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Governor Scott Walker **Secretary Dave Ross**

ELECTRICAL CODE ADVISORY COMMITTEE MEETING

Room 121C, 1400 East Washington Avenue, Madison
Contact: Dale Kleven (608) 261-4472
July 28, 2016

The following agenda describes the issues that the Committee plans to consider at the meeting. At the time of the meeting, items may be removed from the agenda. Please consult the resulting meeting minutes for a description of the recommendations of the Committee.

AGENDA

9:00 A.M.

CALL TO ORDER – ROLL CALL

A. Adoption of Agenda (1)

B. Approval of Minutes of June 8, 2016 (2-4)

C. Department Update

D. Review and Discussion of Changes to the NEC (5-97)
1) Certified Amending Motions for the NEC
2) NEC Code Revisions
3) Division of Industry Services Recommendations
4) Wisconsin Considerations and Committee Recommendations

E. Public Comments

F. Adjournment

SPS 316 ELECTRICAL CODE ADVISORY COMMITTEE MEETING
MEETING MINUTES
June 8, 2016

PRESENT Steven Bacalzo, Joseph Bembnister, Brad Gruenewald, Paul Gruettner, David Helgeson, Gene Jacobson, Charles Johansen, Bill Neitzel, Cory Schmoll

EXCUSED Shannon Clark, John Nikolai

STAFF Dale Kleven, Rules Coordinator; Jeff Grothman, Policy Advisor; Anthony Tadysak, DIS Engineering Consultant; Nifty Lynn Dio, Bureau Assistant; and other Department staff

CALL TO ORDER

Bill Neitzel, called the meeting to order at 9:00 a.m. A quorum of nine(9) members was confirmed.

ADOPTION OF AGENDA

Amendments to the Agenda

- *Addressing Public Comments before Discussion of NEC Reccommendations*

MOTION: Brad Gruenewald moved, seconded by Gene Jacobson, to adopt the agenda as amended. Motion carried unanimously.

APPROVAL OF MINUTES

MOTION: Gene Jacobson moved, seconded by Brad Gruenewald, to approve the minutes of May 9, 2016 as published. Motion carried unanimously.

REVIEW AND DISCUSSION OF CHANGES TO THE NEC

NEC Code Revisions

MOTION: Cory Schmoll moved, seconded by Charles Johansen, to accept the recommended change from the Division of Industry Services to SPS 316.002 with the addition of Energy Storage Systems into SPS 316.002(2)(e)3. Motion carried unanimously.

MOTION: Charles Johansen moved, seconded by David Helgeson, to accept the recommended change from the Division of Industry Services to create SPS 316.003(6) concerning additions and alterations. Motion carried unanimously.

MOTION: Joseph Bembnister moved, seconded by Charles Johansen, to accept the addition to SPS 316.004 as recommended by the Division of Industry Services. Motion carried unanimously.

MOTION: Paul Gruettner moved, seconded by Gene Jacobson, to delete the last sentence of SPS 316.010 as recommended by the Division of Industry Services. Motion carried unanimously.

MOTION: Charles Johansen moved, seconded by Cory Schmoll, to accept the recommended change from the Division of Industry Services to SPS 316.012(1) and (2). Motion carried unanimously.

MOTION: Gene Jacobson moved, seconded by Paul Gruettner, to specify that SPS 316.013(1) pertains to electric fence controllers for non-humans. Motion carried unanimously.

MOTION: Joseph Bembnister moved, seconded by Steven Bacalzo, to delete SPS 316.100(2)(a) as recommended by the Division of Industry Services. Motion carried unanimously.

MOTION: Charles Johansen moved, seconded by Gene Jacobson, to delete SPS 316.110 as recommended by the Division of Industry Services. Motion carried unanimously.

MOTION: Charles Johansen moved, seconded by Gene Jacobson, to recreate SPS 316.110 to modify NEC 110.3(C) to include a Professional Engineer as an acceptable method. Motion carried unanimously.

MOTION: David Helgeson moved, seconded by Paul Gruettner, to request DSPS staff to investigate the possiblility of renumbering SPS 316 and adding subsections to correlate with the 2017 NEC. Motion carried. Opposed: Johansen

MOTION: David Helgeson moved, seconded by Gene Jacobson, to delete SPS 316.210(1) and (3) as recommended by the Division of Industry Services. Motion carried unanimously.

MOTION: Paul Gruettner moved, seconded by Brad Gruenewald, to add NEC 210.8(B) to the exception in SPS 316.210(2) as recommended by the Division of Industry Services. Motion carried unanimously.

MOTION: David Helgeson moved, seconded by Joseph Bembnister, to add condensate pumps to the exception in SPS 316.210(2). Motion carried unanimously.

MOTION: David Helgeson moved, seconded by Brad Gruenewald, to, in SPS 316.210, accept the substitute language suggested by the Division of Industry Services for NEC 210.52(C)(3). Motion carried unanimously.

MOTION: David Helgeson moved, seconded by Cory Schmoll, to add language to SPS 316.210 that the provisions of 2017 NEC 210.71 do not apply to exsisting buildings. Motion carried unanimously.

MOTION: Paul Gruettner moved, seconded by Charles Johansen, to delete SPS 316.220(1), SPS 316.225(1), SPS 316.230(1)(a) and SPS 316.230(1)(c) as recommended by the Division of Industry Services. Motion carried unanimously.

MOTION: Joseph Bembnister moved, seconded by David Helgeson, to substitute the wording in 2017 NEC 225.30(F) with the wording in SPS 316.225(2)(a). Motion carried unanimously.

MOTION: Cory Schmoll moved, seconded by Paul Gruettner, to request DSPS staff seek clarification concerning the public comment regarding overcurrent protection for direct burial of service conductors. Motion carried unanimously.

MOTION: Joseph Bembnister moved, seconded by Chaeles Johansen, to affirm that the Committee has reviewed the second draft of the 2017 NEC article 90 through 225 and SPS 316.001 through SPS 316.225 and established an agreement on acceptance and modifications as made by the Committee. Motion carried unanimously.

ADJOURNMENT

MOTION: Brad Gruenewald moved, seconded by Gene Jacobson, to adjourn the meeting. Motion carried unanimously.

The meeting adjourned at 3:03 p.m.

During today's NFPA Technical Meeting in Las Vegas, the following action has taken place on NFPA 70®,*National Electrical Code®*

- 70-1 Motion to Accept an Identifiable Part of Committee Comment No. 19002 failed.
- 70-2 Motion to Accept Public Comment No. 1134 failed.
- 70-3 Motion to Accept an Identifiable Part of Public Comment No. 793 passed.
- 70-4 Motion to Reject Second Revision No. 1004 passed.
- 70-5 Motion to Accept Public Comment No. 1136 failed.
- 70-6 Motion to Accept Public Comment No. 741 was not pursued.
- 70-7 Motion to Reject an Identifiable Part of Second Revision No. 1223 passed.
- 70-8 Motion to Accept Public Comment No. 1219 failed.
- 70-9 Motion to Accept Public Comment No. 1043 was not pursued.
- 70-10 Motion to Accept Public Comment No. 583 was not pursued.
- 70-11 Motion to Accept Public Comment No. 1401 failed.
- 70-12 Motion to Accept Public Comment Nos. 589 and 320 was not pursued.
- 70-13 Motion to Reject Second Revision No. 2110 failed.
- 70-14 Motion to Accept Public Comment No. 834 passed.
- 70-15 Motion to Reject an Identifiable Part of Second Revision No. 1808 passed.
- 70-16 Motion to Accept Committee Comment No. 3902 and Reject Second Correlating Revision No. 3 failed.
- 70-17 Motion to Reject Second Correlating Revision No. 90 was not pursued.
- 70-18 Motion to Accept Committee Comment No. 3906 and Reject an Identifiable Part of Second Correlating Revision No. 94 was not pursued.
- 70-19 Motion to Accept Public Comment No. 806 failed.
- 70-20 Motion to Reject Second Revision No. 607 passed.
- 70-21 Motion to Reject Second Revision No. 5124, including any Related Portions of First Revision No. 5139 was not pursued.
- 70-22 Motion to Reject an Identifiable Part of Second Revision No. 5124 passed.
- 70-23 Motion to Reject an Identifiable Part of Second Revision No. 5124, including any Related Portions of First Revision No. 5139 passed.
- 70-24 Motion to Accept Public Comment No. 1588 failed.
- 70-25 Motion to Accept Public Comment Nos. 1719, 1509, 1097, and 1461 passed.

- 70-26 Motion to Accept Public Comment Nos. 1075, 1722, and 1534 failed.
- 70-27 Motion to Accept an Identifiable Part of Public Comment No. 46 passed.
- 70-28 Motion to Reject Second Correlating Revision No. 43 failed.
- 70-29 Motion to Accept an Identifiable Part of Public Comment No. 1711 passed.
- 70-30 Motion to Reject Second Correlating Revision No. 112 was not pursued.
- 70-31 Motion to Reject Second Revision No. 981 was not pursued.
- 70-32 Motion to Reject Second Revision No. 982 was not pursued.
- 70-33 Motion to Reject Second Revision No. 983 was not pursued.
- 70-34 Motion to Reject Second Revision No. 988 failed.
- 70-35 Motion to Reject Second Revision No. 989 was not pursued.
- 70-36 Motion to Reject Second Correlating Revision No. 116 was not pursued.
- 70-37 Motion to Reject Second Revision No. 987, including any Related Portions of First Revision No. 1045 failed.
- 70-38 Motion to Reject Second Revision No. 3627 was not pursued.
- 70-39 Motion to Reject Second Revision No. 611 failed.
- 70-40 Motion to Reject an Identifiable Part of Second Revision No. 615 was not pursued.
- 70-41 Motion to Accept Public Comment No. 73 passed.
- 70-42 Motion to Accept an identifiable part of Public Comment No. 1262 failed.
- 70-43 Motion to Reject Second Revision No. 4564, including any Related Portions of First Revision No. 4643 was not pursued

NFPA 70 was passed with 12 amending motions. NFPA 70 COMPLETED.

*REPORT OF THE MOTIONS COMMITTEE ON CERTIFIED AMENDING MOTIONS FOR PRESENTATION AT THE 2016 NFPA TECHNICAL MEETING JUNE 16, 2016 LAS VEGAS, NV FOR THE NFPA 70, *NATIONAL ELECTRICAL CODE®*

I. Introduction.

This is the third Motions Committee Report listing Certified Amending Motions that may be presented at the 2016 NFPA Technical Meeting in Las Vegas, NV on June 16, 2016, and is specific to the *NEC®*. The Motions Committee, consisting of NFPA Standards Council Members R. Bradley, J. Golinveaux, B. Manley, D. O'Connor, R. Owen, J. Rickard (Chair) and M. Snyder has been appointed by the Chair of the Standards Council to certify proper amending motions and otherwise review and act, in accordance with 2.1 through 2.7 of the *NFPA Technical Meeting Convention Rules* (*Convention Rules*), on Notices of Intent to Make a Motion (NITMAMs) that have been submitted on NFPA 70, *National Electrical Code®*, (*NEC®*) which is being processed in the Annual 2016 Revision Cycle.

An Agenda will be posted on the NFPA website prior to the NFPA Technical Meeting, which will include the present Report for the *NEC®* (posted May 17, 2016); the Final Report for Annual 2016 Revision Cycle Documents (posted April 15, 2016); and the Report for the Fall 2015 Revision Cycle Documents (posted October 16, 2015). However, the Motions Committee may refine or revise the sequencing and/or grouping of previously published motions to facilitate the fair, orderly, and efficient consideration of the subjects presented by the motions at the NFPA Association Meeting. Please check the NFPA website to obtain the Consolidated Report.

The Certified Amending Motions for the *NEC®* reporting in the Annual 2016 Revision Cycle are set forth in Part II of this Report; Part III of this Report summarizes motions on the *NEC®* that were not certified by the Motions Committee. In reviewing this Report, the following should be considered:

- The only Amending Motions allowed at an NFPA Technical Meeting are Certified Amending Motions set forth in a report of the NFPA Motions Committee and any Follow-Up Motions, that is, motions that may become necessary as a result of a previous successful Amending Motion. (See *Convention Rules* at 3.4.4.)

- Certified Amending Motions at the NFPA Technical Meeting can only be made by person(s) listed in this Report as authorized to make the motion, or by persons designated in writing to the Standards Council Secretary by the motion submitter as their Designated Representative. (See *Regulations Governing the Development of NFPA Standards (Regulations) at 4.5.3.5(c)).*

- The Certified Amending Motions set forth in this Report are proper and permissible; they will, however, only be presented for consideration of the membership at the 2016 NFPA Technical Meeting if a person authorized to make the motion (or their Designated Representative) physically appears no later than one hour before the beginning of the session (see *Convention Rules* at 2.7), and makes the motion in accordance with NFPA rules.

The information presented above provides a general introduction to some of the relevant features of the NITMAM process and the presentation of Certified Amending Motions. For complete information of the process, participants should consult the *Regulations* and the *Convention Rules*. The Requirements for the submission of NITMAMs and the Certification of Amending Motions can be found at 2.0 of the *Convention Rules* and 4.5 of the *Regulations*. Membership action at NFPA Technical Meetings is detailed in the *Convention Rules* and in 4.5.3 of the *Regulations* (published in the *2016 NFPA Standards Directory* and available on the NFPA website at www.nfpa.org). For additional information about the NFPA standards development process, consult the NFPA website or contact NFPA Codes & Standards Administration Department at 617-984-7248.

II. Certified Amending Motions.

Table A summarizes the Motions on the *NEC*® that have been reviewed by the NFPA Motions Committee and certified as Certified Amending Motions. These motions can be presented for consideration at the 2016 NFPA Technical Meeting in Las Vegas. NV on June 16, 2016.

Previously, the Motions Committee had ruled that twenty-two Annual 2016 Revision Cycle Documents (other than *NEC*®) and one Fall 2015 Revision Cycle Document that have certified amending motions.

Note: *In accordance with 1.6.2(a) of the Regulations, anyone who is dissatisfied with the results of the floor motions from the June 16, 2016 NFPA Technical Meeting or the result of the Technical Committee amendment ballots [see Regulations at 1.6.2(b)] have the right to appeal the results. Appeals shall be filed no later than twenty days following the NFPA Technical Meeting at which Association action on the issuance of the Standard was recommended. The final date to file any such appeal is July 6, 2016.*

III. NITMAMs that were not Certified by Motions Committee.

Of the NITMAMs received on *NEC*®, six were not certified by the Motions Committee, and the Motions Committee approved the withdrawal of three NITMAMs. Table A itemizes the motions that were not certified.

Annual 2016 Final Motions Committee Report

Certified Amending Motions (CAMs)

Technical Meeting (Tech Session) – June, 2016

Motions Committee: Bradley, Golinveaux, Manley, O'Connor, Owen, Rickard (Chair), Snyder

Part II	No. of CAMs
NFPA 70, *National Electrical Code*®	43

NITMAM Closing Date: April 29, 2016
Posted: May 16, 2016
Tech Session: June 16, 2016

Technical Meeting Schedule:

1) Thursday, June 16, 2016 starts @ 8:00 AM

Special Note:

The NFPA Conference and Expo on June 13th-16th, 2016 in Las Vegas, Nevada constitutes the third NFPA Technical Meeting (Tech Session) under the *Regulations Governing the Development of NFPA Standards* (Regs). Please note that under the current process, there will be no hard copies of the Technical Committee records (First Draft Report and Second Draft Report provided at the Tech Session). In addition to the Tech Session Agenda, which incorporates the Fall, NEC® and Annual Final Motions Committee Reports, the complete Technical Committee records (First Draft Report and Second Draft Report) including all changes to the appropriate NFPA Standard, can be found on the next edition tab of the specific Document Information page, http://www.nfpa.org/document#.

Report Layout

Certified Amending Motions (CAMs)

This Report contains Certified Amending Motions (CAMs) for NFPA Standards in the Annual 2016 revision cycle that will be considered at the June, 2016 NFPA Technical Meeting (Tech Session). These motions have been certified and determined as proper by the Motions Committee in accordance with the *Regulations Governing the Development of NFPA Standards (Regs)* and the *NFPA Technical Meeting Convention Rules (Convention Rules)*. Although **the motions as certified will not change**, the manner in which they are presented, their layout, and the accompanying supportive material may be modified (solely for presentation), removed or added to. Please make note of, and take into consideration, the following:

1) **Report Sections.**
The Motions are displayed via two distinct sections which are as follows:

I. **CAM Overview**. Page 3 lists all the CAMs for NFPA 70 that can be pursued at the Tech Session. It includes a reference to the pages containing text that illustrates the potential impact of the CAMs if they were to pass or fail. This page is repeated for all other Annual 2016 Standards being considered at the Tech Session.

II. **Effect of CAMs.** Page 7 displays the potential text of NFPA 70 if Motion Seq # 70-1 were to pass or fail. These pages immediately proceed the applicable CAM Overview page and follow the same order as the motion sequence numbers (Motion Seq #). The impact of a successful CAM on the Second Draft text is shown legislatively. The effect of an unsuccessful motion is illustrated by simply showing the applicable Second Draft text, without legislative changes. Please see below the editorial legend used throughout these sections.

Draft text is displayed as follows:
(~~Strikethrough~~: indicates the deletion of text)
(Underline: indicates the addition of text)

2) **Editorial Renumbering.**
The text, which illustrates the certified amending motion, is derived from the First Draft Report and Second Draft Report. As a result, the section numbers and other materials relating to formatting are subject to change based on the final recommendations of the entire standards development process.

3) **NFPA Technical Meeting Consideration.**
The material provided in this Report is intended to illustrate the potential impact of a successful or unsuccessful Amending Motion on the text of an NFPA Standard. The amendment is based on the recommendation of the NFPA membership when an Amending Motion is filed and presented in accordance with the *Regulations Governing the Development of NFPA Standards (Regs)*. **IMPORTANT NOTE:** The text as recommended by the NFPA membership is subject to the entire standards development process. Therefore, the standard, recommended amendment, and associated text cannot be considered final until the responsible committee(s) are balloted, where required by the *Regs*, and the standard is issued by the Standards Council. **Per Table 1 of the *Regs*, any failed Ballot will result in a recommendation to return the related text to previous edition text.**

Motion Seq #	NITMAM Log #	Panel #	Section/Para	Person(s) Authorized to Make the Motion	Certified Amending Motion**	Motion Page #
70-1	80 81	2	210.12	Jack Wells and John Goodsell, Arc Fault Circuit Interrupter Wiring Device Joint Research and Development Consortium	**Multiple Notices for a Single Motion:** Accept an Identifiable Part of Committee Comment No. 19002	8
70-2	123	4	225.27	Howard Herndon, Southwest Electritech Services LLC.	Accept Public Comment No. 1134	11
70-3	126	4	225.30(F)	John Masarick, Independent Electrical Contractors Inc.	Accept an Identifiable Part of Public Comment No. 793	12
70-4	51 99	4	230.70(A)(4)	Vince Baclawski, NEMA Daniel Buuck, NAHB	**Multiple Notices for a Single Motion:** Reject Second Revision No. 1004	13
70-5	91	10	240.2	Christel Hunter, General Cable Corporation	Accept Public Comment No. 1136	14
70-6	13	5	250.35(B)	Alfio Torrisi	Accept Public Comment No. 741	15
70-7	112	5	250.122(B)	Joseph Andre, JFA Consulting	Reject an Identifiable Part of Second Revision No. 1223	20
70-8	3	3	300.5(D)(3)	Marcelo Hirschler, GBH International	Accept Public Comment No. 1219	21
70-9	46	6	310.15(B)(3)	Phil Simmons, Simmons Electrical Services	Accept Public Comment No. 1043	22
70-10	74	6	310.15(B)(3)	David Brender, Copper Development Association	Accept Public Comment No. 583	25

70-11	30	6	310.15(B)(3)	Travis Lindsey, TLC Services Inc.	Accept Public Comment No. 1401	28
70-12	28 56	6	310.15(B)(3)	David Brender, Copper Development Association Stephen Shull, Empire District Electric Co.	**Multiple Notices for a Single Motion:** Accept Public Comment No. 589 Accept Public Comment No. 320	31
70-13	77	8	370.80	Frederic Hartwell, Hartwell Electrical Services, Inc.	Reject Second Revision No. 2110	34
70-14	49	11	430.22(G)	Vince Baclawski, NEMA	Accept Public Comment No. 834	36
70-15	102 113 134	7	336.10	Richard Holub, The DuPont Company; Gary Savage, Prysmian Group; James Dollard, IBEW Local Union 98	**Multiple Notices for a Single Motion:** Reject an Identifiable Part of Second Revision No. 1808	38
70-16	100 89	14	501.10(A)(1)	Richard Holub, The DuPont Company, Inc. Gary Savage, Prysmian Group	**Related Motions**: Accept Committee Comment No. 3902 and Reject Second Correlating Revision No. 3	39
70-17	88	14	501.10(A)(2)	Gary Savage, Prysmian Group	Reject Second Correlating Revision No. 90	41
70-18	101 93	14	505.15(B)(1)	Richard Holub, The DuPont Company, Inc. Gary Savage, Prysmian Group	**Related Motions:** Accept Committee Comment No. 3906 and Reject an Identifiable Part of Second Correlating Revision No. 94	42
70-19	6	15	525.2	Marcelo Hirschler, GBH International	Accept Public Comment No. 806	43

70-20	20	3	590.4(J)	James Dollard, IBEW	Reject Second Revision No. 607	44
70-21	10	18	600.33(A)	Terry Peters, SPI	Reject Second Revision No. 5124, Including any Related Portions of First Revision No. 5139	45
70-22	8	18	600.33(A)	David Kiddoo, CCCA	Reject an Identifiable Part of Second Revision No. 5124	48
70-23	9	18	600.33(A)	David Kiddoo, CCCA	Reject an Identifiable Part of Second Revision No. 5124, Including any Related Portions of First Revision No. 5139	50
70-24	96	12	625.17(A)	Sean Lui, Tesla Motors	Accept Public Comment No. 1588	52
70-25	131 111 124 130	12	625.17(B)	Jason France, ClipperCreek Inc; Sean Lui, Tesla Motors; Alec Brooks, AeroVironment Inc; Craig Rodine, Chargepoint Inc.	**Multiple Notices for a Single Motion**: Accept Public Comment No. 1719 Accept Public Comment No. 1509 Accept Public Comment No. 1097 Accept Public Comment No. 1461	53
70-26	115 139	12	625.44(A)	Jason France, ClipperCreek Inc; Sean Lui, Tesla Motors;	Multiple Notices for a Single Motion:Accept Public Comment No. 1075 Accept Public Comment No. 1722	54

