact the resulting ampacity listed in corresponding Tables D8-D11. For example, increasing the depth of burial will reduce the ampacity. Likewise, decreasing the spacing between conductors will reduce the ampacity. It is intended that when changes are made from the spacing and depth values shown in Diagrams D8 – D11, calculation of the ampacity should be performed in accordance with IEEE 835.</u></p> <p>Tables D8A to D11B are based on 90 °C. If equipment rated at 75 °C, for example, is connected, then Rule 4-006 may limit the conductor termination ampacity.</p> <p>For “stacked” arrangements of two single conductors per phase in parallel (one row</p>	SN4840

<p>located vertically over another row), it is recommended that ampacities be obtained from the Detail 5 column of Table D8A (copper) or Table D8B (aluminum) for direct buried cables or from the Detail 2 column of Table D9A (copper) or Table D9B (aluminum) for cables in underground raceways.*</p> <p>Remainder of Appendix B note remains unchanged.</p>	
<p><i>Revise Appendix B note to Rule 4-006 3) to read:</i></p> <p>Rule 4-006 3) High-voltage equipment may be tested and rated for termination temperature at 90 °C. For high-voltage installations rated up to 5 kV, where conductors are selected in accordance with Tables 1 to 4, 12E, or D8A to D11B, or for high-voltage installations rated 5 kV to 46 kV, where insulated conductors or cables are selected in accordance with Tables D17A to D17N, the equipment manufacturer should be consulted when insulated conductors or cables are intended for termination on each specific type of high-voltage equipment.</p>	SN4850
<p><i>Add Appendix B Note for Rule 6-100 to read:</i></p> <p><u>Rule 6-100</u> <u>Meter-mounted transfer switches are covered by ANSI/CAN UL1008M, Transfer Switch Equipment, Meter Mounted.</u></p>	SN4604
<p><i>Revise Appendix B note to Rule 6-112 5) to read:</i></p> <p>Rule 6-112 5) Components that meet the requirements of CSA C22.2 No. 82 include</p> <ul style="list-style-type: none"> a) tubular support members; b) support clamps; c) roof plates; d) supply service attachments, e.g., racks; e) service entrance heads; and f) support member terminations (i.e., at the lower end). <p>As an example, a consumer service that does not exceed 200 A and 750 V 1000V, and whose supply service span length is 30 m or less, is acceptable when the maximum unguyed projection of the support member does not exceed 1.5 m, the cantilever load does not exceed 270 kg, three support clamps are used, the upper one being located at the roofline and the other two being installed on the wall of the building, a roof plate is provided to prevent entrance of moisture, the supply conductors or cables are attached on the mast to comply with Rule <u>6-116</u>, and a clearance of not less than 915 mm is provided between the roof and the supply service attachment, except that the clearance may be reduced to 600 mm to the bottom of the drip loops. For a consumer service that exceeds 200 A or is over 750 V 1000V, or whose supply service span length is over 30 m, or for non-standard mast installations (multiple masts supporting each other), additional engineering</p>	SN4730-6

provisions may be required, and consultation with the inspection department and supply authority may be necessary.	
<p><i>Add Appendix B Note for Rule 6-200 4) to read:</i></p> <p><u>Rule 6-200 4)</u> <u>The grounding and bonding requirements for the installation of a meter-mounted transfer switch are covered in Section 10. Subrule 4) requires a caution label located on the meter mounting device or the meter-mounted transfer switch, using the following or equivalent wording:</u> <u>CAUTION: The generator neutral shall not be connected to the generator frame. CSA Standard C22.2 No 100 requires generators without the neutral bonded to the frame are marked as "NEUTRAL FLOATING".</u></p>	SN4604
<p><i>Revise Appendix B note to Rules 8-104 5) b) and 6) b) to read:</i></p> <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>	SN4853
<p><i>Revise Appendix B note to Rules 8-200 and 8-202 to read:</i></p> <p>Rules 8-200 and 8-202 If more than one electric range is involved, the initial range will be provided for according to Rule 8-200 1) a) iv) or 8-202 1) a) v), and any subsequent ranges will be provided for by Rule 8-200 1) a) vii) or 8-202 1) a) vii).</p> <p><u>Examples of water heaters referred to in Rules 8-200 1) a) v) or 8-202 1) a) vi), include electric tankless water heaters and electric water heaters for steamers, swimming pools spas or hot tubs, or electric storage-tank water heaters not used for domestic service water heating. A domestic service water heater delivers hot water to fixtures used at a sink, shower, tub and any other appliance.</u></p>	SN4767-R
<p><i>Add Appendix B note for Rule 8-202 3) to read:</i></p> <p><u>Rule 8-202 3)</u> <u>Item d) applies to installations when electric vehicle supply equipment is either supplied from a panelboard installed in a dwelling unit or from a panelboard installed outside of a dwelling unit.</u></p>	SN4936
<p><i>Revise Appendix B note to Rule 10-212 to read:</i></p> <p><i>(paragraph directly preceding Figure B10-11 and title of Figure B10-11)</i></p> <p>This applies only to situations where both the primary and the secondary of the transformer are rated 750 V <u>1000 V</u> or less. At higher voltages, Section 36 requires a station ground electrode to be installed. Figure B10-11 illustrates this alternative means of grounding a system operating at 750 V or less.</p>	SN4730-10