	21			Alec Brooks, AeroVironment Inc	Accept Public Comment No. 1534	
70-27	42	12	646.3(B)	Stanley Kaufman, CableSafe, Inc./OFS	Accept an Identifiable Part of Public Comment No. 46	55
70-28	60 65	17	680.14	Phil Simmons, Simmons Electrical Services Paul Abernathy, McKinney, TX	**Multiple Notices for a Single Motion:** Reject Second Correlating Revision No. 43	56
70-29	135	4	691.1	Roger McDaniel, Georgia Power Company/Southern Company	Accept an Identifiable Part of Public Comment No. 1711	57
70-30	136	4	691.4	Roger McDaniel, Georgia Power Company/Southern Company	Reject Second Correlating Revision No. 112	58
70-31	137	4	691.6	Roger McDaniel, Georgia Power Company/Southern Company	Reject Second Revision No. 981	59
70-32	138	4	691.7	Roger McDaniel, Georgia Power Company/Southern Company	Reject Second Revision No. 982	60
70-33	140	4	691.8	Roger McDaniel, Georgia Power Company/Southern Company	Reject Second Revision No. 983	61
70-34	125	4	Definition: Intentionally Islanded System. (705.2)	Roger McDaniel, Georgia Power Company/ Southern Company	Reject Second Revision No. 988	62
70-35	121	4	Definition: Island Interconnection Device (IID). (705.2)	Roger McDaniel, Georgia Power Company/ Southern Company	Reject Second Revision No. 989	63
70-36	127	4	705.150 – 705.170	Roger McDaniel, Georgia Power Company/ Southern Company	Reject Second Correlating Revision No. 116	64

70-37	82	4	Article 710	Timothy Croushore, FirstEnergy	Reject Second Revision No. 987, Including any Related Portions of First Revision No. 1045	66
70-38	141	13	Article 712	Roger McDaniel, Georgia Power Company/ Southern Company	Reject Second Revision No. 3627	68
70-39	79	3	725.144	Jeff Silveira, BICSI	Reject Second Revision No. 611	74
70-40	84	3	725.179	Jeff Silveira, BICSI	Reject an Identifiable Part of Second Revision No. 615	77
70-41	12	16	770.24	David Kiddoo, CCCA	Accept Public Comment No. 73	78
70-42	76	16	840.160	Joel Goergen, Cisco Systems, Inc.	Accept an identifiable part of Public Comment No. 1262	79
70-43	105 85	16	Part VI., 840.160	Jeff Silveira, BICSI; Tony Obrien, Cisco Systems	**Multiple Notices for a Single Motion:** Reject Second Revision No. 4564, including any related First Revision No. 4643	80

Motion Seq#	**Certified Amending Motion:** Accept an Identifiable Part of Committee Comment 19002
70-1	**Recommended Text if Motion Passes:** 210.12 (A) Dwelling Units. All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets or devices installed in dwelling unit kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, or similar rooms or areas shall be protected by any of the means described in 210.12(A)(1) through (6): (1) A listed combination-type arc-fault circuit interrupter, installed to provide protection of the entire branch circuit (2) A listed branch/feeder-type AFCI installed at the origin of the branch-circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit. (3) A listed supplemental arc protection circuit breaker installed at the origin of the branch circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit where all of the following conditions are met: a. The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter. b. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor. c. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit. (4) A listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet on the branch circuit in combination with a listed branch-circuit overcurrent protective device where all of the following conditions are met: a. The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter. b. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor. c. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit. ~~d. The combination of the branch-circuit overcurrent device and outlet branch-circuit AFCI shall be identified as meeting the requirements for a system combination-type AFCI and shall be listed as such.~~ (5) If RMC, IMC, EMT, Type MC, or steel-armored Type AC cables meeting the requirements of 250.118, metal wireways, metal auxiliary gutters, and metal outlet and junction boxes are installed for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a listed outlet branch-circuit type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit. (6) Where a listed metal or nonmetallic conduit or tubing or Type MC cable is encased in not less than 50 mm (2 in.) of concrete for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a listed outlet branch-circuit type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit. Exception: Where an individual branch circuit to a fire alarm system installed in accordance with 760.41(B) or 760.121(B) is installed in RMC, IMC, EMT, or steel-sheathed cable, Type AC or Type MC, meeting the requirements of 250.118, with metal outlet and junction boxes, AFCI protection shall be permitted to be omitted.

	Informational Note No. 1: For information on combination-type and branch/feeder-type arc-fault circuit interrupters, see UL 1699-2011, Standard for Arc-Fault Circuit Interrupters. For information on outlet branch-circuit type arc-fault circuit interupters, see UL Subject 1699A, Outline of Investigation for Outlet Branch Circuit Arc-Fault Circuit-Interrupters. For information on system combination AFCIs, see UL Subject 1699C, Outline of Investigation for System Combination Arc-Fault Circuit Interrupters. Informational Note No. 2: See 29.6.3(5) of NFPA 72-2013, National Fire Alarm and Signaling Code, for information related to secondary power-supply requirements for smoke alarms installed in dwelling units. Informational Note No. 3: See 760.41(B) and 760.121(B) for power-supply requirements for fire alarm systems.
70-1 Cont'd	**Recommended Text if Motion Fails:** 210.12 (A) Dwelling Units. All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets or devices installed in dwelling unit kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, or similar rooms or areas shall be protected by any of the means described in 210.12(A)(1) through (6): (1) A listed combination-type arc-fault circuit interrupter, installed to provide protection of the entire branch circuit (2) A listed branch/feeder-type AFCI installed at the origin of the branch-circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit. (3) A listed supplemental arc protection circuit breaker installed at the origin of the branch circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit where all of the following conditions are met: a. The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter. b. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor. c. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit. (4) A listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet on the branch circuit in combination with a listed branch-circuit overcurrent protective device where all of the following conditions are met: a. The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter. b. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor. c. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit. d. The combination of the branch-circuit overcurrent device and outlet branch-circuit AFCI shall be identified as meeting the requirements for a system combination–type AFCI and shall be listed as such. (5) If RMC, IMC, EMT, Type MC, or steel-armored Type AC cables meeting the requirements of 250.118, metal wireways, metal auxiliary gutters, and metal outlet and junction boxes are installed for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a listed outlet branch-circuit type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit. (6) Where a listed metal or nonmetallic conduit or tubing or Type MC cable is encased in not less than 50 mm (2 in.) of concrete for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a listed outlet branch-circuit type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit. Exception: Where an individual branch circuit to a fire alarm system installed in accordance with 760.41(B) or 760.121(B) is installed in RMC, IMC, EMT, or steel-sheathed cable, Type AC or Type MC, meeting the requirements of 250.118, with metal outlet and junction boxes, AFCI protection shall be permitted to be omitted.

70-1 Cont'd	Informational Note No. 1: For information on combination-type and branch/feeder-type arc-fault circuit interrupters, see UL 1699-2011, Standard for Arc-Fault Circuit Interrupters. For information on outlet branch-circuit type arc-fault circuit interupters, see UL Subject 1699A, Outline of Investigation for Outlet Branch Circuit Arc-Fault Circuit-Interrupters. For information on system combination AFCIs, see UL Subject 1699C, Outline of Investigation for System Combination Arc-Fault Circuit Interrupters. Informational Note No. 2: See 29.6.3(5) of NFPA 72-2013, National Fire Alarm and Signaling Code, for information related to secondary power-supply requirements for smoke alarms installed in dwelling units. Informational Note No. 3: See 760.41(B) and 760.121(B) for power-supply requirements for fire alarm systems.

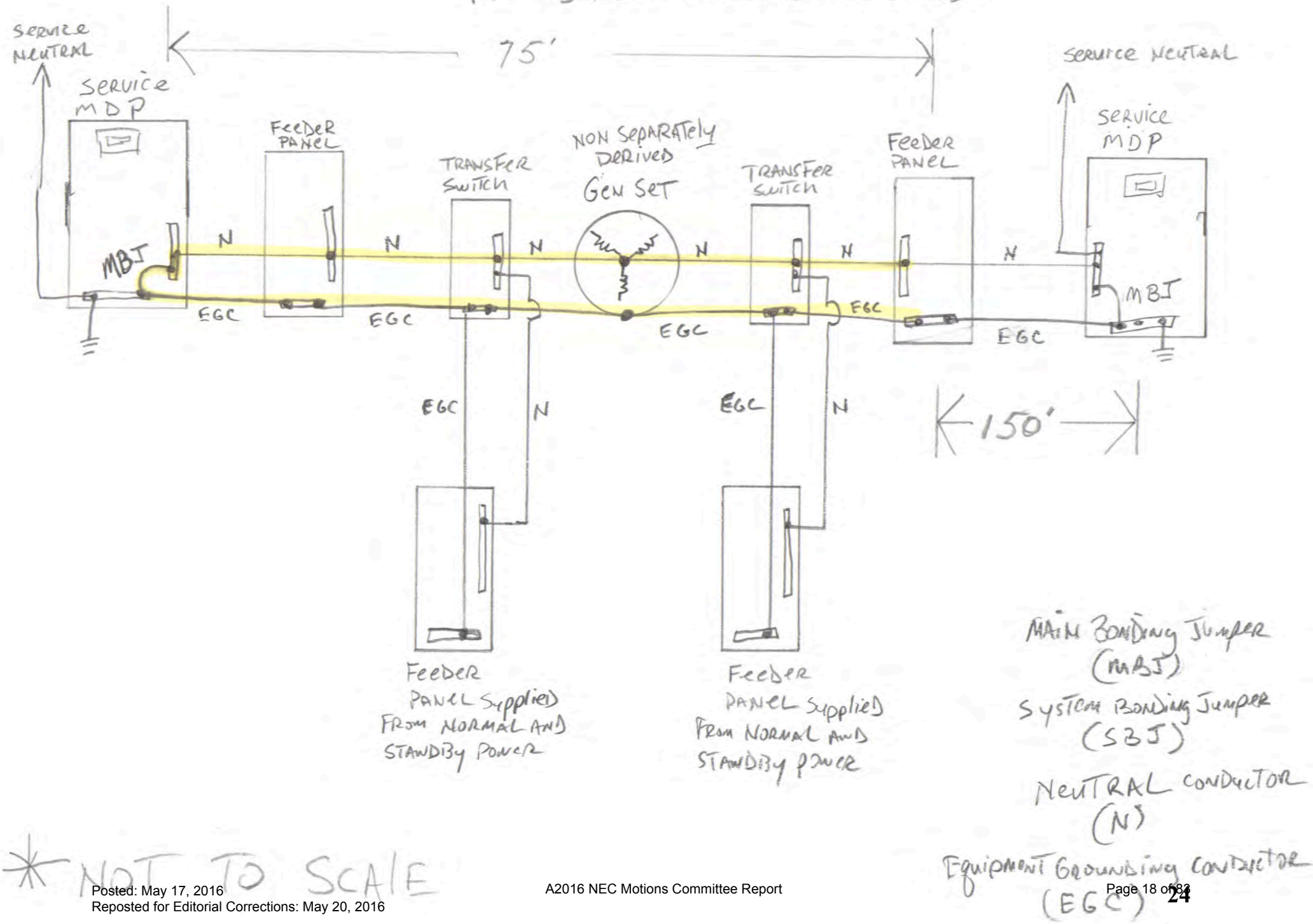
Motion Seq#	
	Certified Amending Motion: Accept Public Comment No. 1134
70-2	**Recommended Text if Motion Passes:** 225.27 Raceway Seal. Where a raceway enters a building or structure from ~~outside~~ an underground distribution system, it shall be sealed in accordance with 300.5(G). Spare or unused raceways shall also be sealed. Sealants shall be identified for use with cable insulation, conductor insulation, bare conductor, shield, ~~or~~ and other components.
	Recommended Text if Motion Fails: 225.27 Raceway Seal. Where a raceway enters a building or structure from outside, it shall be sealed. Spare or unused raceways shall also be sealed. Sealants shall be identified for use with cable insulation, conductor insulation, bare conductor, shield, or other components.

Motion Seq#	**Certified Amending Motion:** Accept an Identifiable Part of Public Comment No. 793
70-3	**Recommended Text if Motion Passes:** 225.30 …. (F) One- or Two-Family Dwelling Unit(s). For a one- or two-family dwelling unit(s) with multiple feeders, it shall be permissible to install not more than six disconnects grouped at one location where the feeders enter the building, provided the feeder conductors ~~are sized 1/0 or larger and~~ originate at the same switchboard, panelboard, or overcurrent protective device location.
	Recommended Text if Motion Fails: 225.30 …. (F) One- or Two-Family Dwelling Unit(s). For a one- or two-family dwelling unit(s) with multiple feeders, it shall be permissible to install not more than six disconnects grouped at one location where the feeders enter the building, provided the feeder conductors are sized 1/0 or larger and originate at the same switchboard, panelboard, or overcurrent protective device location.

Motion Seq#	**Certified Amending Motion:** Reject Second Revision No. 1004
70-4	**Recommended Text if Motion Passes:** ~~230.70(A)(4) Service Disconnects on One- and Two-Family Dwellings.~~ ~~Where installed on one-family and two-family dwellings, the service disconnecting means or remote-controlled device in accordance with 230.70(A)(3) shall be installed outside the structure at the meter location, or at the nearest point of entrance of the service conductors. This requirement shall take effect on July 1, 2020.~~
	Recommended Text if Motion Fails: 230.70(A)(4) Service Disconnects on One- and Two-Family Dwellings. Where installed on one-family and two-family dwellings, the service disconnecting means or remote-controlled device in accordance with 230.70(A)(3) shall be installed outside the structure at the meter location, or at the nearest point of entrance of the service conductors. This requirement shall take effect on July 1, 2020.

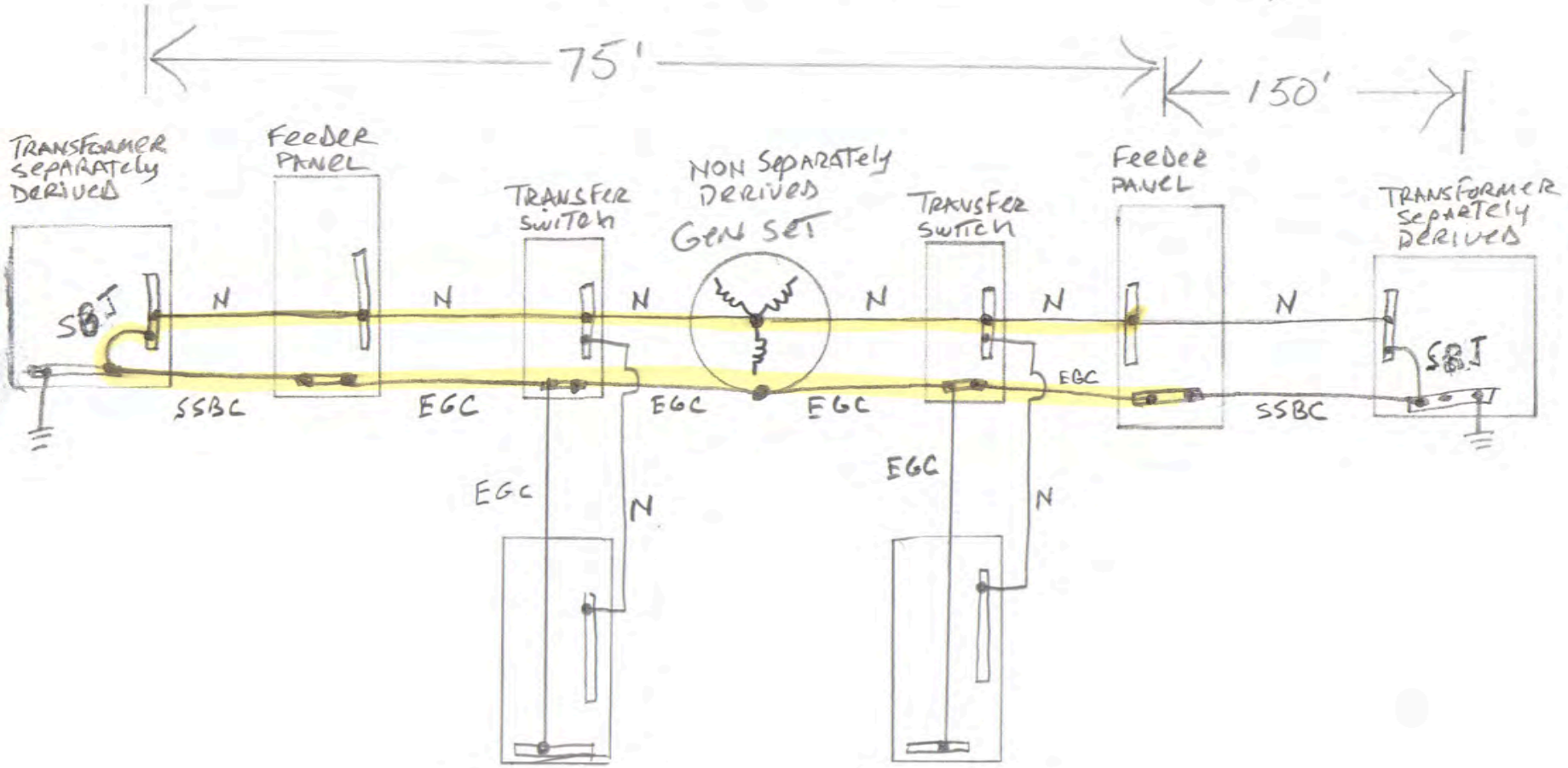
Motion Seq#	**Certified Amending Motion:** Accept Public Comment No. 1136
70-5	**Recommended Text if Motion Passes:** 240.2 Definitions. … Tap Conductor. ~~A conductor~~ As used in this article, a tap conductor is defined as a conductor, other than a service conductor, that has overcurrent protection ahead of its point of supply that exceeds the value permitted for similar conductors that are protected as described elsewhere in 240.4.
	Recommended Text if Motion Fails: 240.2 Definitions. … Tap Conductor. A conductor, other than a service conductor, that has overcurrent protection ahead of its point of supply that exceeds the value permitted for similar conductors that are protected as described elsewhere in 240.4.

Motion Seq#	**Certified Amending Motion:** Accept Public Comment No. 741
70-6	**Recommended Text if Motion Passes:** 250.35 (B) Nonseparately Derived System. ~~If the~~ (1) When a generator is installed as a nonseparately derived system, and overcurrent protection is not integral with the generator assembly, a supply-side bonding jumper shall be installed between the generator equipment grounding terminal and the equipment grounding terminal, bar, or bus of the disconnecting mean(s). It shall be sized in accordance with 250.102(C) based on the size of the conductors supplied by the generator. (2) A non-separately derived generator shall not supply more than one transfer switch (TS) under the following conditions a. One TS supplying a Service disconnect and one TS supplying feeder conductors that are supplied from other service entrance conductors. b. Two or more feeders supplied from different sets of service entrance conductors, with a TS suppling each feeder c. Two or more feeders that are each individually supplied from two different separately derived sources, with a TS suppling each feeder. *Note: Motion includes 4 drawings*
	Recommended Text if Motion Fails: 250.35 (B) Nonseparately Derived System. If the generator is installed as a nonseparately derived system, and overcurrent protection is not integral with the generator assembly, a supply-side bonding jumper shall be installed between the generator equipment grounding terminal and the equipment grounding terminal, bar, or bus of the disconnecting mean(s). It shall be sized in accordance with 250.102(C) based on the size of the conductors supplied by the generator.