<p align="center">Figure B10-11</p> <p align="center">Grounding alternative for a separately derived system operating at 750 V <u>1000 V</u> or less</p>	
<p><i>Revise Appendix B note to Rule 10-302 to read:</i></p> <p>Rule 10-302</p> <p>An impedance grounding device (also known as a neutral grounding device) consists of neutral grounding resistors, single-phase neutral grounding transformers, ground fault neutralizers (resonant or Petersen coil), three-phase zig-zag transformers, or combinations of these, whose purpose is to decrease the level of ground fault current for safety (reduced arc flash), to reduce loss of production, and to mitigate equipment damage.</p> <p>Other benefits of an impedance grounded system are to limit the voltage rise of the other phases so as not to exceed the line-to-line voltage and to stabilize the system voltage-to-ground both during normal operating conditions and during phase-to-ground fault conditions.</p> <p>Conductors for high-voltage systems (greater than 750 V <u>1000 V</u>) are typically insulated for line-to-ground voltages but are labelled as if they are to be applied on line-to-line, solidly grounded systems. A fault on a single phase of an impedance grounded system causes the line-to-ground voltage on the non-faulted phase (s) to rise as high as line-to-line voltage. If this voltage is likely to be applied for longer than 1 min, the insulation of the cable should be upgraded so that it can withstand this increased voltage. Cable suppliers should be consulted to confirm if the system being designed requires 100%, 133%, or 173% insulation (or the equivalent, such as the application of 1000 V cable on 600 V impedance grounded systems).</p> <p>The ground grid system of the supply authority should always be interconnected with the consumer's ground grid system. Where impedance grounding systems are installed, a grounded service conductor is not available for this purpose, and a separate conductor may have to be installed to interconnect the two ground grid systems.</p> <p>For systems experiencing a ground fault on one phase and permitted to remain energized in accordance with Table 17, maintenance practices should encourage timely corrective action to avoid the consequences resulting from a subsequent ground fault on a different phase.</p> <p>Figure B10-12 illustrates an impedance grounded system.</p>	SN4730-10
<p><i>Add an Appendix B note for Rule 12-108 f) to read:</i></p> <p><u>Rule 12-108 1) f)</u></p> <p><u>Item f) recognizes that parallel conductors in many cases are not exactly the same length with any one group forming a parallel set. For purposes of the rule a "group of conductors" is referencing all conductors connected between two common termination points, such as Phase A, B, C, N. It is not the intent that conductors of opposite phases or polarities be of the same length.</u></p>	SN4882

<p><i>Add an Appendix B note for Rule 12-112 to read:</i></p> <p><u>Rule 12-112</u> <u>Conductor joints and splices, such as sealed wire connector systems that are suitable for direct earth burial, are recognized in CSA C22.2 No. 198.2.</u></p>	SN4938
<p><i>Add an Appendix B note for Rule 14-010 to read:</i></p> <p><u>Rule 14-010</u> <u>It is intended by item a) that the objective of a Protective Device is to de-energize a circuit in case of an overload, a short-circuit or a ground fault.</u> <u>Ground fault protection for equipment is intended to de-energize all normally ungrounded conductors of electrical equipment with a ground fault setting sufficient to allow normal operation of the protected equipment.</u> <u>De-energization of the circuit with a ground fault on an ungrounded or impedance grounded system sometimes may be delayed or blocked as part of the overall system protection scheme.</u></p>	SN4809
<p><i>Revise Appendix B note for Rule 14-012 to read:</i></p> <p>Rule 14-012 It is the intent of this Rule to ensure that the overcurrent protective and control devices, the total impedance, and other characteristics of the circuit to be protected are selected and coordinated so that the circuit protective devices will clear a fault without extensively damaging the electrical components of the circuit.</p> <p>Interrupting ratings of overcurrent devices (circuit breakers or fuses) are 5000 A symmetrical maximum for circuit breakers rated 100 A or less and 250 V or less, and 10 000 A symmetrical maximum for circuit breakers rated above 100 A or above 250 V unless otherwise marked. The interrupting rating of fuses is 10 000 A symmetrical maximum unless otherwise marked.</p> <p><u>The protection level of the fourth (neutral) pole of a 4-pole circuit breaker may be less than 100% of the phase poles and it is required to be marked on the circuit breaker, typically as 0%, 50% or 100% of the phase poles. For details refer to CSA Standard C22.2 No 5 for molded-case circuit breakers and Standard C22.2 No. 268 for power circuit breakers.</u></p>	SN4695

Revise Table B18-1 to read:

SN4948
SN4971

Table B18-1
Documents applicable to hazardous locations

By function	Publisher	Reference publication
General		
• Design, installation, maintenance	API	RP 14F, <i>Design, Installation, and Maintenance of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class 1, Division 1 and Division 2 Locations</i>
• Design, installation, maintenance	API	RP 14FZ, <i>Design and Installation of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class I, Zone 0, Zone 1 and Zone 2 Locations</i>
• Design, installation, maintenance	IEC/IEEE	60079-30-2, <i>Explosive atmospheres — Part 30-2: Electrical resistance trace heating — Application guide for design, installation and maintenance</i>
• Design, equipment, installation	IEC	60079-14, <i>Explosive atmospheres — Part 14: Electrical installations design, selection and erection</i>
• Material properties	ISA	TR12.13.01, <i>Flammability Characteristics of Combustible Gases and Vapors</i>

• Design, installation	ISA	Book, <i>Electrical Instruments in Hazardous Locations</i> . Author: Ernest Magison	
• Material properties	ISO/IEC	80079-20-1, <i>Explosive atmospheres — Part 20-1: Material characteristics for gas and vapour classification — Test methods and data</i>	
• Material properties	ISO/IEC	80079-20-2, <i>Explosive atmospheres — Part 20-2: Material characteristics — Combustible dusts test methods</i>	
• Design, installation	NFPA	33, <i>Standard for Spray Application Using Flammable or Combustible Materials</i>	
• Design, equipment, installation	Butterworth-Heinemann	Book, <i>Electrical installations in hazardous areas</i> . Author: Allan McMillan	
• Material properties	Academic Press	Book, <i>Combustion, Flames and Explosions of Gases</i> . Authors: Bernard Lewis, Guenther von Elbe	
• Design, material properties	Gulf Publishing	Book, <i>Explosion Hazards in the Process Industries</i> . Author: Rolf K. Eckoff	
Design	IEC	60079-25, <i>Explosive atmospheres — Part 25: Intrinsically safe electrical systems</i>	
	IEC	TS 60079-32-1, <i>Explosive atmospheres – Electrostatic hazards, guidance</i>	