PARALLEL PATH AND CONNECTION ON LOAD SIDE
TWO SERVICE ENTRANCE CONDUCTORS
SERVICE NEUTRAL
SERVICE MDP
75'
FEEDER PANEL
TRANSFER SWITCH
NON SEPARATELY DERIVED
GEN SET
TRANSFER SWITCH
FEEDER PANEL
SERVICE NEUTRAL
SERVICE MDP
MBJ
N
EGC
MBJ
150'
FEEDER PANEL SUPPLIED FROM NORMAL AND STANDBY POWER
FEEDER PANEL SUPPLIED FROM NORMAL AND STANDBY POWER
MAIN BONDING JUMPER (MBJ)
SYSTEM BONDING JUMPER (SBJ)
NEUTRAL CONDUCTOR (N)
EQUIPMENT GROUNDING CONDUCTOR (EGC)
* NOT TO SCALE

PARALLEL PATH AND CONNECTION ON LOAD SIDE

TWO TRANSFORMERS (SEPARATELY DERIVED)



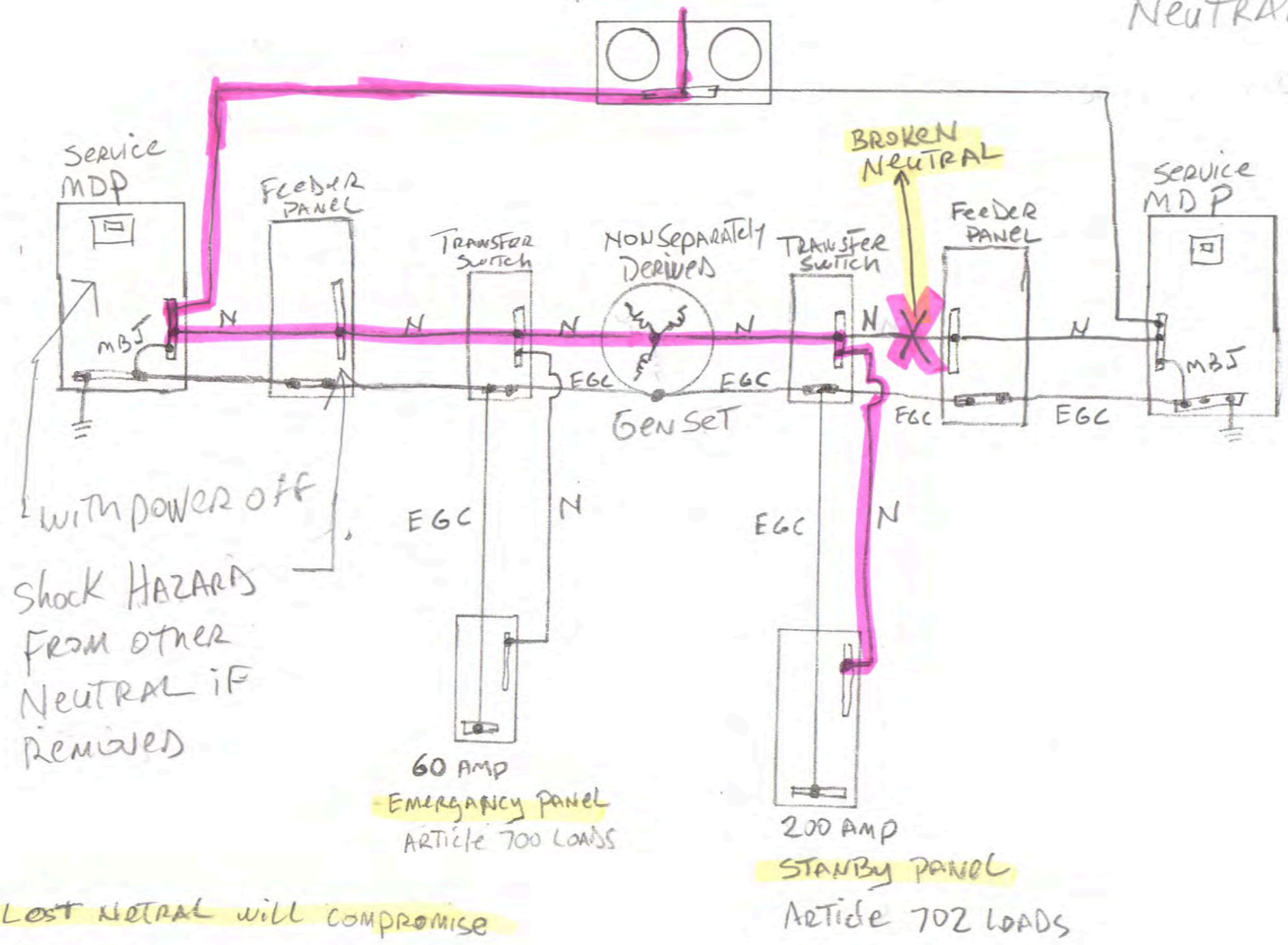
Supply side Bonding Conductor (SSBC)

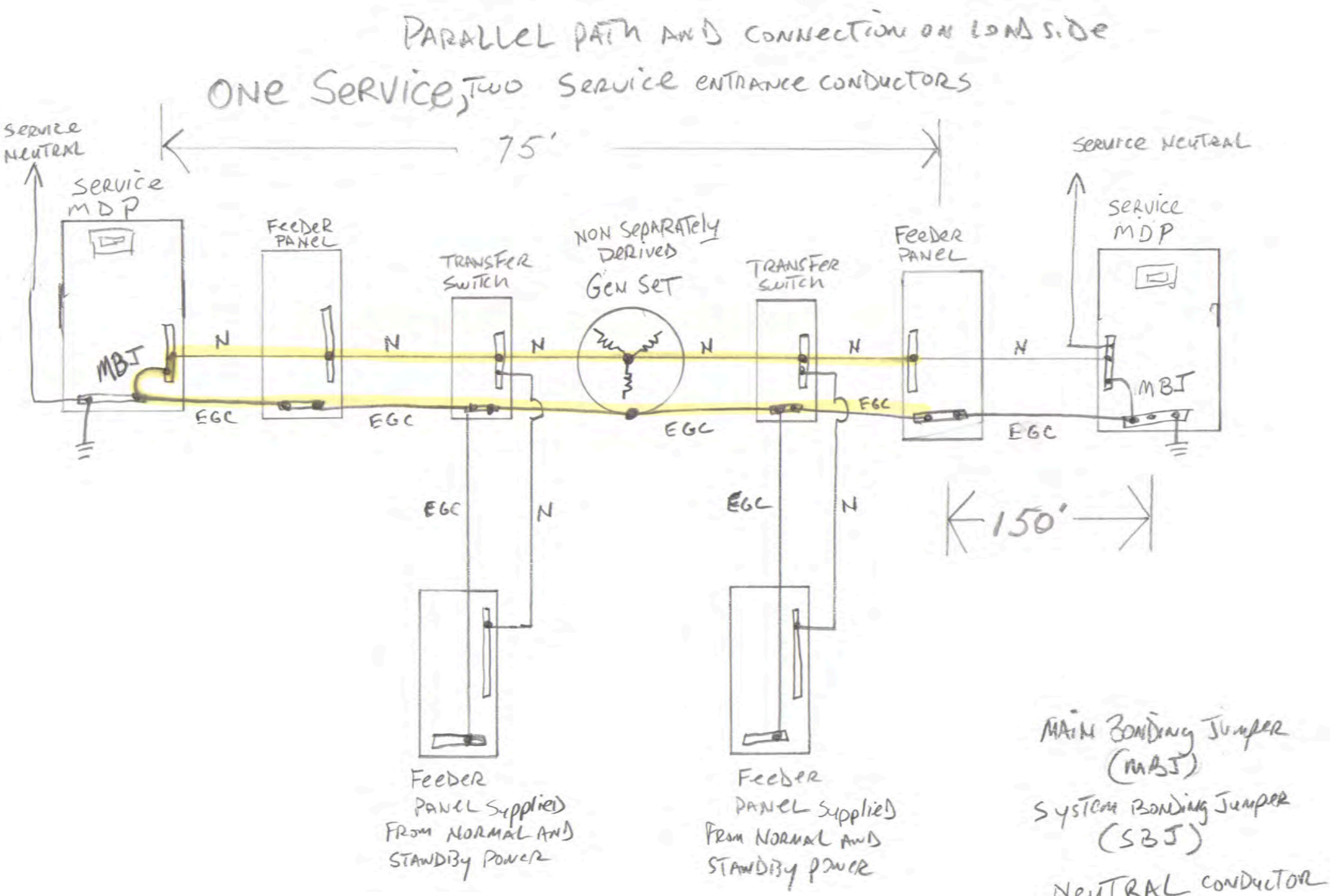
System Bonding Jumper (SBJ)

NEUTRAL (N)

Equipment Grounding Conductor (EGC)

* NOT TO SCALE


ONE SERVICE
LOSS/BROKEN NEUTRAL/OR WORKING ON NEUTRAL
SERVICE MDP
FEEDER PANEL
TRANSFER SWITCH
NON SEPARATELY DERIVED
TRANSFER SWITCH
BROKEN NEUTRAL
FEEDER PANEL
SERVICE MDP
MBJ
N
EGC
GENSET
MBJ
WITH POWER OFF
SHOCK HAZARDS FROM OTHER NEUTRAL IF REMOVED
EGC
N
EGC
N
60 AMP
EMERGENCY PANEL
ARTICLE 700 LOADS
200 AMP
STANBY PANEL
ARTICLE 702 LOADS
LOST NETRAL will COMPROMISE
EMERGENCY SYSTEM


PARALLEL PATH AND CONNECTION ON LOAD SIDE
ONE SERVICE, TWO SERVICE ENTRANCE CONDUCTORS
SERVICE NEUTRAL
75'
SERVICE MDP
FEEDER PANEL
TRANSFER SWITCH
NON SEPARATELY DERIVED
GEN SET
TRANSFER SWITCH
FEEDER PANEL
SERVICE NEUTRAL
SERVICE MDP
MBJ
N
EGC
MBJ
150'
FEEDER PANEL SUPPLIED FROM NORMAL AND STANDBY POWER
FEEDER PANEL SUPPLIED FROM NORMAL AND STANDBY POWER
MAIN BONDING JUMPER (MBJ)
SYSTEM BONDING JUMPER (SBJ)
NEUTRAL CONDUCTOR (N)
EQUIPMENT GROUNDING CONDUCTOR (EGC)
* NOT TO SCALE

Motion Seq#	**Certified Amending Motion:** Reject an Identifiable Part of Second Revision No. 1223
70-7	**Recommended Text if Motion Passes:** 250.122. … (B) Increased in Size. If ungrounded conductors are increased in size <u>for any reason from the minimum size that has sufficient ampacity for the intended installation before the application of any adjustment or correction factor(s)</u> ~~to account for voltage drop~~, wire-type equipment grounding conductors shall be increased in size. The increase in size shall be at least in the same proportion as the increase in the size of the ungrounded conductors using their circular mil area.
	Recommended Text if Motion Fails: 250.122. … (B) Increased in Size. If ungrounded conductors are increased in size to account for voltage drop, wire-type equipment grounding conductors shall be increased in size. The increase in size shall be at least in the same proportion as the increase in the size of the ungrounded conductors using their circular mil area.

Motion Seq#	**Certified Amending Motion:** Accept Public Comment No. 1219
70-8	**Recommended Text if Motion Passes:** 300.5(D)(3) Service Conductors. Underground service conductors <u>and feeders</u> that are not encased in concrete and that are buried 450 mm (18 in.) or more below grade shall have their location identified by a warning ribbon that is placed in the trench at least 300 mm (12 in.) above the underground installation.
	Recommended Text if Motion Fails: 300.5(D)(3) Service Conductors. Underground service conductors that are not encased in concrete and that are buried 450 mm (18 in.) or more below grade shall have their location identified by a warning ribbon that is placed in the trench at least 300 mm (12 in.) above the underground installation.

Motion Seq#	**Certified Amending Motion:** Accept Public Comment No. 1043
70-9	**Recommended Text if Motion Passes:** 310.15(B). … (3) Adjustment Factors. (a) More than Three Current-Carrying Conductors. Where the number of current-carrying conductors in a raceway or cable exceeds three, or where single conductors or multiconductor cables are installed without maintaining spacing for a continuous length longer than 600 mm (24 in.) and are not installed in raceways, the allowable ampacity of each conductor shall be reduced as shown in Table 310.15(B)(3)(a). Section 310.15(A)(2) exception shall not apply. Each current-carrying conductor of a paralleled set of conductors shall be counted as a current-carrying conductor. Where conductors of different systems, as provided in 300.3, are installed in a common raceway or cable, the adjustment factors shown in Table 310.15(B)(3)(a) shall apply only to the number of power and lighting conductors (Articles 210, 215,220, and 230). Informational Note No. 1: See Annex B for adjustment factors for more than three current-carrying conductors in a raceway or cable with load diversity. Informational Note No. 2: See 366.23 for adjustment factors for conductors and ampacity for bare copper and aluminum bars in auxiliary gutters and 376.22(B) for adjustment factors for conductors in metal wireways. (1) Where conductors are installed in cable trays, the provisions of 392.80 shall apply. (2) Adjustment factors shall not apply to conductors in raceways having a length not exceeding 600 mm (24 in.). (3) Adjustment factors shall not apply to underground conductors entering or leaving an outdoor trench if those conductors have physical protection in the form of rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit (PVC), or reinforced thermosetting resin conduit (RTRC) having a length not exceeding 3.05 m (10 ft), and if the number of conductors does not exceed four. (4) Adjustment factors shall not apply to Type AC cable or to Type MC cable under the following conditions: a. The cables do not have an overall outer jacket. b. Each cable has not more than three current-carrying conductors. c. The conductors are 12 AWG copper. d. Not more than 20 current-carrying conductors are installed without maintaining spacing, are stacked, or are supported on “bridle rings.” ~~Exception to (4): If cables meeting the requirements in 310.15(B)(3)(4)a through c with more than 20 current-carrying conductors are installed longer than 600 mm (24 in.) without maintaining spacing, are stacked, or are supported on bridle rings, a 60 percent adjustment factor shall be applied.~~ Exception: A 60 percent adjustment factor shall be applied if the current-carrying conductors in these cables that are stacked or bundled longer than 600 mm (24 in.) without maintaining spacing exceeds 20. (5) An adjustment factor of 60 percent shall be applied to Type AC cable or Type MC cable under the following conditions: a. The cables do not have an overall outer jacket. b. The number of current carrying conductors exceeds 20. c. The cables are stacked or bundled longer that 600 mm (24 in.) without spacing being maintained. Table 310.15(B)(3)(a) Adjustment Factors for More Than Three Current-Carrying Conductors

Number of Conductors[1]	Percent of Values in Table 310.15(B)(16) Through Table 310.15(B)(19) as Adjusted for Ambient Temperature if Necessary
4–6	80
7–9	70
10–20	50
21–30	45
31–40	40
41 and above	35

[1]Number of conductors is the total number of conductors in the raceway or cable, including spare conductors. The count shall be adjusted in accordance with 310.15(B)(5) and (6). The count shall not include conductors that are connected to electrical components that cannot be simultaneously energized.

(b) Raceway Spacing. Spacing between raceways shall be maintained.

70-9 Cont'd

(c) Raceways and Cables Exposed to Sunlight on Rooftops. Where raceways or cables are exposed to direct sunlight on or above rooftops~~, raceways or cables shall be installed a minimum distance above the roof to the bottom of the raceway or cable of 23 mm (7⁄8 in.). Where the distance above the roof to the bottom of the raceway is less than 23 mm (7⁄8 in.), a temperature adder of 33°C (60°F)~~ the adjustments shown in Table 3.10.15(B)(3)(c) shall be added to the outdoor temperature to determine the applicable ambient temperature for application of the correction factors in Table 310.15(B)(2)(a) ~~or Table 310.15(B)(2)(b).~~

Table 310.15(B)(3)(c) Ambient Temperature Adjustment for Raceways or Cables Exposed to Sunlight on or Above Rooftops

Distance Above Roof to Bottom of Raceway or Cable	Temperature Adder	
	°C	°F
On roof 0-13mm (0-1/2in.)	33	60
Above roof 13mm (1/2 in. – 3 ½ in.)	22	40
Above 90mm – 300mm (3 ½ in – 12 in.)	17	30
Above 300mm – 900mm (12 in. – 36 in.)	14	25

Exception: Type XHHW-2 insulated conductors shall not be subject to this ampacity adjustment.

Informational Note: One source for the ambient temperatures in various locations is the ASHRAE Handbook — Fundamentals.

Recommended Text if Motion Fails:

310.15(B). …

(3) Adjustment Factors.

(a) More than Three Current-Carrying Conductors. Where the number of current-carrying conductors in a raceway or cable exceeds three, or where single conductors or multiconductor cables are installed without maintaining spacing for a continuous length longer than 600 mm (24 in.) and are not installed in raceways, the allowable ampacity of each conductor shall be reduced as shown in Table 310.15(B)(3)(a). Each current-carrying conductor of a paralleled set of conductors shall be counted as a current-carrying conductor.

Where conductors of different systems, as provided in 300.3, are installed in a common raceway or cable, the adjustment factors shown in Table 310.15(B)(3)(a) shall apply only to the number of power and lighting conductors (Articles 210, 215,220, and 230).

70-9 Cont'd

Informational Note No. 1: See Annex B for adjustment factors for more than three current-carrying conductors in a raceway or cable with load diversity.
Informational Note No. 2: See 366.23 for adjustment factors for conductors and ampacity for bare copper and aluminum bars in auxiliary gutters and 376.22(B) for adjustment factors for conductors in metal wireways.
(1) Where conductors are installed in cable trays, the provisions of 392.80 shall apply.
(2) Adjustment factors shall not apply to conductors in raceways having a length not exceeding 600 mm (24 in.).
(3) Adjustment factors shall not apply to underground conductors entering or leaving an outdoor trench if those conductors have physical protection in the form of rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit (PVC), or reinforced thermosetting resin conduit (RTRC) having a length not exceeding 3.05 m (10 ft), and if the number of conductors does not exceed four.
(4) Adjustment factors shall not apply to Type AC cable or to Type MC cable under the following conditions:
a. The cables do not have an overall outer jacket.
b. Each cable has not more than three current-carrying conductors.
c. The conductors are 12 AWG copper.
d. Not more than 20 current-carrying conductors are installed without maintaining spacing, are stacked, or are supported on "bridle rings."
Exception to (4): If cables meeting the requirements in 310.15(B)(3)(4)a through c with more than 20 current-carrying conductors are installed longer than 600 mm (24 in.) without maintaining spacing, are stacked, or are supported on bridle rings, a 60 percent adjustment factor shall be applied.

Table 310.15(B)(3)(a) Adjustment Factors for More Than Three Current-Carrying Conductors

Number of Conductors[1]	Percent of Values in Table 310.15(B)(16) Through Table 310.15(B)(19) as Adjusted for Ambient Temperature if Necessary
4–6	80
7–9	70
10–20	50
21–30	45
31–40	40
41 and above	35

[1]Number of conductors is the total number of conductors in the raceway or cable, including spare conductors. The count shall be adjusted in accordance with 310.15(B)(5) and (6). The count shall not include conductors that are connected to electrical components that cannot be simultaneously energized.

(b) Raceway Spacing. Spacing between raceways shall be maintained.
(c) Raceways and Cables Exposed to Sunlight on Rooftops. Where raceways or cables are exposed to direct sunlight on or above rooftops, raceways or cables shall be installed a minimum distance above the roof to the bottom of the raceway or cable of 23 mm (7⁄8 in.). Where the distance above the roof to the bottom of the raceway is less than 23 mm (7⁄8 in.), a temperature adder of 33°C (60°F) shall be added to the outdoor temperature to determine the applicable ambient temperature for application of the correction factors in Table 310.15(B)(2)(a) or Table 310.15(B)(2)(b).
Exception: Type XHHW-2 insulated conductors shall not be subject to this ampacity adjustment.
Informational Note: One source for the ambient temperatures in various locations is the ASHRAE Handbook — Fundamentals.

Motion Seq#	**Certified Amending Motion:** Accept an Identifiable Part of Public Comment No. 583
70-10	**Recommended Text if Motion Passes:** 310.15(B). … (3) Adjustment Factors. (a) More than Three Current-Carrying Conductors. Where the number of current-carrying conductors in a raceway or cable exceeds three, or where single conductors or multiconductor cables are installed without maintaining spacing for a continuous length longer than 600 mm (24 in.) and are not installed in raceways, the allowable ampacity of each conductor shall be reduced as shown in Table 310.15(B)(3)(a). Section 310.15(A)(2) exception shall not apply. Each current-carrying conductor of a paralleled set of conductors shall be counted as a current-carrying conductor. Where conductors of different systems, as provided in 300.3, are installed in a common raceway or cable, the adjustment factors shown in Table 310.15(B)(3)(a) shall apply only to the number of power and lighting conductors (Articles 210, 215,220, and 230). Informational Note No. 1: See Annex B for adjustment factors for more than three current-carrying conductors in a raceway or cable with load diversity. Informational Note No. 2: See 366.23 for adjustment factors for conductors and ampacity for bare copper and aluminum bars in auxiliary gutters and 376.22(B) for adjustment factors for conductors in metal wireways. (1) Where conductors are installed in cable trays, the provisions of 392.80 shall apply. (2) Adjustment factors shall not apply to conductors in raceways having a length not exceeding 600 mm (24 in.). (3) Adjustment factors shall not apply to underground conductors entering or leaving an outdoor trench if those conductors have physical protection in the form of rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit (PVC), or reinforced thermosetting resin conduit (RTRC) having a length not exceeding 3.05 m (10 ft), and if the number of conductors does not exceed four. (4) Adjustment factors shall not apply to Type AC cable or to Type MC cable under the following conditions: a. The cables do not have an overall outer jacket. b. Each cable has not more than three current-carrying conductors. c. The conductors are 12 AWG copper. d. Not more than 20 current-carrying conductors are installed without maintaining spacing, are stacked, or are supported on “bridle rings.” ~~Exception to (4): If cables meeting the requirements in 310.15(B)(3)(4)a through c with more than 20 current-carrying conductors are installed longer than 600 mm (24 in.) without maintaining spacing, are stacked, or are supported on bridle rings, a 60 percent adjustment factor shall be applied.~~ Exception: A 60 percent adjustment factor shall be applied if the current-carrying conductors in these cables that are stacked or bundled longer than 600 mm (24 in.) without maintaining spacing exceeds 20. (5) An adjustment factor of 60 percent shall be applied to Type AC cable or Type MC cable under the following conditions: a. The cables do not have an overall outer jacket. b. The number of current carrying conductors exceeds 20. c. The cables are stacked or bundled longer that 600 mm (24 in.) without spacing being maintained. Table 310.15(B)(3)(a) Adjustment Factors for More Than Three Current-Carrying Conductors

70-10 Cont'd

Number of Conductors[1]	Percent of Values in Table 310.15(B)(16) Through Table 310.15(B)(19) as Adjusted for Ambient Temperature if Necessary
4–6	80
7–9	70
10–20	50
21–30	45
31–40	40
41 and above	35

[1]Number of conductors is the total number of conductors in the raceway or cable, including spare conductors. The count shall be adjusted in accordance with 310.15(B)(5) and (6). The count shall not include conductors that are connected to electrical components that cannot be simultaneously energized.

(b) Raceway Spacing. Spacing between raceways shall be maintained.

(c) Raceways and Cables Exposed to Sunlight on Rooftops. Where raceways or cables are exposed to direct sunlight on or above rooftops, the adjustments shown in Table 310.15(B)(3)(c)raceways or cables shall be installed a minimum distance above the roof to the bottom of the raceway or cable of 23 mm (7⁄8 in.). Where the distance above the roof to the bottom of the raceway is less than 23 mm (7⁄8 in.), a temperature adder of 33°C (60°F) shall be added to the outdoor temperature to determine the applicable ambient temperature for application of the correction factors in Table 310.15(B)(2)(a) or Table 310.15(B)(2)(b).

~~Exception: Type XHHW-2 insulated conductors shall not be subject to this ampacity adjustment.~~

Informational Note: One source for the ambient temperatures in various locations is the ASHRAE Handbook — Fundamentals.

Recommended Text if Motion Fails:

310.15(B). …

(3) Adjustment Factors.

(a) More than Three Current-Carrying Conductors. Where the number of current-carrying conductors in a raceway or cable exceeds three, or where single conductors or multiconductor cables are installed without maintaining spacing for a continuous length longer than 600 mm (24 in.) and are not installed in raceways, the allowable ampacity of each conductor shall be reduced as shown in Table 310.15(B)(3)(a). Each current-carrying conductor of a paralleled set of conductors shall be counted as a current-carrying conductor.

Where conductors of different systems, as provided in 300.3, are installed in a common raceway or cable, the adjustment factors shown in Table 310.15(B)(3)(a) shall apply only to the number of power and lighting conductors (Articles 210, 215,220, and 230).

Informational Note No. 1: See Annex B for adjustment factors for more than three current-carrying conductors in a raceway or cable with load diversity.

Informational Note No. 2: See 366.23 for adjustment factors for conductors and ampacity for bare copper and aluminum bars in auxiliary gutters and 376.22(B) for adjustment factors for conductors in metal wireways.

(1) Where conductors are installed in cable trays, the provisions of 392.80 shall apply.

(2) Adjustment factors shall not apply to conductors in raceways having a length not exceeding 600 mm (24 in.).