	ISA	TR12.2, <i>Intrinsically Safe System Assessment Using the Entity Concept</i>	
	ISA UL	RP12-02-02 120202 , <i>Recommendations for the Preparation, Content, and Organization of Intrinsic Safety Control Drawings</i>	
	NFPA	2, Hydrogen Technologies Code	
	NFPA	HAZ10, <i>Fire Protection Guide to Hazardous Materials</i>	
	NFPA	30, <i>Flammable and Combustible Liquids Code</i>	
	NFPA	61, <i>Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities</i>	
	NFPA	68, <i>Standard on Explosion Protection by Deflagration Venting</i>	
	NFPA	77, <i>Recommended Practice on Static Electricity</i>	
	NFPA	484, <i>Standard for Combustible Metals</i>	
	NFPA	654, <i>Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids</i>	
	NFPA	655, <i>Standard for the Prevention of Sulfur Fires and Explosions</i>	

Area classification*	NFPA	664, <i>Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities</i>	
	NFPA	91, <i>Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids</i>	
	API	RP 505, <i>Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Zone 0, Zone 1, and Zone 2</i>	
	API	RP 500, <i>Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Division 1 and Division 2</i>	
	API	PUBL 4615, <i>Emission Factors for Oil and Gas Production Operations</i>	
	API	PUBL 4638, <i>Calculation Workbook for Oil and Gas Production Equipment Fugitive Emissions</i>	
	API	PUBL 4589, <i>Fugitive Hydrocarbon Emissions from Oil and Gas Production Operations</i>	
	Energy Institute	EI 15, <i>Model code of safe practice Part 15: Area classification code for installations handling flammable fluids</i>	
	IEC	60079-10-1, <i>Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres</i>	

		IEC	60079-10-2, <i>Explosive atmospheres — Part 10-2: Classification of areas — Explosive dust atmospheres</i>	
		ISA	12.10, <i>Area Classification in Hazardous (Classified) Dust Locations</i>	
		NFPA	497, <i>Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas</i>	
		NFPA	499, <i>Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas</i>	
	Equipment, equipment selection (products)[†]	CSA	C60079-13, <i>Explosive atmospheres — Part 13: Equipment protection by pressurized room “p” and artificially ventilated room “v”</i>	
		CSA	C80079-36, <i>Explosive atmospheres – Part 36: Non-electrical equipment for explosive atmospheres – Basic method and requirements</i>	
		CSA	C80079-37, <i>Explosive atmospheres – Part 37: Non-electrical equipment for explosive atmospheres – Non-electrical type of protection constructional safety “c”, control of ignition sources “b”, liquid immersion “k”</i>	
		IEC	60079-29-2, <i>Explosive atmospheres — Part 29-2: Gas detectors — Selection, installation, use and</i>	

		<i>maintenance of detectors for flammable gases and oxygen</i>	
	IEC	60079-29-3, <i>Explosive atmospheres — Part 29-3: Gas detectors — Guidance on functional safety of fixed gas detection systems</i>	
	IEC	TS 60079-42, <i>Explosive atmospheres — Part 42: Electrical safety devices for the control of potential ignition sources for Ex-Equipment</i>	
	IEEE	1673, <i>IEEE Standard for Requirements for Conduit and Cable Seals for Field Connected Wiring to Equipment in Petroleum and Chemical Industry Exposed to Pressures above Atmospheric (1.5 kPa, 0.22 psi)</i>	
	IEEE	1349, <i>IEEE Guide for Application of Electric Motors in Class I, Division 2 and Class I, Zone 2 Hazardous (Classified) Locations</i>	
	ISA <u>UL</u>	TR12.13.03 <u>121303</u> , <i>Guide for Combustible Gas Detection as a Method of Protection</i>	
	ISA	TR12.13.04, Performance Requirements for Open Path Combustible Gas Detectors	
	ISA <u>UL</u>	12.20.01 <u>122001</u> , <i>General Requirements for Electrical Ignition Systems for Internal Combustion Engines in Class I, Division 2 or Zone 2, Hazardous (Classified) Locations</i>	

	ISA	TR12.21.01, Use of Fiber Optic Systems in Class I Hazardous (Classified) Locations	
	ISA <u>UL</u>	12.01.01 <u>120101</u> , Definitions and Information Pertaining to Electrical Equipment in Hazardous (Classified) Locations	
	ISA	12.04.04, Pressurized Enclosures	
	ISA <u>UL</u>	12.12.03 <u>121203</u> , Standard for Portable Electronic Products Suitable for Use in Class I and II, Division 2, Class I Zone 2 and Class III, Division 1 and 2 Hazardous (Classified) Locations	
	ISA	TR12.12.04, Electrical Equipment in a Class I, Division 2/Zone 2 Hazardous Location	
	NFPA	496, Standard for Purged and Pressurized Enclosures for Electrical Equipment	
	NFPA	505, Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance, and Operations	
	UL	1836, Outline of Investigation for Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations	
	UL	122701, Standard for Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids	

	UL	1836, Outline of Investigation for Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations	
Erection, verification (installation)	CSA	C22.1, Canadian Electrical Code, Part I	
	NFPA	70, National Electrical Code	
	IEC	60079-14, Explosive atmospheres — Part 14: Electrical installations, design, selection and erection	
	ISA	RP12.06.01, Recommended Practice for Wiring Methods for Hazardous (Classified) Locations — Instrumentation — Part 1: Intrinsic Safety	
Operations, maintenance	IEC	60079-17, Explosive atmospheres — Part 17: Electrical installations inspection and maintenance	
	IEC	60079-19, Explosive atmospheres — Part 19: Equipment repair, overhaul and reclamation	
	ANSI/EASA	ANSI/EASA AR100, Recommended Practice for the Repair of Rotating Electrical Apparatus;	
<p>*Area classification is a subset of design for hazardous locations.</p> <p>†Product certification Standards are listed in Appendix A, not in this Table.</p>			