(3) Adjustment factors shall not apply to underground conductors entering or leaving an outdoor trench if those conductors have physical protection in the form of rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit (PVC), or reinforced thermosetting resin conduit (RTRC) having a length not exceeding 3.05 m (10 ft), and if the number of conductors does not exceed four.

(4) Adjustment factors shall not apply to Type AC cable or to Type MC cable under the following conditions:

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a. The cables do not have an overall outer jacket.
b. Each cable has not more than three current-carrying conductors.
c. The conductors are 12 AWG copper.
d. Not more than 20 current-carrying conductors are installed without maintaining spacing, are stacked, or are supported on "bridle rings."
Exception to (4): If cables meeting the requirements in 310.15(B)(3)(4)a through c with more than 20 current-carrying conductors are installed longer than 600 mm (24 in.) without maintaining spacing, are stacked, or are supported on bridle rings, a 60 percent adjustment factor shall be applied.
Table 310.15(B)(3)(a) Adjustment Factors for More Than Three Current-Carrying Conductors

Number of Conductors[1]	Percent of Values in Table 310.15(B)(16) Through Table 310.15(B)(19) as Adjusted for Ambient Temperature if Necessary
4–6	80
7–9	70
10–20	50
21–30	45
31–40	40
41 and above	35

[1]Number of conductors is the total number of conductors in the raceway or cable, including spare conductors. The count shall be adjusted in accordance with 310.15(B)(5) and (6). The count shall not include conductors that are connected to electrical components that cannot be simultaneously energized.

(b) Raceway Spacing. Spacing between raceways shall be maintained.

(c) Raceways and Cables Exposed to Sunlight on Rooftops. Where raceways or cables are exposed to direct sunlight on or above rooftops, raceways or cables shall be installed a minimum distance above the roof to the bottom of the raceway or cable of 23 mm (7⁄8 in.). Where the distance above the roof to the bottom of the raceway is less than 23 mm (7⁄8 in.), a temperature adder of 33°C (60°F) shall be added to the outdoor temperature to determine the applicable ambient temperature for application of the correction factors in Table 310.15(B)(2)(a) or Table 310.15(B)(2)(b).
Exception: Type XHHW-2 insulated conductors shall not be subject to this ampacity adjustment.
Informational Note: One source for the ambient temperatures in various locations is the ASHRAE Handbook — Fundamentals.

Motion Seq#	**Certified Amending Motion:** Accept Public Comment No. 1401
70-11	**Recommended Text if Motion Passes:** 310.15(B)…. (3) Adjustment Factors. (a) More than Three Current-Carrying Conductors. Where the number of current-carrying conductors in a raceway or cable exceeds three, or where single conductors or multiconductor cables are installed without maintaining spacing for a continuous length longer than 600 mm (24 in.) and are not installed in raceways, the allowable ampacity of each conductor shall be reduced as shown in Table 310.15(B)(3)(a). Section 310.15(A)(2) exception shall not apply. Each current-carrying conductor of a paralleled set of conductors shall be counted as a current-carrying conductor. Where conductors of different systems, as provided in 300.3, are installed in a common raceway or cable, the adjustment factors shown in Table 310.15(B)(3)(a) shall apply only to the number of power and lighting conductors (Articles 210, 215,220, and 230). Informational Note No. 1: See Annex B for adjustment factors for more than three current-carrying conductors in a raceway or cable with load diversity. Informational Note No. 2: See 366.23 for adjustment factors for conductors and ampacity for bare copper and aluminum bars in auxiliary gutters and 376.22(B) for adjustment factors for conductors in metal wireways. (1) Where conductors are installed in cable trays, the provisions of 392.80 shall apply. (2) Adjustment factors shall not apply to conductors in raceways having a length not exceeding 600 mm (24 in.). (3) Adjustment factors shall not apply to underground conductors entering or leaving an outdoor trench if those conductors have physical protection in the form of rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit (PVC), or reinforced thermosetting resin conduit (RTRC) having a length not exceeding 3.05 m (10 ft), and if the number of conductors does not exceed four. (4) Adjustment factors shall not apply to Type AC cable or to Type MC cable under the following conditions: a. The cables do not have an overall outer jacket. b. Each cable has not more than three current-carrying conductors. c. The conductors are 12 AWG copper. d. Not more than 20 current-carrying conductors are installed without maintaining spacing, are stacked, or are supported on “bridle rings.” ~~Exception to (4): If cables meeting the requirements in 310.15(B)(3)(4)a through c with more than 20 current-carrying conductors are installed longer than 600 mm (24 in.) without maintaining spacing, are stacked, or are supported on bridle rings, a 60 percent adjustment factor shall be applied.~~ Exception: A 60 percent adjustment factor shall be applied if the current-carrying conductors in these cables that are stacked or bundled longer than 600 mm (24 in.) without maintaining spacing exceeds 20. (5) An adjustment factor of 60 percent shall be applied to Type AC cable or Type MC cable under the following conditions: a. The cables do not have an overall outer jacket. b. The number of current carrying conductors exceeds 20. c. The cables are stacked or bundled longer that 600 mm (24 in.) without spacing being maintained. Table 310.15(B)(3)(a) Adjustment Factors for More Than Three Current-Carrying Conductors

Number of Conductors[1]	Percent of Values in Table 310.15(B)(16) Through Table 310.15(B)(19) as Adjusted for Ambient Temperature if Necessary
4–6	80
7–9	70
10–20	50
21–30	45
31–40	40
41 and above	35

[1]Number of conductors is the total number of conductors in the raceway or cable, including spare conductors. The count shall be adjusted in accordance with 310.15(B)(5) and (6). The count shall not include conductors that are connected to electrical components that cannot be simultaneously energized.

(b) Raceway Spacing. Spacing between raceways shall be maintained.

70-11 Cont'd

(c) Raceways and Cables Exposed to Sunlight on Rooftops. Where raceways or cables are exposed to direct sunlight on or above rooftops~~, raceways or cables shall be installed a minimum distance above the roof to the bottom of the raceway or cable of 23 mm (7⁄8 in.). Where the distance above the roof to the bottom of the raceway is less than 23 mm (7⁄8 in.), a temperature adder of 33°C (60°F)~~ the adjustments shown in Table 3.10.15(B)(3)(c) shall be added to the outdoor temperature to determine the applicable ambient temperature for application of the correction factors in Table 310.15(B)(2)(a) or Table 310.15(B)(2)(b).

~~Exception: Type XHHW-2 insulated conductors shall not be subject to this ampacity adjustment.~~

Table 310.15(B)(3)(c) Ambient Temperature Adjustment for Raceways or Cables Exposed to Sunlight on or Above Rooftops

Distance Above Roof to Bottom of Raceway or Cable	Temperature Added	
	°C	°F
On roof 0-13mm (0-1/2in.)	33	60
Above roof 13mm (1/2 in. – 3 ½ in.)	22	40
Above 90mm – 300mm (3 ½ in – 12 in.)	17	30
Above 300mm – 900mm (12 in. – 36 in.)	14	25

Informational Note: One source for the ambient temperatures in various locations is the ASHRAE Handbook — Fundamentals.

Recommended Text if Motion Fails:

310.15(B)….

(3) Adjustment Factors.

(a) More than Three Current-Carrying Conductors. Where the number of current-carrying conductors in a raceway or cable exceeds three, or where single conductors or multiconductor cables are installed without maintaining spacing for a continuous length longer than 600 mm (24 in.) and are not installed in raceways, the allowable ampacity of each conductor shall be reduced as shown in Table 310.15(B)(3)(a). Each current-carrying conductor of a paralleled set of conductors shall be counted as a current-carrying conductor.

Where conductors of different systems, as provided in 300.3, are installed in a common raceway or cable, the adjustment factors shown in Table 310.15(B)(3)(a) shall apply only to the number of power and lighting conductors (Articles 210, 215,220, and 230).

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Informational Note No. 1: See Annex B for adjustment factors for more than three current-carrying conductors in a raceway or cable with load diversity.
Informational Note No. 2: See 366.23 for adjustment factors for conductors and ampacity for bare copper and aluminum bars in auxiliary gutters and 376.22(B) for adjustment factors for conductors in metal wireways.
(1) Where conductors are installed in cable trays, the provisions of 392.80 shall apply.
(2) Adjustment factors shall not apply to conductors in raceways having a length not exceeding 600 mm (24 in.).
(3) Adjustment factors shall not apply to underground conductors entering or leaving an outdoor trench if those conductors have physical protection in the form of rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit (PVC), or reinforced thermosetting resin conduit (RTRC) having a length not exceeding 3.05 m (10 ft), and if the number of conductors does not exceed four.
(4) Adjustment factors shall not apply to Type AC cable or to Type MC cable under the following conditions:
a. The cables do not have an overall outer jacket.
b. Each cable has not more than three current-carrying conductors.
c. The conductors are 12 AWG copper.
d. Not more than 20 current-carrying conductors are installed without maintaining spacing, are stacked, or are supported on "bridle rings."
Exception to (4): If cables meeting the requirements in 310.15(B)(3)(4)a through c with more than 20 current-carrying conductors are installed longer than 600 mm (24 in.) without maintaining spacing, are stacked, or are supported on bridle rings, a 60 percent adjustment factor shall be applied.

Table 310.15(B)(3)(a) Adjustment Factors for More Than Three Current-Carrying Conductors

Number of Conductors[1]	Percent of Values in Table 310.15(B)(16) Through Table 310.15(B)(19) as Adjusted for Ambient Temperature if Necessary
4–6	80
7–9	70
10–20	50
21–30	45
31–40	40
41 and above	35

[1]Number of conductors is the total number of conductors in the raceway or cable, including spare conductors. The count shall be adjusted in accordance with 310.15(B)(5) and (6). The count shall not include conductors that are connected to electrical components that cannot be simultaneously energized.

(b) Raceway Spacing. Spacing between raceways shall be maintained.
(c) Raceways and Cables Exposed to Sunlight on Rooftops. Where raceways or cables are exposed to direct sunlight on or above rooftops, raceways or cables shall be installed a minimum distance above the roof to the bottom of the raceway or cable of 23 mm (7⁄8 in.). Where the distance above the roof to the bottom of the raceway is less than 23 mm (7⁄8 in.), a temperature adder of 33°C (60°F) shall be added to the outdoor temperature to determine the applicable ambient temperature for application of the correction factors in Table 310.15(B)(2)(a) or Table 310.15(B)(2)(b).
Exception: Type XHHW-2 insulated conductors shall not be subject to this ampacity adjustment.
Informational Note: One source for the ambient temperatures in various locations is the ASHRAE Handbook — Fundamentals.

Motion Seq#	**Certified Amending Motion:** Accept Public Comment No. 589; Accept Public Comment No. 320
70-12	**Recommended Text if Motion Passes:** 310.15(B). … (3) Adjustment Factors. (a) More than Three Current-Carrying Conductors. Where the number of current-carrying conductors in a raceway or cable exceeds three, or where single conductors or multiconductor cables are installed without maintaining spacing for a continuous length longer than 600 mm (24 in.) and are not installed in raceways, the allowable ampacity of each conductor shall be reduced as shown in Table 310.15(B)(3)(a). Section 310.15(A)(2) exception shall not apply. Each current-carrying conductor of a paralleled set of conductors shall be counted as a current-carrying conductor. Where conductors of different systems, as provided in 300.3, are installed in a common raceway or cable, the adjustment factors shown in Table 310.15(B)(3)(a) shall apply only to the number of power and lighting conductors (Articles 210, 215,220, and 230). Informational Note No. 1: See Annex B for adjustment factors for more than three current-carrying conductors in a raceway or cable with load diversity. Informational Note No. 2: See 366.23 for adjustment factors for conductors and ampacity for bare copper and aluminum bars in auxiliary gutters and 376.22(B) for adjustment factors for conductors in metal wireways. (1) Where conductors are installed in cable trays, the provisions of 392.80 shall apply. (2) Adjustment factors shall not apply to conductors in raceways having a length not exceeding 600 mm (24 in.). (3) Adjustment factors shall not apply to underground conductors entering or leaving an outdoor trench if those conductors have physical protection in the form of rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit (PVC), or reinforced thermosetting resin conduit (RTRC) having a length not exceeding 3.05 m (10 ft), and if the number of conductors does not exceed four. (4) Adjustment factors shall not apply to Type AC cable or to Type MC cable under the following conditions: a. The cables do not have an overall outer jacket. b. Each cable has not more than three current-carrying conductors. c. The conductors are 12 AWG copper. d. Not more than 20 current-carrying conductors are installed without maintaining spacing, are stacked, or are supported on “bridle rings.” ~~Exception to (4): If cables meeting the requirements in 310.15(B)(3)(4)a through c with more than 20 current-carrying conductors are installed longer than 600 mm (24 in.) without maintaining spacing, are stacked, or are supported on bridle rings, a 60 percent adjustment factor shall be applied.~~ Exception: A 60 percent adjustment factor shall be applied if the current-carrying conductors in these cables that are stacked or bundled longer than 600 mm (24 in.) without maintaining spacing exceeds 20. (5) An adjustment factor of 60 percent shall be applied to Type AC cable or Type MC cable under the following conditions: a. The cables do not have an overall outer jacket. b. The number of current carrying conductors exceeds 20. c. The cables are stacked or bundled longer that 600 mm (24 in.) without spacing being maintained. Table 310.15(B)(3)(a) Adjustment Factors for More Than Three Current-Carrying Conductors

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Number of Conductors[1]	Percent of Values in Table 310.15(B)(16) Through Table 310.15(B)(19) as Adjusted for Ambient Temperature if Necessary
4–6	80
7–9	70
10–20	50
21–30	45
31–40	40
41 and above	35

[1]Number of conductors is the total number of conductors in the raceway or cable, including spare conductors. The count shall be adjusted in accordance with 310.15(B)(5) and (6). The count shall not include conductors that are connected to electrical components that cannot be simultaneously energized.

(b) Raceway Spacing. Spacing between raceways shall be maintained.

(c) Raceways and Cables Exposed to Sunlight on Rooftops. Where raceways or cables are exposed to direct sunlight on or above rooftops, the adjustments shown in Table 310.15(B)(3)(c)raceways or cables shall be installed a minimum distance above the roof to the bottom of the raceway or cable of 23 mm (7⁄8 in.). Where the distance above the roof to the bottom of the raceway is less than 23 mm (7⁄8 in.), a temperature adder of 33°C (60°F) shall be added to the outdoor temperature to determine the applicable ambient temperature for application of the correction factors in Table 310.15(B)(2)(a) or Table 310.15(B)(2)(b).

Exception: Type XHHW-2 insulated conductors shall not be subject to this ampacity adjustment.

Informational Note: One source for the ambient temperatures in various locations is the ASHRAE Handbook — Fundamentals.

Recommended Text if Motion Fails:

310.15. …

(3) Adjustment Factors.

(a) *More than Three Current-Carrying Conductors.* Where the number of current-carrying conductors in a raceway or cable exceeds three, or where single conductors or multiconductor cables are installed without maintaining spacing for a continuous length longer than 600 mm (24 in.) and are not installed in raceways, the allowable ampacity of each conductor shall be reduced as shown in Table 310.15(B)(3)(a). Each current-carrying conductor of a paralleled set of conductors shall be counted as a current-carrying conductor.

Where conductors of different systems, as provided in 300.3, are installed in a common raceway or cable, the adjustment factors shown in Table 310.15(B)(3)(a) shall apply only to the number of power and lighting conductors (Articles 210, 215,220, and 230).

Informational Note No. 1: See Annex B for adjustment factors for more than three current-carrying conductors in a raceway or cable with load diversity.

Informational Note No. 2: See 366.23 for adjustment factors for conductors and ampacity for bare copper and aluminum bars in auxiliary gutters and 376.22(B) for adjustment factors for conductors in metal wireways.

(1) Where conductors are installed in cable trays, the provisions of 392.80 shall apply.

(2) Adjustment factors shall not apply to conductors in raceways having a length not exceeding 600 mm (24 in.).

(3) Adjustment factors shall not apply to underground conductors entering or leaving an outdoor trench if those conductors have physical protection in the form of rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit (PVC), or reinforced thermosetting resin conduit (RTRC) having a length not exceeding 3.05 m (10 ft), and if the number of conductors does not exceed four.

(4) Adjustment factors shall not apply to Type AC cable or to Type MC cable under the following conditions:

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a. The cables do not have an overall outer jacket.
b. Each cable has not more than three current-carrying conductors.
c. The conductors are 12 AWG copper.
d. Not more than 20 current-carrying conductors are installed without maintaining spacing, are stacked, or are supported on "bridle rings."
Exception to (4): If cables meeting the requirements in 310.15(B)(3)(4)a through c with more than 20 current-carrying conductors are installed longer than 600 mm (24 in.) without maintaining spacing, are stacked, or are supported on bridle rings, a 60 percent adjustment factor shall be applied.
Table 310.15(B)(3)(a) Adjustment Factors for More Than Three Current-Carrying Conductors

Number of Conductors[1]	Percent of Values in Table 310.15(B)(16) Through Table 310.15(B)(19) as Adjusted for Ambient Temperature if Necessary
4–6	80
7–9	70
10–20	50
21–30	45
31–40	40
41 and above	35

[1]Number of conductors is the total number of conductors in the raceway or cable, including spare conductors. The count shall be adjusted in accordance with 310.15(B)(5) and (6). The count shall not include conductors that are connected to electrical components that cannot be simultaneously energized.
(b) Raceway Spacing. Spacing between raceways shall be maintained.
(c) Raceways and Cables Exposed to Sunlight on Rooftops. Where raceways or cables are exposed to direct sunlight on or above rooftops, raceways or cables shall be installed a minimum distance above the roof to the bottom of the raceway or cable of 23 mm (7⁄8 in.). Where the distance above the roof to the bottom of the raceway is less than 23 mm (7⁄8 in.), a temperature adder of 33°C (60°F) shall be added to the outdoor temperature to determine the applicable ambient temperature for application of the correction factors in Table 310.15(B)(2)(a) or Table 310.15(B)(2)(b).
Exception: Type XHHW-2 insulated conductors shall not be subject to this ampacity adjustment.
Informational Note: One source for the ambient temperatures in various locations is the ASHRAE Handbook — Fundamentals.

Motion Seq#	**Certified Amending Motion:** Reject Second Revision No. 2110
70-13	**Recommended Text if Motion Passes:** 370.80 Ampacity of Conductors. ~~(A) Ampacity of Single Insulated Conductors.~~ The ampacity of conductors in cablebus shall be in accordance with Table 310.15(B)(17) and Table 310.15(B)(19) for installations up to and including 2000 volts, or with Table 310.60(C)(69) and Table 310.60(C)(70) for installations 2001 to 35,000 volts. ~~(B) Ampacity of Cables Rated 2000 Volts or Less.~~ ~~In cablebus that terminates at equipment with conductor temperature limitations, the allowable ampacity of single-conductor cables shall be as permitted by 310.15(A)(2) . The adjustment factors of 310.15(B)(3)~~ ~~(a) shall not apply to the ampacity of cables in cablebus. The ampacity of single-conductor cables, nominally rated 2000 volts or less, shall comply with the following:~~ ~~(1) The ampacities for 600 kcmil and larger single conductor cables in ventilated cablebus shall not exceed 75 percent of the allowable ampacities in Table 310.15(B)(17) and Table 310.15(B)(19) .~~ ~~(2) Where cablebus are continuously covered for more than 1.8 m (6 ft) with solid unventilated covers, the ampacities for 600 kcmil and larger cables shall not exceed 70 percent of the allowable ampacities in Table 310.15(B)(17) and Table 310.15(B)(19) .~~ ~~(3) The ampacities for 1/0 AWG through 500 kcmil single conductor cables in ventilated cablebus shall not exceed 65 percent of the allowable ampacities in Table 310.15(B)(17) and Table 310.15(B)(19).~~ ~~(4) Where cablebus are continuously covered for more than 1.8 m (6 ft) with solid unventilated covers, the ampacities for 1/0 AWG through 500 kcmil cables shall not exceed 60 percent of the allowable ampacities in Table 310.15(B)(17) and Table 310.15(B)(19).~~ ~~(C) Ampacity of Type MV and Type MC Cables Rated 2001 Volts or Over.~~ ~~The ampacity of Type MV and Type MC cables, nominally rated 2001 volts or over, in cablebus shall comply with the following:~~ ~~(1) The ampacities for 1/0 AWG and larger single-conductor cables in ventilated cablebus shall not exceed 75 percent of the allowable ampacities in Table 310.60(C)(69) and Table 310.60(C)(70).~~ ~~(2) Where the cablebus are covered for more than 1.8 m (6 ft) with solid unventilated covers, the ampacities for 1/0 AWG and larger single-conductor cables shall not exceed 70 percent of the allowable ampacities in Table 310.60(C)(69) and Table 310.60(C)(70).~~ Informational Note No. 1: See 110.14(C) for conductor temperature limitations due to termination provisions for installations up to and including 2000 volts. Informational Note No. 2: See 110.40 for conductor temperature limitations due to termination provisions for installations 2001 to 35,000 volts.
	Recommended Text if Motion Fails: 370.80 Ampacity of Conductors. (A) Ampacity of Single Insulated Conductors. The ampacity of conductors in cablebus shall be in accordance with Table 310.15(B)(17) and Table 310.15(B)(19) for installations up to and including 2000 volts, or with Table 310.60(C)(69) and Table 310.60(C)(70) for installations 2001 to 35,000 volts. (B) Ampacity of Cables Rated 2000 Volts or Less. In cablebus that terminates at equipment with conductor temperature limitations, the allowable ampacity of single-conductor cables shall be as permitted by 310.15(A)(2) . The adjustment factors of 310.15(B)(3)

70-13 Cont'd	(a) shall not apply to the ampacity of cables in cablebus. The ampacity of single-conductor cables, nominally rated 2000 volts or less, shall comply with the following: (1) The ampacities for 600 kcmil and larger single conductor cables in ventilated cablebus shall not exceed 75 percent of the allowable ampacities in Table 310.15(B)(17) and Table 310.15(B)(19) . (2) Where cablebus are continuously covered for more than 1.8 m (6 ft) with solid unventilated covers, the ampacities for 600 kcmil and larger cables shall not exceed 70 percent of the allowable ampacities in Table 310.15(B)(17) and Table 310.15(B)(19) . (3) The ampacities for 1/0 AWG through 500 kcmil single conductor cables in ventilated cablebus shall not exceed 65 percent of the allowable ampacities in Table 310.15(B)(17) and Table 310.15(B)(19). (4) Where cablebus are continuously covered for more than 1.8 m (6 ft) with solid unventilated covers, the ampacities for 1/0 AWG through 500 kcmil cables shall not exceed 60 percent of the allowable ampacities in Table 310.15(B)(17) and Table 310.15(B)(19). (C) Ampacity of Type MV and Type MC Cables Rated 2001 Volts or Over. The ampacity of Type MV and Type MC cables, nominally rated 2001 volts or over, in cablebus shall comply with the following: (1) The ampacities for 1/0 AWG and larger single-conductor cables in ventilated cablebus shall not exceed 75 percent of the allowable ampacities in Table 310.60(C)(69) and Table 310.60(C)(70). (2) Where the cablebus are covered for more than 1.8 m (6 ft) with solid unventilated covers, the ampacities for 1/0 AWG and larger single-conductor cables shall not exceed 70 percent of the allowable ampacities in Table 310.60(C)(69) and Table 310.60(C)(70). Informational Note No. 1: See 110.14(C) for conductor temperature limitations due to termination provisions for installations up to and including 2000 volts. Informational Note No. 2: See 110.40 for conductor temperature limitations due to termination provisions for installations 2001 to 35,000 volts.