Revise Appendix B note for Rule 18-010 to read:

SN4948

Rule 18-010

Maintaining electrical installation safety in hazardous locations is dependent on a regimen of regular maintenance that will ensure that the electrical installation continues to provide safety throughout its life. Maintenance personnel are cautioned that modifications to original equipment or substitution of original components may void certification. In addition to the manufacturer's instructions, the following documents may be used to guide owners and operators of hazardous locations in developing appropriate maintenance procedures:

- a) IEC 60079-17, *Explosive atmospheres — Part 17: Electrical installations inspection and maintenance*;
- b) [IEC 60079-19, Explosive atmospheres – Part 19: Equipment repair, Overhaul, and Reclamation](#);
- ~~b~~c) IEC 60300 series of Standards, *Dependability management*;
- d) [ANSI/EASA AR100, Recommended Practice for the Repair of Rotating Electrical Apparatus](#);
- e) [CSA Z463, Maintenance of electrical systems](#)
- ~~e~~f) IEEE 902, *IEEE Guide for Maintenance, Operation, and Safety of Industrial and Commercial Power Systems*; and
- ~~e~~g) NFPA 70B, *Recommended Practice for Electrical Equipment Maintenance*.

Most certifications of hazardous location luminaires exclude the use of self-contained (e.g., LED, CFL) replacement lamps. The maintenance, repair, or alteration of hazardous location luminaires is intended to be done in a manner that does not invalidate the original approval, is in accordance with the original manufacturer's instructions, and the lamps used are in accordance with those listed on the nameplate.

It is not the intent of this Rule to prohibit the use of complete assemblies that have been approved to replace the main body of an existing luminaire which may utilize an existing mounting component.

Unused openings of enclosures installed in hazardous locations are suitably closed to maintain the degree of protection and explosion protection intended to be provided by such enclosures.

Add an Appendix B note for Rule 18-074 to read:

SN4851

[Rule 18-074](#)

[Rule 10-600 2\) exempts extra-low voltage equipment from the requirement for bonding as there is no shock hazard. However, in hazardous locations, a fault to the enclosure or a static generated charge can create an ignition capable spark \(for example, with paint spray booths and dust handling systems, or where a person comes in proximity to extra-low voltage equipment\). A connection to ground at the equipment would be sufficient to meet this requirement. An example of making the extra-low voltage equipment equipotential is by mounting an instrument to steel which is in contact with the facility ground grid. For more information on static electricity control, see recommended practice NFPA 77 and IEC TS60079-32-1.](#)

<p><i>Revise Appendix B note to Rule 20-060 to read:</i></p> <p>Rule 20-060 A vehicle refueling appliance without storage is certified in accordance with CSA/ANSI NGV 5.2. and installed in accordance with CSA B149.1. For vehicle refuelling appliances connected to storage, see CSA B108.1. Information on the non-electrical aspects of compressed natural gas (NGV) (CNG) refuelling stations and NGV CNG storage facilities may be found in CSA B149.1 or CSA B108.1 as applicable.</p>	SN4747																																
<p><i>Revise Appendix B note to Rule 22-002 to read:</i></p> <p>Rule 22-002 Examples of some, but not all, of the occupancies in which Category 1 or Category 2 locations may be encountered are listed in Table B22-1.</p> <p style="text-align: center;">Table B22-1 Examples of Category 1 and Category 2 locations</p> <table border="1" data-bbox="219 835 1286 1535"> <thead> <tr> <th colspan="2" data-bbox="219 846 808 884">Category 1</th></tr> </thead> <tbody> <tr> <td data-bbox="219 884 808 961">Basements (other than in residential occupancies)</td><td data-bbox="808 884 1286 961">Dye works</td></tr> <tr> <td data-bbox="219 961 808 999">Bathhouses</td><td data-bbox="808 961 1286 999">Ice cream plants</td></tr> <tr> <td data-bbox="219 999 808 1037">Bottling works</td><td data-bbox="808 999 1286 1037">Ice plants</td></tr> <tr> <td data-bbox="219 1037 808 1075">Breweries</td><td data-bbox="808 1037 1286 1075">Laundries (commercial)</td></tr> <tr> <td data-bbox="219 1075 808 1113">Canneries</td><td data-bbox="808 1075 1286 1113">Stables for cattle only</td></tr> <tr> <td data-bbox="219 1113 808 1150">Cold storage plants</td><td data-bbox="808 1113 1286 1150">Stables for horses in rural farm areas</td></tr> <tr> <td data-bbox="219 1150 808 1203">Dairies (commercial and farm)</td><td data-bbox="808 1150 1286 1203"></td></tr> <tr> <th colspan="2" data-bbox="219 1203 808 1241">Category 2</th></tr> <tr> <td data-bbox="219 1241 808 1278">Abattoirs</td><td data-bbox="808 1241 1286 1278">Metal refineries</td></tr> <tr> <td data-bbox="219 1278 808 1316">Casing rooms</td><td data-bbox="808 1278 1286 1316">Potato storage facilities</td></tr> <tr> <td data-bbox="219 1316 808 1354">Chemical works (some)</td><td data-bbox="808 1316 1286 1354">Pulp mills</td></tr> <tr> <td data-bbox="219 1354 808 1392">Fertilizer rooms</td><td data-bbox="808 1354 1286 1392">Railway round houses</td></tr> <tr> <td data-bbox="219 1392 808 1430">Glue houses</td><td data-bbox="808 1392 1286 1430">Stables for horses</td></tr> <tr> <td data-bbox="219 1430 808 1467">Hide cellars</td><td data-bbox="808 1430 1286 1467">Sugar mills</td></tr> <tr> <td data-bbox="219 1467 808 1505">Meat-packing plants</td><td data-bbox="808 1467 1286 1505">Tanneries</td></tr> </tbody> </table>	Category 1		Basements (other than in residential occupancies)	Dye works	Bathhouses	Ice cream plants	Bottling works	Ice plants	Breweries	Laundries (commercial)	Canneries	Stables for cattle only	Cold storage plants	Stables for horses in rural farm areas	Dairies (commercial and farm)		Category 2		Abattoirs	Metal refineries	Casing rooms	Potato storage facilities	Chemical works (some)	Pulp mills	Fertilizer rooms	Railway round houses	Glue houses	Stables for horses	Hide cellars	Sugar mills	Meat-packing plants	Tanneries	SN3917
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<p><i>Add an Appendix B note for Rule 22-300 to read:</i></p> <p>Rule 22-300 Cables that run from a Category 1 or 2 location to another location can transfer liquid or moisture to the other location that might drip on unprotected electrical wiring or equipment. This Rule requires that suitable precautions are taken to prevent this from occurring.</p>	SN4150-D																																
<p><i>Revise Appendix B note to Rule 26-420 to read:</i></p>	SN4730-26																																