Motion Seq#	**Certified Amending Motion:** Accept Public Comment No. 834
70-14	**Recommended Text if Motion Passes:** 430.22(G) Conductors for Small Motors. Conductors for small motors shall not be smaller than 14 AWG unless otherwise permitted in 430.22(G)(1) or (G)(2). (1) 18 AWG Copper. ~~Where~~ 18 AWG individual copper conductors installed in a cabinet or enclosure, ~~18 AWG individual~~ copper conductors~~, copper conductors~~ that are part of a jacketed multiconductor cable assembly, or copper conductors in a flexible cord shall be permitted, under either of the following sets of conditions: (1) The circuit supplies a motor with a full-load current rating, as determined by 430.6(A)(1), of greater than 3.5 amperes, and less than or equal to 5 amperes, and all the following conditions are met: a. The circuit is protected in accordance with 430.52 . b. The circuit is provided with maximum Class 10 or Class 10A overload protection in accordance with 430.32 . c. Overcurrent protection is provided in accordance with 240.4(D)(1)(2). (2) The circuit supplies a motor with a full-load current rating, as determined by 430.6(A)(1), of 3.5 amperes or less, and all the following conditions are met: a. The circuit is protected in accordance with 430.52 . b. The circuit is provided with maximum Class 20 overload protection in accordance with 430.32 2. c. Overcurrent protection is provided in accordance with 240.4(D)(1)(2) . (2) 16 AWG Copper. ~~Where~~ 16 AWG individual copper conductors installed in a cabinet or enclosure, ~~16 AWG individual~~ copper conductors~~, copper conductors~~ that are part of a jacketed multiconductor cable assembly, or copper conductors in a flexible cord shall be permitted under either of the following sets of conditions: (1) The circuit supplies a motor with a full-load current rating, as determined by 430.6(A)(1), of greater than 5.5 amperes, and less than or equal to 8 amperes, and all the following conditions are met: a. The circuit is protected in accordance with 430.52. b. The circuit is provided with maximum Class 10 or Class 10A overload protection in accordance with 430.32. c. Overcurrent protection is provided in accordance with 240.4(D)(2)(2). (2) The circuit supplies a motor with a full-load current rating, as determined by 430.6(A)(1), of 5.5 amperes or less, and all the following conditions are met: a. The circuit is protected in accordance with 430.52. b. The circuit is provided with maximum Class 20 overload protection in accordance with 430.32. c. Overcurrent protection is provided in accordance with 240.4(D)(2)(2).
	Recommended Text if Motion Fails: 430.22(G) Conductors for Small Motors. Conductors for small motors shall not be smaller than 14 AWG unless otherwise permitted in 430.22(G)(1) or (G)(2). (1) 18 AWG Copper.

70-14 Cont'd	Where installed in a cabinet or enclosure, 18 AWG individual copper conductors, copper conductors that are part of a jacketed multiconductor cable assembly, or copper conductors in a flexible cord shall be permitted, under either of the following sets of conditions: (1) The circuit supplies a motor with a full-load current rating, as determined by 430.6(A)(1), of greater than 3.5 amperes, and less than or equal to 5 amperes, and all the following conditions are met: a. The circuit is protected in accordance with 430.52 . b. The circuit is provided with maximum Class 10 or Class 10A overload protection in accordance with 430.32 . c. Overcurrent protection is provided in accordance with 240.4(D)(1)(2). (2) The circuit supplies a motor with a full-load current rating, as determined by 430.6(A)(1), of 3.5 amperes or less, and all the following conditions are met: a. The circuit is protected in accordance with 430.52 . b. The circuit is provided with maximum Class 20 overload protection in accordance with 430.32. c. Overcurrent protection is provided in accordance with 240.4(D)(1)(2) . (2) 16 AWG Copper. Where installed in a cabinet or enclosure, 16 AWG individual copper conductors, copper conductors that are part of a jacketed multiconductor cable assembly, or copper conductors in a flexible cord shall be permitted under either of the following sets of conditions: (1) The circuit supplies a motor with a full-load current rating, as determined by 430.6(A)(1), of greater than 5.5 amperes, and less than or equal to 8 amperes, and all the following conditions are met: a. The circuit is protected in accordance with 430.52. b. The circuit is provided with maximum Class 10 or Class 10A overload protection in accordance with 430.32. c. Overcurrent protection is provided in accordance with 240.4(D)(2)(2). (2) The circuit supplies a motor with a full-load current rating, as determined by 430.6(A)(1), of 5.5 amperes or less, and all the following conditions are met: a. The circuit is protected in accordance with 430.52. b. The circuit is provided with maximum Class 20 overload protection in accordance with 430.32. c. Overcurrent protection is provided in accordance with 240.4(D)(2)(2).

Motion Seq#	
	Certified Amending Motion: Reject an Identifiable Part of Second Revision No. 1808
70-15	**Recommended Text if Motion Passes:** 336.10 Uses Permitted. Type TC cable shall be permitted to be used as follows: … 10. Direct buried, where identified for such use ~~11. In hazardous (classified) locations where specifically permitted by other articles in this *Code*. For Class I, Division 1 and Zone 1 locations only, Type TC cable used for other than flexible connections shall also comply with the following:~~ ~~a. The cable jacket and construction shall be evaluated and listed for the specific hazardous materials present in the location.~~ ~~b. The hazardous material group(s) evaluated shall be marked on the cable.~~ ~~c. The cable diameter shall be limited to 1 in. or smaller.~~ ~~d. The cable shall be permitted only for voltages of 150 volts to ground or less and currents of 30 amps or less.~~ ~~e. The cable shall be marked both "-ER" and "-HL."~~ Informational Note: See 310.15(A)(3) for temperature limitation of conductors.
	Recommended Text if Motion Fails: 336.10 Uses Permitted. Type TC cable shall be permitted to be used as follows: … 10. Direct buried, where identified for such use 11. In hazardous (classified) locations where specifically permitted by other articles in this *Code*. For Class I, Division 1 and Zone 1 locations only, Type TC cable used for other than flexible connections shall also comply with the following: a. The cable jacket and construction shall be evaluated and listed for the specific hazardous materials present in the location. b. The hazardous material group(s) evaluated shall be marked on the cable. c. The cable diameter shall be limited to 1 in. or smaller. d. The cable shall be permitted only for voltages of 150 volts to ground or less and currents of 30 amps or less. e. The cable shall be marked both "-ER" and "-HL." Informational Note: See 310.15(A)(3) for temperature limitation of conductors.

Motion Seq#	
	Certified Amending Motion: Accept Committee Comment No. 3902 and Reject Second Correlating Revision No. 3
70-16	**Recommended Text if Motion Passes:** 501.10(A)(1) General. In Class I, Division 1 locations, the wiring methods in (a) through (f) shall be permitted. (a) Threaded rigid metal conduit or threaded steel intermediate metal conduit. Exception: Type PVC conduit, Type RTRC conduit, and Type HDPE conduit shall be permitted where encased in a concrete envelope a minimum of 50 mm (2 in.) thick and provided with not less than 600 mm (24 in.) of cover measured from the top of the conduit to grade. The concrete encasement shall be permitted to be omitted where subject to the provisions of 514.8, Exception No. 2, or 515.8(A). Threaded rigid metal conduit or threaded steel intermediate metal conduit shall be used for the last 600 mm (24 in.) of the underground run to emergence or to the point of connection to the aboveground raceway. An equipment grounding conductor shall be included to provide for electrical continuity of the raceway system and for grounding of non–current-carrying metal parts. (b) Type MI cable terminated with fittings listed for the location. Type MI cable shall be installed and supported in a manner to avoid tensile stress at the termination fittings. (c) In industrial establishments with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation, Type MC-HL cable listed for use in Class I, Zone 1 or Division 1 locations, with a gas/vaportight continuous corrugated metallic sheath, an overall jacket of suitable polymeric material, and a separate equipment grounding conductor(s) in accordance with 250.122, and terminated with fittings listed for the application. Type MC-HL cable shall be installed in accordance with the provisions of Article 330, Part II. (d) In industrial establishments with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation, Type ITC-HL cable listed for use in Class I, Zone 1 or Division 1 locations, with a gas/vaportight continuous corrugated metallic sheath and an overall jacket of suitable polymeric material, and terminated with fittings listed for the application, and installed in accordance with the provisions of Article 727. (e) Optical fiber cable Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC shall be permitted to be installed in raceways in accordance with 501.10(A). These optical fiber cables shall be sealed in accordance with 501.15. <u>(f) In industrial establishments with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation, for applications limited to 600 volts, nominal, or less, and where protected from damage by location or a suitable guard, listed Type TC-ER-HL cable with an overall jacket and a separate equipment grounding conductor(s) in accordance with 250.122 that is terminated with fittings listed for the location. Type TC-ER-HL cables shall be installed in accordance with the provisions of 336.10, including the restrictions of 336.10(7).</u>
	Recommended Text if Motion Fails: (1) General. In Class I, Division 1 locations, the wiring methods in (a) through (f) shall be permitted. (a) Threaded rigid metal conduit or threaded steel intermediate metal conduit. Exception: Type PVC conduit, Type RTRC conduit, and Type HDPE conduit shall be permitted where encased in a concrete envelope a minimum of 50 mm (2 in.) thick and provided with not less than 600 mm (24 in.) of cover measured from the top of the conduit to grade. The concrete encasement shall be permitted to be omitted where subject to the provisions of 514.8, Exception No. 2, or 515.8(A). Threaded rigid metal conduit or threaded steel

70-16 Cont'd	intermediate metal conduit shall be used for the last 600 mm (24 in.) of the underground run to emergence or to the point of connection to the aboveground raceway. An equipment grounding conductor shall be included to provide for electrical continuity of the raceway system and for grounding of non–current-carrying metal parts. (b) Type MI cable terminated with fittings listed for the location. Type MI cable shall be installed and supported in a manner to avoid tensile stress at the termination fittings. (c) In industrial establishments with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation, Type MC-HL cable listed for use in Class I, Zone 1 or Division 1 locations, with a gas/vaportight continuous corrugated metallic sheath, an overall jacket of suitable polymeric material, and a separate equipment grounding conductor(s) in accordance with 250.122, and terminated with fittings listed for the application. Type MC-HL cable shall be installed in accordance with the provisions of Article 330, Part II. (d) In industrial establishments with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation, Type ITC-HL cable listed for use in Class I, Zone 1 or Division 1 locations, with a gas/vaportight continuous corrugated metallic sheath and an overall jacket of suitable polymeric material, and terminated with fittings listed for the application, and installed in accordance with the provisions of Article 727. (e) Optical fiber cable Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC shall be permitted to be installed in raceways in accordance with 501.10(A). These optical fiber cables shall be sealed in accordance with 501.15.

Motion Seq#	**Certified Amending Motion:** Reject Second Correlating Revision No. 90
70-17	**Recommended Text if Motion Passes:** 501.10(A)(2) Flexible Connections. Where necessary to employ flexible connections, as at motor terminals, one of the following shall be permitted: (a) Flexible fittings listed for the location (b) Flexible cord in accordance with the provisions of 501.140, terminated with cord connectors listed for the location ~~(c) In industrial establishments with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation, for applications limited to 600 volts, nominal, or less, and where protected from damage by location or a suitable guard, listed Type TC-ER-HL cable with an overall jacket and a separate equipment grounding conductor(s) in accordance with 250.122 that is terminated with fittings listed for the location~~
	Recommended Text if Motion Fails: 501.10(A)(2) Flexible Connections. Where necessary to employ flexible connections, as at motor terminals, one of the following shall be permitted: (a) Flexible fittings listed for the location (b) Flexible cord in accordance with the provisions of 501.140, terminated with cord connectors listed for the location (c) In industrial establishments with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation, for applications limited to 600 volts, nominal, or less, and where protected from damage by location or a suitable guard, listed Type TC-ER-HL cable with an overall jacket and a separate equipment grounding conductor(s) in accordance with 250.122 that is terminated with fittings listed for the location

Motion Seq#	**Certified Amending Motion:** Accept Committee Comment No. 3906 and Reject an Identifiable Part of Second Correlating Revision No. 94
70-18	**Recommended Text if Motion Passes:** 505.15(B)(1) General. In Class I, Zone 1 locations, the wiring methods in 505.15(B)(1) (a) through (B)(1)(i) shall be permitted. … (i) In industrial establishments with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation, for applications limited to 600 volts nominal or less, ~~for cable diameters 25 mm (1 in.) or less,~~ and where the cable is not subject to physical damage, Type TC-ER-HL cable listed for use in Class I, Zone 1 locations, with an overall jacket and a separate equipment grounding conductor(s) in accordance with 250.122, and terminated with fittings listed for the location, Type TC-ER-HL cable shall be installed in accordance with the provisions of Article 336, including the restrictions of 336.10(7).
	Recommended Text if Motion Fails: 505.15(B)(1) General. In Class I, Zone 1 locations, the wiring methods in 505.15(B)(1) (a) through (B)(1)(i) shall be permitted. … (i) In industrial establishments with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation, for applications limited to 600 volts nominal or less, for cable diameters 25 mm (1 in.) or less, and where the cable is not subject to physical damage, Type TC-ER-HL cable listed for use in Class I, Zone 1 locations, with an overall jacket and a separate equipment grounding conductor(s) in accordance with 250.122, and terminated with fittings listed for the location, Type TC-ER-HL cable shall be installed in accordance with the provisions of Article 336, including the restrictions of 336.10(7).

Motion Seq#	**Certified Amending Motion:** Accept Public Comment No. 806
70-19	**Recommended Text if Motion Passes:** 525.2 Definitions. Operator (as related to carnivals, circuses, fairs and similar events). The individual responsible for starting, stopping, and controlling an amusement ride or supervising a concession.
	Recommended Text if Motion Fails: 525.2 Definitions. Operator. The individual responsible for starting, stopping, and controlling an amusement ride or supervising a concession.

Motion Seq#	
	Certified Amending Motion: Reject Second Revision No. 607
70-20	**Recommended Text if Motion Passes:** 590.4(J) Definition…. Support. Cable assemblies and flexible cords and cables shall be supported in place at intervals that ensure that they will be protected from physical damage. Support shall be in the form of staples, cable ties, straps, or similar type fittings installed so as not to cause damage. Cable assemblies and flexible cords and cables installed as branch circuits or feeders shall not be installed on the floor or on the ground. Extension cords shall not be required to comply with 590.4(J). ~~Multiconductor cord or cable of a type identified in Table 400.4 for hard usage or extra-hard usage shall not be required to comply with 590.4(J).~~Vegetation shall not be used for support of overhead spans of branch circuits or feeders. Exception: For holiday lighting in accordance with 590.3(B), where the conductors or cables are arranged with strain relief devices, tension take-up devices, or other approved means to avoid damage from the movement of the live vegetation, trees shall be permitted to be used for support of overhead spans of branch-circuit conductors or cables.
	Recommended Text if Motion Fails: 590.4(J) Definition…. Support. Cable assemblies and flexible cords and cables shall be supported in place at intervals that ensure that they will be protected from physical damage. Support shall be in the form of staples, cable ties, straps, or similar type fittings installed so as not to cause damage. Cable assemblies and flexible cords and cables installed as branch circuits or feeders shall not be installed on the floor or on the ground. Extension cords shall not be required to comply with 590.4(J). Multiconductor cord or cable of a type identified in Table 400.4 for hard usage or extra-hard usage shall not be required to comply with 590.4(J). Vegetation shall not be used for support of overhead spans of branch circuits or feeders. Exception: For holiday lighting in accordance with 590.3(B), where the conductors or cables are arranged with strain relief devices, tension take-up devices, or other approved means to avoid damage from the movement of the live vegetation, trees shall be permitted to be used for support of overhead spans of branch-circuit conductors or cables.

Motion Seq#	
	Certified Amending Motion: Reject Second Revision No. 5124, including any related portions of First Revision No. 5139
70-21	**Recommended Text if Motion Passes:**

600.33. …

Listed class 2 cable ~~listed for the application~~ that complies with Table 600.33(A)(1) ~~or Table 600.33(A)(2)~~ ~~for substitutions~~ shall be installed on the load side of the Class 2 power source. The conductors shall have an ampacity not less than the load to be supplied and shall not be sized smaller than 22 ~~18~~ AWG.

~~Table 600.33(A)(1) Applications of Power Limited Cable in Signs and Outline Lighting~~

~~Location~~	~~CL2~~	~~CL3~~	~~CL2R~~	~~CL3R~~	~~CL2P~~	~~CL3P~~	~~PLTC~~
~~Non-concealed spaces inside buildings~~	~~Y~~	~~Y~~	~~Y~~	~~Y~~	~~Y~~	~~Y~~	~~Y~~
~~Concealed spaces inside buildingsthat are not used as plenums or risers~~	~~Y~~	~~Y~~	~~Y~~	~~Y~~	~~Y~~	~~Y~~	~~Y~~
~~Environmental air spaces plenums or risers~~	~~N~~	~~N~~	~~Y~~	~~Y~~	~~Y~~	~~Y~~	~~N~~
~~Wet locations~~	~~N~~	~~N~~	~~N~~	~~N~~	~~N~~	~~N~~	~~Y~~

~~Y = Permitted. N = Not Permitted.~~

~~Table 600.33(A)(2) Class 2 Cable Substitutions~~

~~Cable Type~~	~~Permitted Substitutions~~
~~CL3P~~	~~CMP~~
~~CL2P~~	~~CMP, CL3P~~
~~CL3R~~	~~CMP, CL3P, CMR~~
~~CL2R~~	~~CMP, CL3P, CL2P, CMR, CL3R~~
~~PLTC~~	~~CL2, CL3X, CL2X~~
~~CL3~~	~~CMP, CL3P, CMR, CL3R, CMG, CM, PLTC~~
~~CL2~~	~~CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG CM, PLTC, CL3~~
~~CL3X~~	~~CMP, CL3P, CMR, CL3R, CMG, CM, PLTC, CL3, CMX~~
~~CL2X~~	~~CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG, CM, PLTC, CL3, CL2, CMX,CL3X~~

~~(1) General Use.~~

~~CL2 or CL3, PLTC, or any listed applicable cable for general use shall be installed within and on buildings or structures.~~

~~(2) Other Building Locations.~~

~~In other locations, any listed applicable cable permitted in 600.33(A)(1) , (A)(2), (A)(3), and (A)(4) and Table 600.33(A)(1)and (A)(2) shall be permitted to be used as follows:~~

70-21 Cont'd

~~CL2P or CL3P — Ducts, plenums, or other spaces used for environmental air~~
~~CL2R or CL3R — Vertical shafts and risers~~
~~Substitutions from Table 600.33(A)(2)~~

(1) Wet Locations.

Class 2 cable used in a wet location shall be identified listed and marked suitable for use in a wet locations or have a moisture-impervious metal sheath.

(2) Other Locations.

In other locations, any applicable cable permitted in Table 725.154 shall be permitted to be used. Class 2 cable exposed to sunlight shall be listed and marked sunlight resistant suitable for outdoor use.

(B) Installation.

Secondary wiring shall be installed in accordance with (B)(1) and (B)(2).

Support wiring shall be installed in a neat and workmanlike manner. Cables and conductors installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable is not be damaged by normal building use. ~~The cable shall be supported and secured at intervals not exceeding 1.8 m (6 ft).~~ Such cables shall be supported by straps, staples, hangers, cable ties, or similar fittings designed and installed so as not to damage the cable. The installation shall also comply with 300.4(D) .

Connections in cable and conductors shall be made with listed insulating devices and be accessible after installation. Where made in a wall, connections shall be enclosed in a listed box.

(C) Protection Against Physical Damage.

Where subject to physical damage, the conductors shall be protected and installed in accordance with 300.4 .

(D) Grounding and Bonding.

Grounding and bonding shall be in accordance with 600.7 .

Recommended Text if Motion Fails:

600.33. …

Class 2 cable listed for the application that complies with Table 600.33(A)(1) or Table 600.33(A)(2) for substitutions shall be installed on the load side of the Class 2 power source. The conductors shall have an ampacity not less than the load to be supplied and shall not be sized smaller than 18 AWG.

Table 600.33(A)(1) Applications of Power Limited Cable in Signs and Outline Lighting

Location	CL2	CL3	CL2R	CL3R	CL2P	CL3P	PLTC
Non-concealed spaces inside buildings	Y	Y	Y	Y	Y	Y	Y
Concealed spaces inside buildings that are not used as plenums or risers	Y	Y	Y	Y	Y	Y	Y
Environmental air spaces plenums-or risers	N	N	Y	Y	Y	Y	N
Wet locations	N	N	N	N	N	N	Y

Y = Permitted. N = Not Permitted.

Table 600.33(A)(2) Class 2 Cable Substitutions

Cable Type	Permitted Substitutions
CL3P	CMP
CL2P	CMP, CL3P
CL3R	CMP, CL3P, CMR

70-21 Cont'd	CL2R	CMP, CL3P, CL2P, CMR, CL3R
	PLTC	CL2, CL3X, CL2X
	CL3	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC
	CL2	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG CM, PLTC, CL3
	CL3X	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC, CL3, CMX
	CL2X	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG, CM, PLTC, CL3, CL2, CMX,CL3X
	(B) Installation. Secondary wiring shall be installed in accordance with (B)(1) and (B)(2). Wiring shall be installed and supported in a neat and workmanlike manner. Cables and conductors installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable is not damaged by normal building use. The cable shall be supported and secured at intervals not exceeding 1.8 m (6 ft). Such cables shall be supported by straps, staples, hangers, cable ties, or similar fittings designed and installed so as not to damage the cable. The installation shall also comply with 300.4(D). Connections in cable and conductors shall be made with listed insulating devices and be accessible after installation. Where made in a wall, connections shall be enclosed in a listed box.	

Motion Seq# 70-22

Certified Amending Motion: Reject an Identifiable Part of Second Revision No. 5124

Recommended Text if Motion Passes:

600.33. …
Class 2 cable listed for the application that complies with Table 600.33(A)(1) or Table 600.33(A)(2) for substitutions shall be installed on the load side of the Class 2 power source. The conductors shall have an ampacity not less than the load to be supplied and shall not be sized smaller than 18 AWG.
Table 600.33(A)(1) Applications of Power Limited Cable in Signs and Outline Lighting

Location	CL2	CL3	CL2R	CL3R	CL2P	CL3P	PLTC
Non-concealed spaces inside buildings	Y	Y	Y	Y	Y	Y	Y
Concealed spaces inside buildings that are not used as plenums or risers	Y	Y	Y	Y	Y	Y	Y
Environmental air spaces plenums-or risers	N	N	N ~~Y~~	N ~~Y~~	Y	Y	N
Wet locations	N	N	N	N	N	N	Y

Y = Permitted. N = Not Permitted.
Table 600.33(A)(2) Class 2 Cable Substitutions

Cable Type	Permitted Substitutions
CL3P	CMP
CL2P	CMP, CL3P
CL3R	CMP, CL3P, CMR
CL2R	CMP, CL3P, CL2P, CMR, CL3R
PLTC	CL2, CL3X, CL2X
CL3	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC
CL2	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG CM, PLTC, CL3
CL3X	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC, CL3, CMX
CL2X	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG, CM, PLTC, CL3, CL2, CMX,CL3X

Recommended Text if Motion Fails:

600.33. …
Class 2 cable listed for the application that complies with Table 600.33(A)(1) or Table 600.33(A)(2) for substitutions shall be installed on the load side of the Class 2 power source. The conductors shall have an ampacity not less than the load to be supplied and shall not be sized smaller than 18 AWG.
Table 600.33(A)(1) Applications of Power Limited Cable in Signs and Outline Lighting

70-22 Cont'd

Location	CL2	CL3	CL2R	CL3R	CL2P	CL3P	PLTC
Non-concealed spaces inside buildings	Y	Y	Y	Y	Y	Y	Y
Concealed spaces inside buildings that are not used as plenums or risers	Y	Y	Y	Y	Y	Y	Y
Environmental air spaces plenums-or risers	N	N	Y	Y	Y	Y	N
Wet locations	N	N	N	N	N	N	Y

Y = Permitted. N = Not Permitted.

Table 600.33(A)(2) Class 2 Cable Substitutions

Cable Type	Permitted Substitutions
CL3P	CMP
CL2P	CMP, CL3P
CL3R	CMP, CL3P, CMR
CL2R	CMP, CL3P, CL2P, CMR, CL3R
PLTC	CL2, CL3X, CL2X
CL3	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC
CL2	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG CM, PLTC, CL3
CL3X	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC, CL3, CMX
CL2X	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG, CM, PLTC, CL3, CL2, CMX,CL3X

Motion Seq#

Certified Amending Motion: Reject an Identifiable Part of Second Revision No. 5124, including any related portions of First Revision No. 5139

70-23

Recommended Text if Motion Passes:

600.33….
Class 2 cable listed for the application that complies with Table 600.33(A)(1) or Table 600.33(A)(2) for substitutions shall be installed on the load side of the Class 2 power source. The conductors shall have an ampacity not less than the load to be supplied and shall not be sized smaller than 18 AWG.
Table 600.33(A)(1) Applications of Power Limited Cable in Signs and Outline Lighting

Location	CL2	CL3	CL2R	CL3R	CL2P	CL3P	PLTC
Non-concealed spaces inside buildings	Y	Y	Y	Y	Y	Y	Y
Concealed spaces inside buildings that are not used as plenums or risers	Y	Y	Y	Y	Y	Y	Y
Environmental air spaces plenums-or risers	N	N	Y	Y	Y	Y	N
Wet locations	N	N	N	N	N	N	Y

Y = Permitted. N = Not Permitted.
Table 600.33(A)(2) Class 2 Cable Substitutions

Cable Type	Permitted Substitutions
CL3P	CMP
CL2P	CMP, CL3P
CL3R	CMP, CL3P, CMR
CL2R	CMP, CL3P, CL2P, CMR, CL3R
~~PLTC~~	~~CL2, CL3X, CL2X~~
CL3	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC
CL2	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG CM, PLTC, CL3
CL3X	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC, CL3, CMX
CL2X	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG, CM, PLTC, CL3, CL2, CMX,CL3X

Recommended Text if Motion Fails:

630.33. …
Class 2 cable listed for the application that complies with Table 600.33(A)(1) or Table 600.33(A)(2) for substitutions shall be installed on the load side of the Class 2 power source. The conductors shall have an ampacity not less than the load to be supplied and shall not be sized smaller than 18 AWG.
Table 600.33(A)(1) Applications of Power Limited Cable in Signs and Outline Lighting

70-23 Cont'd

Location	CL2	CL3	CL2R	CL3R	CL2P	CL3P	PLTC
Non-concealed spaces inside buildings	Y	Y	Y	Y	Y	Y	Y
Concealed spaces inside buildings that are not used as plenums or risers	Y	Y	Y	Y	Y	Y	Y
Environmental air spaces plenums-or risers	N	N	Y	Y	Y	Y	N
Wet locations	N	N	N	N	N	N	Y

Y = Permitted. N = Not Permitted.

Table 600.33(A)(2) Class 2 Cable Substitutions

Cable Type	Permitted Substitutions
CL3P	CMP
CL2P	CMP, CL3P
CL3R	CMP, CL3P, CMR
CL2R	CMP, CL3P, CL2P, CMR, CL3R
PLTC	CL2, CL3X, CL2X
CL3	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC
CL2	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG CM, PLTC, CL3
CL3X	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC, CL3, CMX
CL2X	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG, CM, PLTC, CL3, CL2, CMX,CL3X

Motion Seq#	
	Certified Amending Motion: Accept Public Comment No. 1588
70-24	**Recommended Text if Motion Passes:** 625.17(A) Power-Supply Cord. The cable for cord-connected equipment shall comply with all of the following: (1) Be any of the types specified in 625.17(B) or hard service cord, junior hard service cord, or portable power cable types in accordance with Table 400.4. Hard service cord, junior hard service cord, or portable power cable types shall be listed, as applicable, for exposure to oil and damp and wet locations. (2) Have an ampacity as specified in Table 400.5(A)(1) or, for 8 AWG and larger, in the 60°C columns of Table 400.5(A)(2). (3) Have an overall length as specified in 625.17(A)(3)a. or b as follows: a. When the interrupting device of the personnel protection system specified in 625.22 is located within the enclosure of the supply equipment or charging system, the power-supply cord shall be not more than ~~300 mm 12 in~~ 915 mm (36 in.) long, b. When the interrupting device of the personnel protection system specified in 625.22 is located at the attachment plug, or within the first 300 mm (12 in.) of the power-supply cord, the overall cord length shall be a minimum of 1.8 m (6 ft) and shall be not greater than 4.6 m (15 ft). **Recommended Text if Motion Fails:** 625.17(A) Power-Supply Cord. The cable for cord-connected equipment shall comply with all of the following: (1) Be any of the types specified in 625.17(B) or hard service cord, junior hard service cord, or portable power cable types in accordance with Table 400.4. Hard service cord, junior hard service cord, or portable power cable types shall be listed, as applicable, for exposure to oil and damp and wet locations. (2) Have an ampacity as specified in Table 400.5(A)(1) or, for 8 AWG and larger, in the 60°C columns of Table 400.5(A)(2). (3) Have an overall length as specified in 625.17(A)(3)a. or b as follows: a. When the interrupting device of the personnel protection system specified in 625.22 is located within the enclosure of the supply equipment or charging system, the power-supply cord shall be not more than 300 mm (12 in) long, b. When the interrupting device of the personnel protection system specified in 625.22 is located at the attachment plug, or within the first 300 mm (12 in.) of the power-supply cord, the overall cord length shall be a minimum of 1.8 m (6 ft) and shall be not greater than 4.6 m (15 ft).

Motion Seq#	**Certified Amending Motion:** Accept Public Comment No. 1719; Accept Public Comment No. 1509; Accept Public Comment No. 1097; Accept Public Comment No. 1461
70-25	**Recommended Text if Motion Passes:** 625.17(B) (1) Output Cable to the Electric Vehicle. The output cable to the electric vehicle shall be Type EV, EVJ, EVE, EVJE, EVT, or EVJT flexible cable as specified in Table 400.4. The output cable shall have an ampacity as specified in Table 400.5(A)(1) or, for 8 AWG and larger, in the 60°C columns of Table 400.5(A)(2). Exception to (B)(1): Listed electric vehicle supply equipment may incorporate output cables having ampacities greater than the ampacities in the 60°C columns of Table 400.5(A)(2) based on the permissible temperature limits for the components and the cable.
	Recommended Text if Motion Fails: 625.17(B) (1) Output Cable to the Electric Vehicle. The output cable to the electric vehicle shall be Type EV, EVJ, EVE, EVJE, EVT, or EVJT flexible cable as specified in Table 400.4. The output cable shall have an ampacity as specified in Table 400.5(A)(1) or, for 8 AWG and larger, in the 60°C columns of Table 400.5(A)(2).

Motion Seq#	
	Certified Amending Motion: Accept Public Comment No. 1075; Accept Public Comment No. 1722; Accept Public Comment No. 1534
70-26	**Recommended Text if Motion Passes:** 625.44(A) Portable Equipment. Portable equipment shall be connected to the premises wiring systems by one <u>or more</u> of the following methods: (1) A nonlocking, 2-pole, 3-wire grounding-type receptacle outlet rated at 125 volt, single phase, 15 or 20 amperes <u>(2) A nonlocking, 2-pole, 3-wire grounding-type receptacle outlet rated at 250 volt, single phase, 15 or 20 amperes</u> <u>(3) A nonlocking, 2-pole, 3-wire or 3-pole, 4-wire grounding-type receptacle outlet rated at 250 volt, single phase, 30 or 50 amperes</u> <u>(4)</u> A nonlocking, 2-pole, 3-wire grounding-type receptacle outlet rated <u>50</u> ~~60~~ volts dc maximum, 15 or 20 amperes The length of the power supply cord, if provided, between the receptacle outlet and the equipment shall be in accordance with 625.17(A) (3).
	Recommended Text if Motion Fails: 625.44(A) Portable Equipment. Portable equipment shall be connected to the premises wiring systems by one of the following methods: (1) A nonlocking, 2-pole, 3-wire grounding-type receptacle outlet rated at 125 volt, single phase, 15 or 20 amperes (2) A nonlocking, 2-pole, 3-wire grounding-type receptacle outlet rated 60 volt dc maximum, 15 or 20 amperes The length of the power supply cord, if provided, between the receptacle outlet and the equipment shall be in accordance with 625.17(A) (3).

Motion Seq#	**Certified Amending Motion:** Accept Identifiable Part of Public Comment No. 46
70-27	**Recommended Text if Motion Passes:** 646.3(B) Wiring and Cabling in Other Spaces Used for Environmental Air (Plenums). The following sections and tables shall apply to wiring and cabling in other spaces used for environmental air (plenums) within a modular data center space: (1) Wiring methods: 300.22(C)(1) (2) Class 2, Class 3, and PLTC cables: 725.135(C) and Table 725.154 (3) Fire alarm systems: 760.53(B)(2), 760.135(C) and Table 760.154 (4) Optical fiber cables: 770.113(C) and Table 770.154(a) (5) Communications circuits: 800.113(C) and Table 800.154(a), (b), and (c) (6) CATV and radio distribution systems: 820.113(C) and Table ~~800~~ 820.154(a) Informational Note: Environmentally controlled working spaces, aisles, and equipment areas in an MDC are not considered a plenum.
	Recommended Text if Motion Fails: 646.3(B) Wiring and Cabling in Other Spaces Used for Environmental Air (Plenums). The following sections and tables shall apply to wiring and cabling in other spaces used for environmental air (plenums) within a modular data center space: (1) Wiring methods: 300.22(C)(1) (2) Class 2, Class 3, and PLTC cables: 725.135(C) and Table 725.154 (3) Fire alarm systems: 760.53(B)(2), 760.135(C) and Table 760.154 (4) Optical fiber cables: 770.113(C) and Table 770.154(a) (5) Communications circuits: 800.113(C) and Table 800.154(a), (b), and (c) (6) CATV and radio distribution systems: 820.113(C) and Table 800.154(a) Informational Note: Environmentally controlled working spaces, aisles, and equipment areas in an MDC are not considered a plenum.

Motion Seq#	
	Certified Amending Motion: Reject Second Correlating Revision No. 43
70-28	**Recommended Text if Motion Passes:** ~~680.14 Corrosive Environment.~~ ~~(A) General.~~ ~~Areas where pool sanitation chemicals are stored, as well as areas with circulation pumps, automatic chlorinators, filters, open areas under decks adjacent to or abutting the pool structure, and similar locations shall be considered to be a corrosive environment. The air in such areas shall be considered to be laden with acid, chlorine, and bromine vapors, or any combination of acid, chlorine, or bromine vapors, and any liquids or condensation in those areas shall be considered to be laden with acids, chlorine, and bromine vapors, or any combination of acid, chlorine, or bromine vapors.~~ ~~(B) Wiring Methods.~~ ~~Wiring methods in the areas described in 680.14(A) shall be listed and identified for use in such areas. Rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit, and reinforced thermosetting resin conduit shall be considered to be resistant to the corrosive environment specified in 680.14(A).~~
	Recommended Text if Motion Fails: 680.14 Corrosive Environment. (A) General. Areas where pool sanitation chemicals are stored, as well as areas with circulation pumps, automatic chlorinators, filters, open areas under decks adjacent to or abutting the pool structure, and similar locations shall be considered to be a corrosive environment. The air in such areas shall be considered to be laden with acid, chlorine, and bromine vapors, or any combination of acid, chlorine, or bromine vapors, and any liquids or condensation in those areas shall be considered to be laden with acids, chlorine, and bromine vapors, or any combination of acid, chlorine, or bromine vapors. (B) Wiring Methods. Wiring methods in the areas described in 680.14(A) shall be listed and identified for use in such areas. Rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit, and reinforced thermosetting resin conduit shall be considered to be resistant to the corrosive environment specified in 680.14(A).

Motion Seq#	**Certified Amending Motion:** Accept an Identifiable Part of Public Comment No. 1711
70-29	**Recommended Text if Motion Passes:** 691 Large-Scale Photovoltaic (PV) Electric ~~Supply Stations~~ Power Production Facility 691.1 Scope. This article covers the installation of large-scale PV electric ~~supply stations~~ power production facilities with a generating capacity of no less than 5000 kW, and not under exclusive utility control. Informational Note No. 1: Facilities covered by this article have specific design and safety features unique to large-scale PV facilities and are operated for the sole purpose of providing electric supply to a system operated by a regulated utility for the transfer of electric energy. Informational Note No. 2: Section 90.2(B)(5) includes information about utility-owned properties not covered under this Code. For additional information on electric supply stations, see ANSI/IEEE C2-2012, National Electrical Safety Code. **Recommended Text if Motion Fails:** 691 Large-Scale Photovoltaic (PV) Electric Supply Stations 691.1 Scope. This article covers the installation of large-scale PV electric supply stations with a generating capacity of no less than 5000 kW, and not under exclusive utility control. Informational Note No. 1: Facilities covered by this article have specific design and safety features unique to large-scale PV facilities and are operated for the sole purpose of providing electric supply to a system operated by a regulated utility for the transfer of electric energy. Informational Note No. 2: Section 90.2(B)(5) includes information about utility-owned properties not covered under this Code. For additional information on electric supply stations, see ANSI/IEEE C2-2012, National Electrical Safety Code.

Motion Seq#	
	Certified Amending Motion: Reject Second Correlating Revision No. 112
70-30	**Recommended Text if Motion Passes:** 691.4 Special Requirements for Large-Scale PV Electric Supply Stations. Large-scale PV electric supply stations shall ~~be accessible only to authorized personnel and~~ comply with the following: (1) Electrical circuits and equipment for large-scale PV electric supply stations are accessible only to qualified personnel needed for the maintenance and operation of the PV electric supply station ~~shall be maintained and operated only by qualified personnel~~. Informational Note: Refer to NFPA 70E-2015, Standard for Electrical Safety in the Workplace, for electrical safety requirements. (2) Access to PV electric supply stations is ~~shall be~~ restricted by fencing or other adequate means in accordance with 110.31. Field applied hazard markings shall be applied in accordance with 110.21(B). (3) The connection between the PV electric supply station and the utility transmission or distribution system ~~system operated by a utility for the transfer of electrical energy~~ is ~~shall be through~~ through medium- or high-voltage switch gear, substation, switch yard, or similar methods whose sole purpose is ~~shall be~~ to safely and effectively interconnect the two systems. (4) The electrical loads within the ~~PV electric~~ supply station are only used to power auxiliary equipment for the generation of the PV power. (5) ~~Large scale~~ PV electric supply stations shall not be installed on buildings.
	Recommended Text if Motion Fails: 691.4 Special Requirements for Large-Scale PV Electric Supply Stations. Large-scale PV electric supply stations shall be accessible only to authorized personnel and comply with the following: (1) Electrical circuits and equipment shall be maintained and operated only by qualified personnel. Informational Note: Refer to NFPA 70E-2015, Standard for Electrical Safety in the Workplace, for electrical safety requirements. (2) Access to PV electric supply stations shall be restricted by fencing or other adequate means in accordance with 110.31. Field-applied hazard markings shall be applied in accordance with 110.21(B). (3) The connection between the PV electric supply station and the system operated by a utility for the transfer of electrical energy shall be through medium- or high-voltage switch gear, substation, switch yard, or similar methods whose sole purpose shall be to safely and effectively interconnect the two systems. (4) The electrical loads within the PV electric supply station shall only be used to power auxiliary equipment for the generation of the PV power. (5) Large-scale PV electric supply stations shall not be installed on buildings.

Motion Seq#	
	Certified Amending Motion: Reject Second Revision No. 981
70-31	**Recommended Text if Motion Passes:** 691.6 ~~Engineered~~ Design Under Engineering Supervision. Documentation of the ~~electrical portion of the~~ engineered design of the electric supply station shall be ~~stamped and~~ provided upon request of the AHJ. An additional ~~Additional stamped~~ independent engineering report ~~reports~~ detailing compliance of the design with applicable ~~electrical~~ standards and industry practice shall be provided upon request of the AHJ. ~~The independent engineer shall be a licensed professional electrical engineer retained by the system owner or installer.~~ This documentation shall include details of conformance of the design with Article 690, and any alternative methods to Article 690, or other articles of this Code .
	Recommended Text if Motion Fails: 691.6 Engineered Design. Documentation of the electrical portion of the engineered design of the electric supply station shall be stamped and provided upon request of the AHJ. Additional stamped independent engineering reports detailing compliance of the design with applicable electrical standards and industry practice shall be provided upon request of the AHJ. The independent engineer shall be a licensed professional electrical engineer retained by the system owner or installer. This documentation shall include details of conformance of the design with Article 690 , and any alternative methods to Article 690 , or other articles of this Code .

Motion Seq#	**Certified Amending Motion:** Reject Second Revision No. 982
70-32	**Recommended Text if Motion Passes:** 691.7 Installation Under Engineering Supervision ~~Conformance of Construction to Engineered Design~~. Documentation ~~that the construction~~ of the electric supply station installation ~~conforms to the electrical engineered design~~ shall be provided upon request of the AHJ. An additional ~~Additional stamped~~ independent engineering report ~~reports~~ detailing compliance with ~~the construction conforms with this *Code*~~, applicable standards and industry practice shall be provided upon request of the AHJ. This documentation shall include details of conformance of the installation with this Code, applicable standards, and industry practice ~~The independent engineer shall be a licensed professional electrical engineer retained by the system owner or installer~~. This documentation, where requested, shall be available prior to the commercial operation of the station.
	Recommended Text if Motion Fails: 691.7 Conformance of Construction to Engineered Design. Documentation that the construction of the electric supply station conforms to the electrical engineered design shall be provided upon request of the AHJ. Additional stamped independent engineering reports detailing the construction conforms with this Code, applicable standards and industry practice shall be provided upon request of the AHJ. The independent engineer shall be a licensed professional electrical engineer retained by the system owner or installer. This documentation, where requested, shall be available prior to commercial operation of the station.

Motion Seq#	**Certified Amending Motion:** Reject Second Revision No. 983
70-33	**Recommended Text if Motion Passes:** 691.8 Direct Current Operating Voltage. For large-scale PV electric supply stations operating at a dc voltage above 1000 volts, calculations shall be performed under engineering supervision ~~included in the documentation required in 691.6~~.
	Recommended Text if Motion Fails: 691.8 Direct Current Operating Voltage. For large-scale PV electric supply stations, calculations shall be included in the documentation required in 691.6.

Motion Seq#	
	Certified Amending Motion: Reject Second Revision No. 988
70-34	**Recommended Text if Motion Passes:** **705.2 Definitions.** **Intentionally Islanded ~~Microgrid~~ System.** A premises wiring system that has generation and/or~~,~~ energy storage , and load , has ~~(s), or any combination thereof, that includes~~ the ability to disconnect from and parallel with the primary source , and is intentionally planned . Informational Note: An electrical system that separates from the primary source and can operate individually or interconnected is sometimes referred to as a microgrid. ~~The application of Article 705 to microgrid systems is limited by the exclusions in 90.2(B)(5) related to electric utilities.~~
	Recommended Text if Motion Fails: **705.2 Definitions.** **Microgrid System.** A premises wiring system that has generation, energy storage, and load(s), or any combination thereof, that includes the ability to disconnect from and parallel with the primary source. Informational Note: The application of Article 705 to microgrid systems is limited by the exclusions in 90.2(B)(5) related to electric utilities.

Motion Seq#	
	Certified Amending Motion: Reject Second Revision No. 989
70-35	**Recommended Text if Motion Passes:** **705.2 Definitions.** **Island Interconnection ~~Microgrid Interconnect~~ Device (IID) ~~(MID)~~.** A device that allows an intentionally islanded ~~a microgrid~~ system to separate from and reconnect to a primary power source.
	Recommended Text if Motion Fails: **705.2 Definitions.** **Microgrid Interconnect Device (MID).** A device that allows a microgrid system to separate from and reconnect to a primary power source.