<p>Rule 26-420</p> <p>Low-voltage surge protective devices (SPDs) or transient voltage surge suppressors are surge suppression products designed for repeated suppression of transient voltage surges on 50 and 60 Hz power circuits not exceeding 750 V 1000V. IEEE C62.41.1 and C62.41.2 describe three general categories of operating environment for surge protective devices. The three system exposure environments are Category A, Category B, and Category C. Surge rating for Category A is intended for outlets and long branch circuits that exceed 10 m in length from Category B or 20 m in length from Category C. Surge rating for Category B is intended for feeders and short branch circuits, distribution panels, heavy appliance outlets with short connections to the service entrance, and lighting systems in large buildings. Surge rating for Category C is intended for outdoor and service entrance installations, service drops from a pole to a building, and underground lines to a well pump. The CSA C22.2 No. 269 series of Standards covers five types of surge protective devices as described in Table B26-1.</p>	
<p>Add Appendix B note to Rule 26-654 f) to read:</p> <p><u>Rule 26-654 f)</u> <u>National and provincial policies that mandate the sales of EVs will result in a need for charging infrastructure. The intention of this rule is to incorporate harmonized EV Ready infrastructure provisions for which the policy requirement is put forward in other regulations or by-laws.</u></p>	SN4983
<p>Add Appendix B note to Rule 26-700 9) to read:</p> <p><u>Rule 26-700 9)</u> <u>Table 67 mandates minimum clearance from a heating fixture, a trace heater set, a heating panel set, or a heating device set to a receptacle.</u> <u>In considering the location of receptacle outlets, provisions of Table 67 should be taken into account.</u></p>	SN4837
<p>Delete Appendix B note to Rule 26-720 n)</p> <p>Rule 26-720 n) It is intended by this requirement to recognize a need for additional electric vehicle charging infrastructure in residential occupancies only in those cases where such electric vehicle charging infrastructure is mandated by the provincial/territorial building codes or local building or zoning regulations.</p> <p>Users of this Code should consult local building or zoning bylaws for electric vehicle charging infrastructure requirements and for the number of dedicated receptacles for electric vehicle charging equipment required as a percentage of the total parking spaces for cars in a residential occupancy.</p>	SN4983
<p>Delete Appendix B note to Rule 26-722 a)</p>	SN4837

<p>Rule 26-722 a) In laying out the location of receptacle outlets in residential premises, consideration should be given to the placement of electric baseboard heaters, hot air registers, and hot water or steam registers to avoid having cords pass over hot or conductive surfaces wherever possible.</p>	
<p><i>Revise Appendix B note to Rule 26-744 10) to read:</i></p> <p>Rule 26-744 10) Some permanently connected <u>and cord connected</u> appliances are <u>permitted to be</u> provided with <u>more than one</u> multiple points of supply as permitted by <u>in accordance with</u> the applicable safety Standard for electrical equipment and are marked accordingly.</p>	SN4804
<p><i>Revise Appendix B note to Rule 46-306 1) to read:</i></p> <p>Rule 46-306 1) Where approved unit equipment includes a list of lamps suitable for remote installations, the requirements of CSA C22.2 No. 141</p> <ul style="list-style-type: none"> <u>a) provide integrated overcurrent protection for the remote lamp's circuit; and</u> <u>b) take into account a voltage drop of 5% in the remote lamp's circuit, unless the list specifies that certain lamps conform to the requirements with a greater voltage drop.</u> <p>Note 4 of Table D3 can be used to determine approximate permissible circuit lengths.</p>	SN4883
<p><i>Add an Appendix B note for Rule 52-000 to read:</i></p> <p>Rule 52-000 <u>Code users should reference Section 24 when imaging equipment installation is located within a Patient Care Area as defined in Section 24.</u></p>	SN4295

Revise Table B62-1 to read:

SN4929

Table B62-1

Usage marking of trace heaters or heating devices ~~and cross-references to Table 60 of the Canadian Electrical Code, Part I (18th edition, 1998)~~ — Trace heater set type designations and examples of applications

Usage marking and usage		Weather resistance	Wet location applications	Wet location under pressure	Previous type designations and Example A applications
No usage mark or G	General use	No	No	No	1A — Ceiling, floor, and wall heating (dry locations) 1B — Floor heating embedded in concrete (if dry location) 3A, 3C, 5A — Dry and damp location external pipe or vessel tracing heating
S	With weather resistance	Yes	No	No	All applications where a degree of UV and condensation weather resistance is required, including damp locations. (No previous equivalent.)
W	With wet rating	No	Yes	No	2A — Soil heating 2B — Snow melting and floor heating embedded in concrete (wet location) such as for saunas and showers