Motion Seq#	
	Certified Amending Motion: Reject Second Correlating Revision No. 116
70-36	**Recommended Text if Motion Passes:** 705.150 System Operation. Interconnected electric power production sources ~~Microgrid systems~~ shall be permitted to disconnect from the primary source of power or other interconnected electric power production sources and operate as a separate intentionally islanded or stand-alone ~~microgrid~~ system. 705.155 Disconnecting Means. Stand-alone power sources shall be provided with a lockable disconnecting means and overcurrent protection in accordance with 240.21. 705.160 Primary Power Source Connection. Connections to primary power sources that are external to the intentionally islanded or stand-alone ~~microgrid~~ system shall comply with the requirements of 705.12. 705.165 Reconnection to Primary Power Source. Operating intentionally islanded or stand-alone ~~Microgrid~~ systems that reconnect to primary power sources shall be provided with the necessary equipment to establish a synchronous transition. 705.170 Island Interconnection ~~Microgrid Interconnect~~ Devices (IID) ~~(MID).~~ ~~Microgrid interconnect devices shall comply with the following:~~ ~~(1)~~ An IID shall be ~~Be~~ required for any connection between an intentionally islanded or stand-alone ~~a microgrid~~ system and a primary power source. ~~(2)~~ Interconnection devices shall be listed,~~Be listed~~ or field labeled, as suitable for the intended interconnection application. ~~(3)~~ Interconnection devices shall have ~~Have~~ sufficient number of overcurrent devices located so as to provide overcurrent protection from all sources. ~~Informational Note: MID functionality is often incorporated in an interactive or multimode inverter, energy storage system, or similar device identified for interactive operation.~~
	Recommended Text if Motion Fails: 705.150 System Operation. Microgrid systems shall be permitted to disconnect from the primary source of power or other interconnected electric power production sources and operate as a separate microgrid system. 705.160 Primary Power Source Connection. Connections to primary power sources that are external to the microgrid system shall comply with the requirements of 705.12. 705.165 Reconnection to Primary Power Source. Microgrid systems that reconnect to primary power sources shall be provided with the necessary equipment to establish a synchronous transition. 705.170 Microgrid Interconnect Devices (MID). Microgrid interconnect devices shall comply with the following: (1) Be required for any connection between a microgrid system and a primary power source (2) Be listed or field labeled for the application (3) Have sufficient number of overcurrent devices located to provide overcurrent protection from all sources

70-36 Cont'd	Informational Note: MID functionality is often incorporated in an interactive or multimode inverter, energy storage system, or similar device identified for interactive operation.

Motion Seq#	**Certified Amending Motion:** Reject Second Revision 987, Including any Related Portions of First Revision No. 1045 and First Correlating Revisions
70-37	**Recommended Text if Motion Passes:** ~~Article 710 Stand-Alone Systems.~~ ~~710.1 Scope.~~ ~~This article covers electric power production sources operating in stand-alone mode.~~ ~~710.6 Equipment Approval.~~ ~~All equipment shall be listed or field-labeled for the intended use.~~ ~~710.15 General.~~ ~~Premises wiring systems shall be adequate to meet the requirements of this *Code* for similar installations supplied by a feeder or service. The wiring on the supply side of the building or structure disconnecting means shall comply with the requirements of this *Code*, except as modified by 710.15(A) through (F).~~ ~~(A) Supply Output.~~ ~~Power supply to premises wiring systems shall be permitted to have less capacity than the calculated load. The capacity of the stand-alone supply shall be equal to or greater than the load posed by the largest single utilization equipment connected to the system. Calculated general lighting loads shall not be considered as a single load.~~ ~~(B) Sizing and Protection.~~ ~~The circuit conductors between a stand-alone source and a building or structure disconnecting means shall be sized based on the sum of the output ratings of the stand-alone sources.~~ ~~(C) Single 120-Volt Supply.~~ ~~Stand-alone systems shall be permitted to supply 120 volts to single-phase, 3-wire, 120/240-volt service equipment or distribution panels where there are no 240-volt outlets and where there are no multiwire branch circuits. In all installations, the sum of the ratings of the power sources shall be less than the rating of the neutral bus in the service equipment. This equipment shall be marked with the following words or equivalent:~~ ~~WARNING:~~ ~~SINGLE 120-VOLT SUPPLY. DO NOT CONNECT MULTIWIRE BRANCH CIRCUITS!~~ ~~The warning sign(s) or label(s) shall comply with 110.21(B).~~ ~~(D) Energy Storage or Backup Power System Requirements.~~ ~~Energy storage or backup power supplies are not required.~~ ~~(E) Back-Fed Circuit Breakers.~~ ~~Plug-in type back-fed circuit breakers connected to an interconnected supply shall be secured in accordance with 408.36(D). Circuit breakers marked "line" and "load" shall not be back-fed.~~ ~~(F) Voltage and Frequency Control.~~ ~~The stand-alone supply shall be controlled so that voltage and frequency remain within suitable limits for the connected loads~~
	Recommended Text if Motion Fails: Article 710 Stand-Alone Systems. 710.1 Scope. This article covers electric power production sources operating in stand-alone mode.

70-37 Cont'd	710.6 Equipment Approval. All equipment shall be listed or field labeled for the intended use. 710.15 General. Premises wiring systems shall be adequate to meet the requirements of this *Code* for similar installations supplied by a feeder or service. The wiring on the supply side of the building or structure disconnecting means shall comply with the requirements of this *Code*, except as modified by 710.15(A) through (F). (A) Supply Output. Power supply to premises wiring systems shall be permitted to have less capacity than the calculated load. The capacity of the stand-alone supply shall be equal to or greater than the load posed by the largest single utilization equipment connected to the system. Calculated general lighting loads shall not be considered as a single load. (B) Sizing and Protection. The circuit conductors between a stand-alone source and a building or structure disconnecting means shall be sized based on the sum of the output ratings of the stand-alone sources. (C) Single 120-Volt Supply. Stand-alone systems shall be permitted to supply 120 volts to single-phase, 3-wire, 120/240-volt service equipment or distribution panels where there are no 240-volt outlets and where there are no multiwire branch circuits. In all installations, the sum of the ratings of the power sources shall be less than the rating of the neutral bus in the service equipment. This equipment shall be marked with the following words or equivalent: WARNING: SINGLE 120-VOLT SUPPLY. DO NOT CONNECT MULTIWIRE BRANCH CIRCUITS! The warning sign(s) or label(s) shall comply with 110.21(B). (D) Energy Storage or Backup Power System Requirements. Energy storage or backup power supplies are not required. (E) Back-Fed Circuit Breakers. Plug-in type back-fed circuit breakers connected to an interconnected supply shall be secured in accordance with 408.36(D). Circuit breakers marked "line" and "load" shall not be back-fed. (F) Voltage and Frequency Control. The stand-alone supply shall be controlled so that voltage and frequency remain within suitable limits for the connected loads.

Motion Seq#	**Certified Amending Motion:** Reject Second Revision No. 3627
70-38	**Recommended Text if Motion Passes:** Article 712 Direct Current Microgrids Part I. General 712.1 Scope. This article applies to direct current microgrids. 712.2 Definitions. Direct Current Microgrid (DC Microgrid). A direct current microgrid is a power distribution system consisting of one or more ~~than one~~ interconnected dc power source s , ~~supplying~~ dc-dc converter s ~~(s)~~ , dc load s ~~(s)~~ , and ~~/or~~ ac load s ~~(s)~~ powered by dc-ac inverter s ~~(s)~~ . A dc microgrid is typically not directly connected to an ac primary source of electricity, but some dc microgrids interconnect via one or more dc-ac bidirectional converters or dc–ac inverters. Informational Note: Direct current power sources include ac-dc converters (rectifiers), bidirectional dc-ac inverters/converters, photovoltaic systems, wind generators, energy storage systems (including batteries), and fuel cells. Grounded Two-Wire DC System A two-wire dc power system that has a direct ~~solid~~ connection or reference-ground between one of the current carrying conductors and the equipment grounding system. Grounded Three-Wire DC System. A dc power system with a solid connection or reference-ground between the center point of a bipolar dc power source and the equipment grounding system. Nominal Voltage. A nominal value assigned to a circuit or system for the purpose of conveniently designating its dc voltage class (e.g., 24 volts dc, 190/380 volts dc, 380 volts dc) . Informational Note: The actual voltage at which a circuit operates can vary from the nominal voltage within a range that permits satisfactory operation of equipment. Reference-Grounded DC System. A microgrid system that is not solidly grounded but has a low- impedance ~~resistance~~ electrical reference that maintains voltage to ground in normal operation. In the faulted-state, the system becomes ungrounded or high-impedance grounded in order to limit fault current. Resistively Grounded. A dc power system with a high- impedance ~~resistance~~ connection between the current carrying conductors and the equipment grounding system. Primary DC Source. A dc power source that supplies the majority of the dc load in a dc microgrid. Ungrounded DC System. A dc power system that has no direct or resistive connection between the current carrying conductors and the equipment grounding system. 712.3 Other Articles. Wherever the requirements of other articles of this *Code* and Article 712 differ, the requirements of Article 712 shall apply. DC microgrids interconnected through an inverter or bi-directional converter with ac electric power production sources shall comply with Article 705 .

712.4 Labeling and Listing ~~and Labeling~~ .

Any direct-current equipment used in ~~the dc circuits of~~ a direct-current micro grid shall be listed or ~~and~~ labeled for dc use.

712.10 Directory.

A permanent directory denoting all dc electric power sources operating to supply the dc microgrid shall be installed at each source location capable of acting as the primary dc source.

Part II. Circuit Requirements

712.25 Identification of Circuit Conductors

(A)

Ungrounded circuit conductors in dc microgrids shall be identified according to the requirements of 210.5(C)(2) for branch circuits and 215.12(C)(2) for feeders.

(B)

Ungrounded conductors of 6 AWG or smaller shall be permitted to be identified by polarity at all termination, connection, and splice points by marking tape, tagging, or other approved means.

712.30 System Voltage.

The system voltage of a dc microgrid shall be defined as follows ~~determined by one of the following methods~~ :

1. The nominal voltage to ground for solidly grounded systems
2. The nominal voltage to ground for reference-grounded systems where all conductors are disconnected from power sources when the reference ground is in the high-impedance, faulted state
3. The highest nominal voltage between conductors for resistively grounded dc systems and ungrounded dc systems.

~~Informational Note: Examples of nominal dc system voltages include but are not limited to 24, 48, 125, 190/380, or 380 volts.~~

70-38 Cont'd

Part III. Disconnecting Means

712.34 DC Source Disconnecting Means.

The output of each dc source shall have a readily accessible, lockable disconnecting means ~~that is lockable in the open position~~ . Disconnecting means shall be located in accordance with 690.13(A) for photovoltaic systems and adjacent to the source for other systems .

712.35 Disconnection of Ungrounded Conductors.

In solidly grounded two- and three-wire systems, the disconnecting means shall simultaneously open all ungrounded conductors. In ungrounded, resistively grounded and reference-grounded systems, such devices shall open all current-carrying conductors.

712.37 Directional Current Devices.

Disconnecting means and protective and overcurrent devices that are designed ~~shall be listed, be marked~~ for use in a single current direction , shall ~~and~~ only be used in the designated current direction.

Informational Note: Examples of directional current devices are magnetically quenched contactors and semiconductor switches in overcurrent devices.

712.38 Loss of Direct Current Source.

Upon loss of primary dc source, all dc electric power sources shall be automatically disconnected from all ungrounded conductors of the dc primary source and shall not be reconnected until the primary dc source is restored. Individual premises dc sources shall be permitted to reconfigure and operate as the primary dc source in a stand-alone system(s) to supply loads that have been disconnected.

Part IV. Wiring Methods

712.40 Identification for Branch Circuits and Feeder Circuits.

(A)

Wiring methods for dc microgrids shall comply with the requirements of 210.5 for branch circuits and 215.12 for feeders.

(B)

DC microgrids operating at voltages greater than 300 volts dc shall be reference-grounded dc systems or resistively grounded dc systems.

712.52 System Grounding.

(A) ~~General~~.
Direct-current microgrids shall be grounded in accordance with 250.162 .
(B) ~~Over 300 Volts~~.
DC microgrids operating at voltages greater than 300 volts dc shall be reference-grounded dc systems or resistively grounded dc systems.
712.55 Ground Fault Protection of ~~Detection~~ Equipment.
~~Ungrounded, reference-grounded, or resistively grounded~~ DC ~~dc~~ microgrids operating at greater than 60 volts dc shall have ground fault protection ~~detection~~ that does all of the following: Detects the fault Indicates ~~indicates~~ that a fault has occurred . For solidly grounded and reference-grounded systems, disconnects power from the faulted equipment Ground ~~The ground~~ fault equipment shall comply ~~be marked in accordance~~ with 250.167(C) .
(A)
DC microgrids operating at greater than 60 volts dc shall have ground fault protection that does all of the following:
1. Detects the fault
2. Indicates that a fault has occurred
3. For solidly grounded and reference-grounded systems, disconnects power from the faulted equipment

(A)
Ground fault equipment shall comply with 250.167.
712.57 Arc Fault Protection.
~~Where required elsewhere in this *Code* , specific systems within the~~ DC microgrid s with a system voltage of greater than 60 volts shall be required to have arc fault protection . for utilization circuits. Arc ~~The arc~~ fault protection equipment shall be identified and listed for the purpose .
Informational Note: ~~Section~~ 90.4 applies when suitable equipment for arc fault protection is not available.

70-38 Cont'd

Part V. Marking
712.62 Panelboards ~~Distribution Equipment and Conductors~~ .
Panelboards in dc microgrid systems shall be marked in accordance with 408.3 ~~Distribution equipment and conductors shall be marked as required elsewhere in this*Code*~~ .
712.65 Panelboards.
Panelboards in dc microgrid systems shall be marked in accordance with 408.3 .
712.65 Available DC Fault ~~Short-Circuit~~ Current.
(A) Field Marking.
Maximum ~~The maximum~~ available dc short-circuit current on the dc microgrid shall be field marked at the dc source (s) . The field marking(s) shall include the date thefault- ~~short-circuit~~ current calculation was performed and be of sufficient durability to withstand the environment involved.
(B) Modifications.
When modifications to the electrical installation occur that affect the maximum available fault ~~short-circuit~~ current at the dc source, the maximum available fault ~~short-circuit~~ current shall be verified or recalculated as necessary to ensure the equipment ratings are sufficient for the maximum available fault ~~short-circuit~~ current at the line terminals of the equipment. The required field marking(s) in 712.65(A) shall be adjusted to reflect ~~indicate~~ the new level of maximum available fault ~~short-circuit~~ current~~and date~~ .
Part VI. Systems with Multiple Sources ~~Protection~~
712.70 Overcurrent Protection.
Equipment and conductors connected to more than one electrical source shall have overcurrent ~~protective~~ devices located so as to provide protection from all sources.
712.72 Interrupting and Short-Circuit Current Ratings .
Consideration shall be given to the contribution of fault ~~short-circuit~~ currents from all interconnected power sources for the interrupting ratings and short-circuit current ratings of equipment in ~~the~~ dc microgrid system s ~~(s)~~ . Overcurrent protective devices and equipment used within a dc microgrid

shall have an interrupting rating at nominal circuit voltage or a short-circuit current rating sufficient for the available fault ~~short-circuit~~ current at the line terminals of the equipment.

Part VII. Systems over 1000 Volts

712.80 General.

Systems with a maximum voltage between conductors of over 1000 volts dc shall comply with Article 490 and other requirements ~~in this *Code*~~ applicable to installations rated over 1000 volts.

70-38 Cont'd

Recommended Text if Motion Fails:

Article 712 Direct Current Microgrids

Part I. General

712.1 Scope.

This article applies to direct current microgrids.

712.2 Definitions.

Direct Current Microgrid (DC Microgrid).

A direct current microgrid is a power distribution system consisting of more than one interconnected dc power source , supplying dc-dc converter (s) , dc load (s) , and/or ac load (s) powered by dc-ac inverter (s) . A dc microgrid is typically not directly connected to an ac primary source of electricity, but some dc microgrids interconnect via one or more dc-ac bidirectional converters or dc–ac inverters.

Informational Note: Direct current power sources include ac-dc converters (rectifiers), bidirectional dc-ac inverters/converters, photovoltaic systems, wind generators, energy storage systems (including batteries), and fuel cells.

Grounded Two-Wire DC System

A system that has a solid connection or reference-ground between one of the current carrying conductors and the equipment grounding system.

Grounded Three-Wire DC System.

A system with a solid connection or reference-ground between the center point of a bipolar dc power source and the equipment grounding system.

Nominal Voltage.

A value assigned to a circuit or system for the purpose of conveniently designating its dc voltage class .

Informational Note: The actual voltage at which a circuit operates can vary from the nominal voltage within a range that permits satisfactory operation of equipment.

Reference-Grounded DC System.

A system that is not solidly grounded but has a low- resistance electrical reference that maintains voltage to ground in normal operation.

Resistively Grounded.

A system with a high- resistance connection between the current carrying conductors and the equipment grounding system.

Primary DC Source.

A source that supplies the majority of the dc load in a dc microgrid.

Ungrounded DC System.

A system that has no direct or resistive connection between the current carrying conductors and the equipment grounding system.

712.3 Other Articles.

Wherever the requirements of other articles of this *Code* and Article 712 differ, the requirements of Article 712 shall apply. DC microgrids interconnected through an inverter or bi-directional converter with ac electric power production sources shall comply with Article 705 .

712.4 Listing and Labeling .

Any equipment used in the dc circuits of a direct-current micro grid shall be listed and labeled for dc use.

712.10 Directory.

70-38 Cont'd	A permanent directory denoting all dc electric power sources operating to supply the dc microgrid shall be installed at each source location capable of acting as the primary dc source. Part II. Circuit Requirements 712.25 Identification of Circuit Conductors (A) Ungrounded circuit conductors in dc microgrids shall be identified according to the requirements of 210.5(C)(2) for branch circuits and 215.12(C)(2) for feeders. (B) Ungrounded conductors of 6 AWG or smaller shall be permitted to be identified by polarity at all termination, connection, and splice points by marking tape, tagging, or other approved means. 712.30 System Voltage. The system voltage of a dc microgrid shall be determined by one of the following methods : 1. The nominal voltage to ground for solidly grounded systems 2. The nominal voltage to ground for reference-grounded systems 3. The highest nominal voltage between conductors for resistively grounded dc systems and ungrounded dc systems. Informational Note: Examples of nominal dc system voltages include but are not limited to 24, 48, 125, 190/380, or 380 volts. Part III. Disconnecting Means 712.34 DC Source Disconnecting Means. The output of each dc source shall have a readily accessible, disconnecting means that is lockable in the open position and adjacent to the source . 712.35 Disconnection of Ungrounded Conductors. In solidly grounded two- and three-wire systems, the disconnecting means shall simultaneously open all ungrounded conductors. In ungrounded, resistively grounded and reference-grounded systems, such devices shall open all current-carrying conductors. 712.37 Directional Current Devices. Disconnecting means shall be listed, be marked for use in a single current direction , and only be used in the designated current direction. Informational Note: Examples of directional current devices are magnetically quenched contactors and semiconductor switches in overcurrent devices. Part IV. Wiring Methods 712.52 System Grounding. (A) General. Direct-current microgrids shall be grounded in accordance with 250.162 . (B) Over 300 Volts. DC microgrids operating at voltages greater than 300 volts dc shall be reference-grounded dc systems or resistively grounded dc systems. 712.55 Ground Fault Detection Equipment. Ungrounded, reference grounded, or resistively grounded dc microgrids operating at greater than 60 volts dc shall have ground fault detection that indicates that a fault has occurred . The ground fault equipment shall be marked in accordance with 250.167(C) . 712.57 Arc Fault Protection. Where required elsewhere in this *Code* , specific systems within the DC microgrid shall have arc fault protection . The arc fault protection equipment shall be listed . Informational Note: Section 90.4 applies when suitable equipment for arc fault protection is not available. Part V. Marking 712.62 Distribution Equipment and Conductors . Distribution equipment and conductors shall be marked as required elsewhere in this *Code* . 712.65 Available DC Short-Circuit Current.

70-38 Cont'd	(A) Field Marking. The maximum available dc short-circuit current on the dc microgrid shall be field marked at the dc source (s) . The field marking(s) shall include the date the short-circuit current calculation was performed and be of sufficient durability to withstand the environment involved. (B) Modifications. When modifications to the electrical installation occur that affect the maximum available short-circuit current at the dc source, the maximum available short-circuit current shall be verified or recalculated as necessary to ensure the equipment ratings are sufficient for the maximum available short-circuit current at the line terminals of the equipment. The required field marking(s) in 712.65(A) shall indicate the new maximum available short-circuit current and date . Part VI. Protection 712.70 Overcurrent Protection. Equipment and conductors connected to more than one electrical source shall have overcurrent protective devices to provide protection from all sources. 712.72 Interrupting and Short-Circuit Current Ratings . Consideration shall be given to the contribution of short-circuit currents from all interconnected power sources for the interrupting ratings and short-circuit current ratings of equipment in the dc microgrid system (s) . Overcurrent protective devices and equipment used within a dc microgrid shall have an interrupting rating at nominal circuit voltage or a short-circuit current rating sufficient for the available short-circuit current at the line terminals of the equipment. Part VII. Systems over 1000 Volts 712.80 General. Systems with a maximum voltage between conductors of over 1000 volts dc shall comply with Article 490 and other requirements in this *Code* applicable to installations rated over 1000 volts. .