					2C — Animal pens/ grey water heating 2D — Pool deck heating 3B, 3D, 5B — Wet location pipe and vessel surface heating Freeze protection heating of fire suppression systems 4A, 4B — Pipe and conduit interior heating systems (non un pressurized applications) Earth storage heating	
P	With wet rating and pressure rating test	No	Yes	Yes	4A, 4B — Pipe interior heating systems(pressurized applications)	
WS	With wet rating test and weather resistance	Yes	Yes	No	2E — Roof de-icing Gutter and downspout de-icing Catch basins and drain heating Rail surface heating	
PS	With wet rating , / pressure	Yes	Yes	Yes	4A, 4B — Pipe interior heating systems (pressurized applications)	

	<u>rating test</u> , and weather resistance				<u>where a degree of UV and condensation resistance is required</u>	
X*	Specially investigated <u>trace heater</u> or heating device or heating device set	—	—	—	<p>e.g., 2C — Animal pens/<u>grey water</u> <u>heating where ammonium</u> <u>hydroxide testing is additionally</u> <u>required</u></p> <p>4A, 4B — Pipe interior heating in <u>pressurized and</u> potable water applications where <u>water toxicity</u> <u>testing is additionally required</u></p> <p><u>Heating devices in indoor location</u> <u>applications where</u> mechanical abuse is very unlikely, allowing for lower mechanical test levels</p> <p><u>Earth storage heating</u></p>	

* X indicates additional requirements and/or exemptions for specific applications. Note that an additional usage marking of W is required in addition to the X marking for animal pen/grey water or earth storage heating applications. An additional usage marking of P or PS is required in addition to the X marking in pipe interior heating in pressurized and potable water applications. The manufacturer's instructions must include a complete explanation of these additional requirements or exemptions.

<p>Add an Appendix B note for Rule 62-126 2) a), 62-126 3) b) and c) to read:</p> <p><u>Rule 62-126 2) a), 62-126 3) b) and c)</u> <u>Field assembly component kits of heating device sets are certified to CSA C22.2 No. 130 with markings and installation instructions. These components can be used for field assembly, splicing, terminations and repairs of trace heater.</u></p>	SN4970
<p>Add an Appendix B note for Rule 64-902 to read:</p> <p><u>Rule 64-902 2), 64-1000</u> <u>Energy storage systems with a storage capacity exceeding 1 kWh are required to be approved as a system in accordance with ANSI/CAN/UL 9540.</u> <u>Energy storage systems with a storage capacity of 1 kWh or less are not required to be approved as a system, but the equipment that makes up the system (batteries, charge controller, overcurrent protection, cables etc.) are required to be approved in accordance with the applicable product standards.</u></p>	SN4930

<h1>Appendix C</h1>	
<p>Add new Clause C5 to read:</p> <p><u>C5 Canadian Electrical Code/ National Building Code Liaison Committee</u></p> <p><u>C5.1 Terms of reference</u> <u>The Canadian Electrical Code, Part I (CE Code, Part I) / National Building Code of Canada (NBCC) Liaison Committee shall be responsible for</u></p> <ul style="list-style-type: none"> a) <u>monitoring applicable revisions to the NBCC for the purpose of correlation with Appendix G,</u> <ul style="list-style-type: none"> i) <u>advising the Committee on the CE Code, Part I of relevant NBCC priorities, workplans, activities and revisions that could impact electrical installations, and</u> ii) <u>developing proposals to revise the CE Code, Part I, or the NBCC, or both, where necessary to maintain coordination between the CE Code, Part I and the NBCC,</u> b) <u>monitoring proposed revisions to the CE Code, Part I and advising the Section Subcommittee and the Committee on the CE Code, Part I where such revisions could</u> <ul style="list-style-type: none"> i) <u>result in loss of coordination between the CE Code, Part I and the NBCC, or</u> ii) <u>conflict with the provisions of Clause C11.26, C11.27, or C11.28, and</u> c) <u>revising and maintaining Appendix G, in coordination with relevant provisions of the NBCC.</u> <p><u>C5.2 Structure</u> <u>The Executive Committee shall appoint a Chair and a Vice-Chair for the CE Code, Part I/NBCC Liaison Committee. The Chair shall be a voting member of the</u></p>	SN4873

<p><u>Committee on the CE Code, Part I. The Vice-Chair shall act as the Committee Chair in the absence of the Chair.</u></p> <p><u>C5.3 Liaison committee membership</u></p> <p><u>C5.3.1</u> <u>It is recommended that representation on the Liaison Committee include the following categories</u></p> <ul style="list-style-type: none"> a) <u>committees responsible for development of the National Building Code of Canada.</u> b) <u>the Chair of the Section 32 Subcommittee;</u> c) <u>the Chair of the Section 46 Subcommittee; and</u> d) <u>a Project Manager provided by CSA.</u> <p><u>C5.3.2</u> <u>It is further recommended that</u></p> <ul style="list-style-type: none"> a) <u>The Liaison Committee be composed of not more than 12 members;</u> b) <u>at the discretion of the committee Chair, the number of members be increased if further representation is required;</u> c) <u>at least three members be voting members of the Committee on Part I; and</u> d) <u>if practicable, the Liaison Committee membership be balanced in representation from the various geographical areas of Canada.</u> 	
<p><i>Revise Clause C6.1 to read:</i></p> <p>C6.1 A request for an amendment to the <i>CE Code, Part I</i> may be submitted to the Project Manager of the Committee on Part I by any person, organization, or committee (see Annex B) <u>through the following website: https://codeproposal.csagroup.org/</u></p>	SN4798

<p style="text-align: center;">Annex B</p> <p style="text-align: center;">Request for an amendment to the <i>Canadian Electrical Code, Part I</i></p> <p>Notes:</p> <ol style="list-style-type: none"> 1) This Annex contains the suggested form to be used when requesting a change to the CE Code, Part I. See Clause C6. 2) An electronic version of this form is available for download from www.csa.org/standards/areas-of-focus/electrical/cecode-proposals. <div style="border: 1px solid black; padding: 10px;"> <p>TO: The Project Manager of the Committee on Part I</p> <p>FROM:</p> <p>AFFILIATION:</p> <p>DATE:</p> <p>RE: Request for an Amendment to Rule(s):</p> <p>Primary reasons for request (mark with an "x"):</p> <p>☐ Improve safety</p> <p>☐ Address new technology</p> <p>☐ Correlate with electrical product Standard requirements</p> <p>☐ Correlate with other relevant Standards*</p> <p>☐ Clarify existing wording</p> <p><small>*Relevant Standards include the National Electrical Code, the National Building Code of Canada, CSA C22.3 No. 1, CSA Z32, CSA C282, etc.</small></p> <p>Request (specifically worded):</p> <p>Reasons for request:</p> <p>Supporting information:</p> <p><small>Notice: By submitting this proposal (the "Proposal") to CSA Group, you assign all right, title and interest in the copyright to the Proposal to CSA Group, and you waive all moral rights associated with the Proposal. By submitting this Proposal to CSA Group, you represent and warrant that the Proposal does not contain any content that you do not have a right to transmit and assign under any law or under contractual or fiduciary relationships [such as inside information, proprietary and confidential information learned or disclosed as part of employment relationships or under nondisclosure agreements]; or any content that infringes any patent, trademark, trade secret, copyright or other proprietary rights) of any party, and acknowledge that CSA Group is relying on this representation and warranty.</small></p> </div>	
<p>Revise Clause C6.2.1 to read:</p> <p>C6.2.1</p> <p>A request for an amendment to the Code shall</p> <p>a) apply only to installations covered by the Scope of the Code;</p> <p>b) include a specifically worded proposal,</p> <p>c) include reasons for the proposal, and</p> <p>d) include supporting data.</p> <p>The wording to be added, changed, or deleted shall be submitted in such a way that the</p> <p>intent request for an amendment shall be submitted in such a way that the intent of the</p> <p>proposed additions, deletions or revisions is clear.</p> <p>C6.2.2</p> <p>An unclear proposal Requests for an amendment that do not meet the requirements of</p> <p>Clause C6.2.1 may be returned to the submitter by the Project Manager after</p>	SN4459-C

consultation with the Section Chair and the Chair of the Committee on Part I.

Appendix D

Revise Table D1 to read

SN4897

Trade designation (CSA Standard)	CSA type designation	Voltage rating	Number of circuit insulated conductors	Size range, AWG or kcmil	Insulation	Covering on each insulated conductor	Outer covering	Reference Notes
Communications cable (C22.2 No. 214)	CMP	300	1 or multiple conductor or multiple coaxial	30 to 6	Thermoplastic	None	Thermoplastic jacket with or without a metal sheath or braid	38 36
	CMR							
	CMG							
	CM							
	Cross-connect							
	CMX and CMUC							
	CMH							

Revise note 36) of Table D1 to read

SN4897

36) ~~CMG~~ [CMUC](#) cables that are used to electrically connect communications equipment to a telecommunications network must be not smaller than No. 26 AWG copper. Cables with insulated conductors of No. 28 and No. 30 AWG copper must be permitted for other types of communication applications.

Appendix I

Delete all existing entries in Appendix I

Add the following entry to Appendix I:

SN4914

[Rule 2-100 3\)](#)

[Question: Where the distribution panel is circuit breakers of various sizes, do you need to mark the maximum breaker size on the label adjacent to the breaker?](#)

[Answer: Yes](#)

Add the following entry to Appendix I:

SN4901-A

[Rule 4-004](#)

<p><u>Question:</u> Based on the literal text of Rule 4-004(1)(d) and 4-004(2)(d) in conjunction with Diagram D9, does Diagram D9 apply to underground installations in "conduit and raceway"?</p> <p><u>Answer:</u> Yes</p>	
<p>Add the following entry to Appendix I:</p> <p><u>Rule 4-004</u></p> <p><u>Question:</u> Based on the literal text of Rule 4-004(1)(d) and 4-004(2)(d) in conjunction with Diagram D11, does Diagram D11 apply to underground installations in "conduit and raceway"?</p> <p><u>Answer:</u> Yes</p>	SN4901-B
<p>Add the following entry to Appendix I:</p> <p><u>Rule 14-100 d)</u></p> <p><u>Question:</u> Does relaxation, allowed by paragraph 14-100 d), apply only to a circuit supplied from a power or distribution transformer, where a primary and secondary voltage is rated over 750 V?</p> <p><u>Answer:</u> No</p>	SN4890
<p>Add the following entry to Appendix I:</p> <p><u>Rule 26-248</u></p> <p><u>Question:</u> Can one disconnecting means be used for more than one transformer?</p> <p><u>Answer:</u> YES</p>	SN4887
<p>Add the following entry to Appendix I:</p> <p><u>Rule 52-008</u></p> <p><u>Question:</u> With regard to Subrule 52-008 2), does a shunt trip breaker meet the requirements of this required disconnecting means?</p> <p><u>Answer:</u> Yes</p>	SN4585
<p>Add the following entry to Appendix I:</p> <p><u>Rule 62-118</u></p> <p><u>Question:</u> When applying 62-118 5) b) to a commercial service or feeder calculation, if there is a single unit heater as the sole electric space heating load in addition to other electrical equipment, is the space heating load to be taken at 75%</p>	SN5015

<u>of the connected heating load plus the combined loads of the other equipment with demand factors as applicable in Section 8 for the type of occupancy?</u>	
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<u>Answer: Yes</u>	
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Appendix J, Annex J18

Revise notes to Appendix J to read:

SN4899

Appendix J — Rules and Notes to Rules for installations using the Class and Division system of classification

Notes:

- 1) The Introduction and Annexes J18, J20, JD, and JT of this Appendix are normative (mandatory) for installations that use the Division system of hazardous location classification. Rules 18-000 4) and 20-000 ~~3)2)~~ require that the Rules in these Annexes be applied to Class/Division installations as provided for by Rules 18-000 3) and ~~4) 20-000-2)~~.
- 2) Annex JB consists of notes and illustrations for information and clarification purposes only and is informative (non-mandatory)

Revise Rule J18-072 to read:

SN4851-J18

J18-072 Equipotential Bonding in hazardous locations of extra-low voltage equipment (see Annex JB)

- ~~1) Exposed non-current-carrying metal parts of electrical extra-low voltage equipment shall be made equipotential with nearby conductive parts by a permanent conductive connection between them, including the frames or metal exteriors of motors, fixed or portable lamps or other utilization equipment, luminaires, cabinets, cases, and conduit, shall be bonded to ground using~~
 - ~~a) bonding conductors sized in accordance with Rule 10-616; or~~
 - ~~b) rigid metal conduit with threaded couplings and threaded bosses on enclosures with joints made up tight.~~
- ~~2) Notwithstanding Subrule 1), where raceways or cables incorporate an internal bonding conductor, box connectors with standard locknuts shall be permitted to bond the metallic armour or raceway.~~

Revise Rule J18-074 to read:

SN4926-J18

J18-074 Uninsulated exposed parts

- ~~There shall be no uninsulated exposed parts of an electrical installation or of electrical equipment such as electrical conductors, buses, terminals, or components unless they~~ Uninsulated and exposed energized parts shall be
- a) ~~operate at less than 30 V (15 V in wet locations) and are additionally protected by~~ supplied by an extra-low voltage circuit and provided with a type of protection suitable for the location; or
 - b) ~~are~~ installed as provided for in Rule J18-324 for electric cranes, hoists, and similar equipment in a Class III location.

Revise Subrule J18-262 1) to read:

SN4928-J18

J18-262 Motors and generators, Class II, Division 2 (see Annex JB)

- 1) Except as provided for in Subrule 2) motors and generators shall be
 - a) marked for use in Class II or Class II, Division 2 locations; or

<p>b) ordinary totally enclosed pipe-ventilated (TEPV), totally enclosed nonventilated (TENV), or totally enclosed fan-cooled (TEFC) provided that the expected maximum external surface temperature under normal operating conditions is less than the minimum ignition temperature defined in the area classification subject to the following:</p> <p>i) equipped with integral overheating protection in accordance with Rule 28-314; and</p> <p>ii) if drain holes or other openings are provided, they shall be closed with threaded plugs.</p>	
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Appendix J, Annex JB

Revise Annex JB note for Rule J18-010 to read:

SN4948-
J18

Rule J18-010

Maintaining electrical installation safety in hazardous locations is dependent on a regimen of regular maintenance that will ensure that the electrical installation continues to provide safety throughout its life. Maintenance personnel are cautioned that modifications to original equipment or substitution of original components may void certification. In addition to the manufacturer's instructions, the following documents may be used to guide owners and operators of hazardous locations in developing appropriate maintenance procedures:

- a) IEC 60079-17, *Explosive atmospheres — Part 17: Electrical installations inspection and maintenance*;
- ~~b)~~ [IEC 60079-19, Explosive atmospheres – Part 19: Equipment repair, Overhaul, and Reclamation](#);
- ~~b~~c) IEC 60300 series of Standards, *Dependability management*;
- ~~d)~~ [ANSI/EASA AR100, Recommended Practice for the Repair of Rotating Electrical Apparatus](#);
- ~~e)~~ [CSA Z463, Maintenance of electrical systems](#)
- ~~e~~f) IEEE 902, *IEEE Guide for Maintenance, Operation, and Safety of Industrial and Commercial Power Systems*; and
- ~~d~~g) NFPA 70B, *Recommended Practice for Electrical Equipment Maintenance*.

Most certifications of hazardous location luminaires exclude the use of self-contained (e.g., LED, CFL) replacement lamps. The maintenance, repair, or alteration of hazardous location luminaires is intended to be done in a manner that

- a) does not invalidate the original approval;
- b) is in accordance with the original manufacturer's instructions; and
- c) the lamps used are in accordance with those listed on the nameplate.

It is not the intent of this Rule to prohibit the use of complete assemblies that have been approved to replace the main body of an existing luminaire which may utilize an existing mounting component.

Unused openings of enclosures installed in hazardous locations are suitably closed to maintain the degree of protection and explosion protection intended to be provided by such enclosures.	
<p>Add an Annex JB note for Rule J18-072 to read:</p> <p><u>Rule J18-072</u></p> <p><u>Rule 10-600 2) exempts extra-low voltage equipment from the requirement for bonding as there is no shock hazard. However, in hazardous locations, a fault to the enclosure or a static generated charge can create an ignition capable spark (for example, with paint spray booths and dust handling systems, or where a person comes in proximity to extra-low voltage equipment). A connection to ground at the equipment would be sufficient to meet this requirement. An example of making the extra-low voltage equipment equipotential is by mounting an instrument to steel which is in contact with the facility ground grid. For more information on static electricity control, see recommended practice NFPA 77 and IEC TS60079-32-1.</u></p>	SN4851-J18

Subjects incorporated into this Memorandum of Revisions							
MOR 26-1		MOR 26-2		MOR 26-3		MOR 26-4	
3917	4730-2	4394-4	4953				
4295	4730-26	4475	4958				
4604	4730-30	4493	4959				
4739	4730-56	4585	4969				
4747	4730-6	4695	4970				
4754	4767-R	4724	4971				
4769	4801-0	4730-14	4972				
4779	4851-J18	4730-54	4983				
4789	4901-A	4730-60	5015				
4792	4901-B	4801-86					
4798		4809					
4804		4810					
4815		4837					
4824		4850					
4828		4882					
4833		4887					
4836		4890					
4838		4890-R					

4840		4898					
4851		4899					
4852		4903					
4853		4910					
4858		4911					
4860		4925					
4862		4926					
4870		4926-J18					
4873		4927					
4878		4928					
4883		4928-J18					
4886		4929					
4889		4930					
4893		4932					
4897		4933					
4909		4936					
4914		4937					
3961-76		4938					
4148-12		4939					
4150-D		4941					
4459-C		4948					
4730-10		4948-J18					