Motion Seq#	**Certified Amending Motion:** Reject Second Revision No. 611, Including any Related Portions of First Revisions and First Correlating Revisions

70-39

Recommended Text if Motion Passes:

~~725.144 Transmission of Power and Data.~~

~~The requirements of 725.144(A) and (B) shall apply to Class 2 and Class 3 circuits that transmit power and data to a powered device. The requirements of Parts I and III of Article 725 and 300.11 shall apply to Class 2 and Class 3 circuits that transmit power and data. The conductors that carry power for the data circuits shall be copper. The current in the power circuit shall not exceed the current limitation of the connectors.~~

~~Informational No. 1: One example of the use of cables that transmit power and data is the connection of closed-circuit TV cameras (CCTV).~~

~~Informational Note No. 2: The 8P8C connector is in widespread use with powered communications systems. These connectors are typically rated at 1.3 amperes maximum.~~

~~Table 725.144 Ampacities of Each Conductor in Amperes in 4-Pair Class 2 or Class 3 Data Cables Based on Copper Conductors at an Ambient Temperature of 30°C (86° F) with all All Conductors in All Cables Carrying Current, 60°C (140°F), 75°C (167°F), and 90°C (194°F) Rated Cables~~

AWG	Number of 4-Pair Cables in a Bundle																				
	1			2–7			8–19			20–37			38–61			62–91			92–192		
	Temperature Rating			Temperature Rating			Temperature Rating			Temperature Rating			Temperature Rating			Temperature Rating			Temperature Rating		
	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C
26	1	1	1	1	1	1	0.7	0.8	1	0.5	0.6	0.7	0.4	0.5	0.6	0.4	0.5	0.6	NA	NA	NA
24	2	2	2	1	1.4	1.6	0.8	1	1.1	0.6	0.7	0.9	0.5	0.6	0.7	0.4	0.5	0.6	0.3	0.4	0.5
23	2.5	2.5	2.5	1.2	1.5	1.7	0.8	1.1	1.2	0.6	0.8	0.9	0.5	0.7	0.8	0.5	0.7	0.8	0.4	0.5	0.6
22	3	3	3	1.4	1.8	2.1	1	1.2	1.4	0.7	0.9	1.1	0.6	0.8	0.9	0.6	0.8	0.9	0.5	0.6	0.7

~~Note 1: For bundle sizes over 192 cables, or for conductor sizes smaller than 26 AWG, ampacities shall be permitted to be determined by qualified personnel under engineering supervision.~~

~~Note 2: Where only half of the conductors in each cable are carrying current, the values in the table shall be permitted to be increased by a factor of 1.4.~~

~~Informational Note: The conductor sizes in data cables in wide-spread use are typically 22–26 AWG.~~

~~(A) Use of Class 2 or Class 3 Cables to Transmit Power and Data.~~

~~Where Types CL3P, CL2P, CL3R, CL2R, CL3, or CL2 transmit power and data, the following shall apply, as applicable:~~

~~(1) The ampacity ratings in Table 725.144 shall apply at an ambient temperature of 30°C (86°F).~~

~~(2) For ambient temperatures above 30°C (86°F), the correction factors of 310.15(B)(2) shall apply.~~

~~Informational Note: One example of the use of Class 2 cables is a network of closed-circuit TV cameras using 24 AWG, 60°C rated, Type CL2R, Category 5e local area network (LAN) cables.~~

~~(B) Use of Class 2 LP or Class 3 LP Cables to Transmit Power and Data.~~

~~Types CL3P-LP, CL2P-LP, CL3R-LP, CL2R-LP, CL3-LP, or CL2-LP shall be permitted to supply power to equipment at a current level up to the marked ampere limit located immediately following the suffix LP and shall be permitted to transmit data to the equipment. The Class 2 LP and Class 3 LP cables shall comply with the following, as applicable:~~

~~Informational Note 1: The "(xxA)" following the suffix -LP indicates the ampacity of each conductor in a cable.~~

70-39 Cont'd

~~Informational Note 2: An example of a limited power (LP) cable is a cable marked Type CL2-LP(0.5A), 23 AWG. A Type CL2-LP(0.5), 23 AWG could be used in any location where a Type CL2 could be used; however, the LP cable would be suitable for carrying up to 0.5 A per conductor, regardless of the number of cables in a bundle. If used in a 7-cable bundle, the same cable could carry up to 1.2 amperes per conductor.~~

~~(1) Cables with the suffix "-LP" shall be permitted to be installed in bundles, raceways, cable trays, communications raceways, and cable routing assemblies.~~

~~(2) Cables with the suffix "-LP" and a marked ampere level shall follow the substitution hierarchy of Table 725.154 and Figure 725.154(A) for the cable type without the suffix "LP" and without the marked ampere level.~~

(3) ~~System design shall be permitted by qualified persons under engineering supervision.~~

Recommended Text if Motion Fails:

725.144 Transmission of Power and Data.

The requirements of 725.144(A) and (B) shall apply to Class 2 and Class 3 circuits that transmit power and data to a powered device. The requirements of Parts I and III of Article 725 and 300.11 shall apply to Class 2 and Class 3 circuits that transmit power and data. The conductors that carry power for the data circuits shall be copper. The current in the power circuit shall not exceed the current limitation of the connectors.

Informational No. 1: One example of the use of cables that transmit power and data is the connection of closed-circuit TV cameras (CCTV).

Informational Note No. 2: The 8P8C connector is in widespread use with powered communications systems. These connectors are typically rated at 1.3 amperes maximum.

Table 725.144 Ampacities of Each Conductor in Amperes in 4-Pair Class 2 or Class 3 Data Cables Based on Copper Conductors at an Ambient Temperature of 30°C (86° F) with all All Conductors in All Cables Carrying Current, 60°C (140°F), 75°C (167°F), and 90°C (194°F) Rated Cables

AWG	Number of 4-Pair Cables in a Bundle																				
	1			2–7			8–19			20–37			38–61			62–91			92–192		
	Temperature Rating			Temperature Rating			Temperature Rating			Temperature Rating			Temperature Rating			Temperature Rating			Temperature Rating		
	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C
26	1	1	1	1	1	1	0.7	0.8	1	0.5	0.6	0.7	0.4	0.5	0.6	0.4	0.5	0.6	NA	NA	NA
24	2	2	2	1	1.4	1.6	0.8	1	1.1	0.6	0.7	0.9	0.5	0.6	0.7	0.4	0.5	0.6	0.3	0.4	0.5
23	2.5	2.5	2.5	1.2	1.5	1.7	0.8	1.1	1.2	0.6	0.8	0.9	0.5	0.7	0.8	0.5	0.7	0.8	0.4	0.5	0.6
22	3	3	3	1.4	1.8	2.1	1	1.2	1.4	0.7	0.9	1.1	0.6	0.8	0.9	0.6	0.8	0.9	0.5	0.6	0.7

Note 1: For bundle sizes over 192 cables, or for conductor sizes smaller than 26 AWG, ampacities shall be permitted to be determined by qualified personnel under engineering supervision.

Note 2: Where only half of the conductors in each cable are carrying current, the values in the table shall be permitted to be increased by a factor of 1.4.

Informational Note: The conductor sizes in data cables in wide-spread use are typically 22–26 AWG.

(A) Use of Class 2 or Class 3 Cables to Transmit Power and Data.

(1) Where Types CL3P, CL2P, CL3R, CL2R, CL3, or CL2 transmit power and data, the following shall apply, as applicable:

The ampacity ratings in Table 725.144 shall apply at an ambient temperature of 30°C (86°F).

(2) For ambient temperatures above 30°C (86°F), the correction factors of 310.15(B)(2) shall apply.

Informational Note: One example of the use of Class 2 cables is a network of closed- circuit TV cameras using 24 AWG, 60°C rated, Type CL2R, Category 5e local area network (LAN) cables.

(B) Use of Class 2-LP or Class 3-LP Cables to Transmit Power and Data.

70-39 Cont'd	Types CL3P-LP, CL2P-LP, CL3R-LP, CL2R-LP, CL3-LP, or CL2-LP shall be permitted to supply power to equipment at a current level up to the marked ampere limit located immediately following the suffix LP and shall be permitted to transmit data to the equipment. The Class 2-LP and Class 3-LP cables shall comply with the following, as applicable: Informational Note 1: The "(xxA)" following the suffix -LP indicates the ampacity of each conductor in a cable. Informational Note 2: An example of a limited power (LP) cable is a cable marked Type CL2-LP(0.5A), 23 AWG. A Type CL2-LP(0.5), 23 AWG could be used in any location where a Type CL2 could be used; however, the LP cable would be suitable for carrying up to 0.5 A per conductor, regardless of the number of cables in a bundle. If used in a 7-cable bundle, the same cable could carry up to 1.2 amperes per conductor. (1) Cables with the suffix "-LP" shall be permitted to be installed in bundles, raceways, cable trays, communications raceways, and cable routing assemblies. (2) Cables with the suffix "-LP" and a marked ampere level shall follow the substitution hierarchy of Table 725.154 and Figure 725.154(A) for the cable type without the suffix "LP" and without the marked ampere level. (3) System design shall be permitted by qualified persons under engineering supervision.

Motion Seq#	
	Certified Amending Motion: Reject an Identifiable Part of Second Revision No. 615
70-40	**Recommended Text if Motion Passes:** 725.179 Listing and Marking of Class 2, Class 3, and Type PLTC Cables…. ~~(I) Limited Power (LP) Cables.~~ ~~Limited power (LP) cables shall be listed as suitable for carrying power and data circuits up to a specified current limit for each conductor without exceeding the temperature rating of the cable where the cable is installed in cable bundles in free air or installed within a raceway, cable tray, or cable routing assembly. The cables shall be marked with the suffix "-LP" with the ampere limit located immediately following the suffix LP, where the current limit is in amperes per conductor.~~ ~~Informational Note: The ampere limit located immediately following the suffix LP is the ampacity of each conductor in a cable. For example, 1 ampere Class 2 limited-power cables would be marked CL2-LP (1.0A), CL2R-LP (1.0A), or CL2-LP (1.0A).~~ **Recommended Text if Motion Fails:** 725.179 Listing and Marking of Class 2, Class 3, and Type PLTC Cables…. (I) Limited Power (LP) Cables. Limited power (LP) cables shall be listed as suitable for carrying power and data circuits up to a specified current limit for each conductor without exceeding the temperature rating of the cable where the cable is installed in cable bundles in free air or installed within a raceway, cable tray, or cable routing assembly. The cables shall be marked with the suffix "-LP" with the ampere limit located immediately following the suffix LP, where the current limit is in amperes per conductor. Informational Note: The ampere limit located immediately following the suffix LP is the ampacity of each conductor in a cable. For example, 1 ampere Class 2 limited-power cables would be marked CL2-LP (1.0A), CL2R-LP (1.0A), or CL2-LP (1.0A).

Motion Seq#	**Certified Amending Motion:** Accept Public Comment No. 73
70-41	**Recommended Text if Motion Passes:** 770.24 Mechanical Execution of Work. Optical fiber cables shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps, staples, cable ties, hangers, or similar fittings designed and installed so as not to damage the cable. The installation shall also conform to 300.4(D) and 300.11. Nonmetallic cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties <u>in accordance with 800.170(C)</u>. Informational Note No. 1: Accepted industry practices are described in ANSI/NECA/BICSI 568-2006, Standard for Installing Commercial Building Telecommunications Cabling; ANSI/NECA/FOA 301-2015, Standard for Installing and Testing Fiber Optic Cables; and other ANSI-approved installation standards. Informational Note No. 2: See 4.3.11.2.6.5 and 4.3.11.5.5.6 of NFPA 90A-2015, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C). <u>Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.</u>”
	Recommended Text if Motion Fails: 770.24 Mechanical Execution of Work. Optical fiber cables shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware including straps, staples, cable ties, hangers, or similar fittings designed and installed so as not to damage the cable. The installation shall also conform with 300.4(D) through (G) and 300.11. Nonmetallic cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties. Informational Note No. 1: Accepted industry practices are described in ANSI/NECA/BICSI 568-2006, Standard for Installing Commercial Building Telecommunications Cabling; ANSI/NECA/FOA 301-2009, Standard for Installing and Testing Fiber Optic Cables; and other ANSI-approved installation standards. Informational Note No. 2: See 4.3.11.2.6.5 and 4.3.11.5.5.6 of NFPA 90A-2015, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Motion Seq#	
	Certified Amending Motion: Accept an Identifiable Part of Public Comment No. 1262
70-42	**Recommended Text if Motion Passes:** 840.160 Powering Circuits. Communications cables, in addition to carrying the communications circuit, shall also be permitted to carry circuits for powering communications equipment. Where the power supplied over a communications cable to communications equipment is greater than ~~60 watts~~ 0.5A per conductor or greater than 100 watts, communication cables and the power circuit shall comply with 725.144 where communications cables are used in place of Class 2 and Class 3 cables. Cables and Equipment Marking Supplying Premises Power and Communications. Powering circuits supplying more than 0.5A per conductor or greater than 100 watts per cable must be clearly labeled on the equipment face plate in maximum watts per port.
	Recommended Text if Motion Fails: 840.160 Powering Circuits. Communications cables, in addition to carrying the communications circuit, shall also be permitted to carry circuits for powering communications equipment. Where the power supplied over a communications cable to communications equipment is greater than 60 watts, communication cables and the power circuit shall comply with 725.144 where communications cables are used in place of Class 2 and Class 3 cables.

Motion Seq#	**Certified Amending Motion:** Reject Second Revision No. 4564, Including any Related Portions of First Revisions and First Correlating Revisions
70-43	**Recommended Text if Motion Passes:** ~~Part VI. Premises Powering of Communications Equipment over Communications Cables~~ ~~840.160 Powering Circuits.~~ ~~Communications cables, in addition to carrying the communications circuit, shall also be permitted to carry circuits for powering communications equipment. Where the power supplied over a communications cable to communications equipment is greater than 60 watts, communication cables and the power circuit shall comply with 725.144 where communications cables are used in place of Class 2 and Class 3 cables.~~
	Recommended Text if Motion Fails: Part VI. Premises Powering of Communications Equipment over Communications Cables 840.160 Powering Circuits. Communications cables, in addition to carrying the communications circuit, shall also be permitted to carry circuits for powering communications equipment. Where the power supplied over a communications cable to communications equipment is greater than 60 watts, communication cables and the power circuit shall comply with 725.144 where communications cables are used in place of Class 2 and Class 3 cables.

Table A
NITMAMs not certified for the June 2016 NFPA Technical Meeting (Tech Session)

NFPA 70, *National Electrical Code*

NITMAM Log #	Section/Para	Submitter of the Motion	Motion	Motions Committee Notes and Comments
87	230.70(A)	Dean Weigand, Briggs and Stratton	Reject an Identifiable Part of Second Revision No. 1004	The submitter seeks to add text that was not included in the related Second Revision.
104	240.67	Eric Maier, Boltswitch Inc.	Accept an Identifiable Part of Public Comment No. 290	The submitter seeks to add text that was not included in the related Public Comment.
109	240.67	James Erickson, Boltswitch Inc.	Accept an Identifiable Part of Public Comment No. 608	The submitter seeks to add text that was not included in the related Public Comment.
110	240.67	James Erickson, Boltswitch Inc.	Accept an Identifiable Part of Public Comment No. 1635	The submitter seeks to add text that was not included in the related Public Comment.
7	240.100	Paul Guidry, Fluor Enterprises Inc.	Accept Public Comment No. 235	The submitter proposed no text nor text amendments.
29	310.15(B)	Travis Lindsey, TLC Services Inc.	Accept an Identifiable Part of Public Comment No. 583	The submitter seeks to accept a Public Comment that he did not submit.

	Chapter SPS 316			
SPS 316		**Suggestions/Revisions**	**Comments**
	Subchapter I: Administration and Enforcement			
	0.001 Purpose. (1) PRACTICAL SAFEGUARDING. Pursuant to ss. 101.02 (1), 101.63 (1), 101.73 (1), and 101.82 (1), Stats., the purpose of this chapter is the practical safeguarding of persons and property from hazards arising from the installation and use of electricity. Note: Hazards often occur because of overloading of wiring systems by methods or usage not in conformity with this chapter. This occurs because initial wiring did not provide for increases in the use of electricity. An adequate initial installation and reasonable provisions for system changes will provide for future increases in the use of electricity. (2) (2) CODE INTENTION. This chapter is not intended as a design specification or as an instruction manual for untrained persons. Note: The Wisconsin state electrical code is issued and administered by the department and by the public service commission in 2		
	0.002 Scope. (1) COVERED. This chapter covers: (a) Installations of electric and communication conductors and equipment in places of employment, within or on public and pri- vate buildings or other structures, including mobile homes, recre- ational vehicles, and floating buildings; and other premises such as yards, carnivals, parking and other lots, mines, trenches and tunnels, and industrial substations. (b) Installations of conductors and equipment that connect to the supply of electricity. (c) Installations of other outside conductors and equipment on the premises. (d) Installations of optical fiber cable. (e) Installations in buildings used by the electric utility, such as office buildings, warehouses, garages, machine shops and rec- reational buildings, that are not an integral part of a generating plant, substation or control center. (f) Inspections of electrical construction of farms, public buildings and places of employment. (2) NOT COVERED. This chapter does not cover: (a) Installations of electric conductors and equipment in ships, watercraft other than floating buildings, railway rolling stock, air-	**SPS 316.002 Scope. (1)** GENERAL. Except as provided in sub. (2), this chapter applies to electrical wiring installations. (2) EXCLUSIONS. This chapter does not cover any of the following electrical wiring installations: (a) Installations in ships, watercraft, railway rolling stock, aircraft, or automotive vehicles. (b) Installations for generation, transformation or distribution of power used exclusively by railways for signaling and communication purposes.	Simplify Application by eliminating inclusive list.
	0.003 Application. (1) TYPES OF INSTALLATIONS. The provisions of this chapter apply to all new installations, recon- structions, alterations and extensions. (2) TESTING. Rooms which are used exclusively for routine or special electrical test work and are under the supervision of a qual- ified person, shall comply with this chapter where practicable for the character of the testing done. (3) EXISTING INSTALLATIONS. Existing electrical installations shall conform to the electrical code that applied when the installa- tions were installed. An existing electrical installation may be required to be brought into compliance with the current code's requirements by the department and within the time period deter- mined by the department when a hazard to life, health or property exists or is created by the installation.	New SPS 316.003 (6) Additions and Alterations. Additions and alterations to electrical systems covered by this code shall comply with all provisions of this code at the time of permit application or the beginning of the project, if no permit is required.	SPS 316 does not presently have an addition/alteration clause, this will bring the SPS 316 in line with other documents.
	0.004 Authority. (1) DEPARTMENT AUTHORITY. Under s. 101.02 (1), Stats., the department reserves the right to interpret the requirements in this chapter and in all adopted codes and standards. Note: Section 101.02 (1) of the Statutes reads: "The department shall adopt rea- sonable and proper rules and regulations relative to the exercise of its powers and authorities and proper rules to govern its proceedings and to regulate the mode and manner of all investigations and hearings." (2) MUNICIPAL AUTHORITY. Municipalities may exercise juris- diction over inspection of electrical construction covered by the scope of this chapter. For public buildings and places of employ- ment, s. SPS 316.920 (2) specifies the conditions required for municipalities to exercise this jurisdiction. Note: Section SPS 320.02 (1) (a) prohibits any municipality from adopting an ordinance establishing restrictions on the electrical construction of one− and two− family dwellings covered by the Uniform Dwelling Code. Note: Section SPS 361.03 (5) (b) prohibits any municipality from adopting an ordinance establishing restrictions on the electrical construction of multifamily dwellings as defined in s. SPS 362.0202.	Add the following language and note to SPS 316.004 (1) Interpretations. Any Departmental interpretation of the requirements in this chapter or in the codes and standards that are adopted in this chapter shall supersede any differing interpretation by either a lower level jurisdiction or an issuer of the adopted code or standard. Note: Ss 101.86 Prohibits municipalities from ennacting rules that are more restrictive than SPS 316. 101.86 Municipal Authority. (1) Municipalities May: (a) Enact an electrical code or otherwise exercise jurisdiction over electrical wiring and inspection of electrical wiring by enactement of ordinances, provided that the electrical code or	Change by Wisconsin 2015 Act 55
	0.005 Petition for variance. The department shall consider and may grant a variance to a provision of this chap- ter in accordance with ch. SPS 303. The petition for variance shall include, where applicable, a position statement from the fire department having jurisdiction. Note: Chapter SPS 303 requires the submittal of a petition for variance form (SBD−9890) and a fee, and that an equivalency is established in the petition for vari- ance that meets the intent of the rule being petitioned. Chapter SPS 303 also requires the department to process regular petitions within 30 business days and priority peti- tions within 10 business days. Note: The Department forms required in this chapter are available for a nominal fee at telephone 800-DOC−SALE (800−362−7253) or 411 (Telecommunications Relay), or at docsales@doa.state.wi.us. Forms are also available at no charge at the Department's Web site at http://dsps.wi.gov through links to Division of Industry Ser- vices forms. History: Cr. Register, October, 1990, No. 418, eff. 11−1−90; r. and recr., Register, September, 1999, No. 525, eff. 10−1−99; CR 08−047: renum. from Comm 16.05 Reg- ister February 2009 No. 638, eff. 3−1−09; correction made under s. 13.92 (4) (b) 7.,		
	0.006 Penalties. Penalties for violations of this chapter shall be assessed in accordance with s. 101.02 (12) and (13), or s. 101.88 (3), Stats. Note: Section 101.02 (13) (a), Stats., indicates penalties will be assessed against any employer, employee, owner or other person who fails or refuses to perform any duty lawfully enjoined, within the time prescribed by the department, for which no penalty has been specifically provided, or who fails, neglects or refuses to comply with any lawful order made by the department, or any judgment or decree made by any court in connection with ss. 101.01 to 101.599, Stats. For each violation, failure or refusal, the employee, owner or other person must forfeit and pay into the state trea- sury a sum not less than $10 nor more than $100 for each violation.		
	0.007 Fees. Fees for petitions for variance, elec- trical plan review and electrical inspections issued under this chapter shall be submitted as specified in ch. SPS 302. History: Cr. Register, September, 1999, No. 525, eff. 10−1−99; CR 02−072: am. Register April 2003 No. 568, eff. 5−1−03; CR 08−047: renum. from Comm 16.065 Register February 2009 No. 638, eff. 3−1−09; correction made under s. 13.92 (4) (b) 7., Stats., Register December 2011 No. 672.		
	0.008 Appeals. (1) APPEAL OF LOCAL ORDER. Any person affected by a local order which may be in conflict with a provision of this chapter may petition the department for a hear- ing on the grounds that the local order is unreasonable and in con- flict with the provision of this chapter. All appeals shall be acted on and a decision in writing shall be issued by the department within 30 business days of receiving an appeal. Note: Section 101.01 (l) (f), Stats., defines "local order" as any ordinance, order, rule or determination of any common council, board of aldermen, board of trustees or the village board, of any village or city, or the board of health of any municipality, or an order or direction of any official of such municipality, upon any matter over which the department has jurisdiction. (2) PETITION OF ADMINISTRATIVE RULE. Pursuant to s. 227.12, Stats., any municipality, corporation or any 5 or more persons		
	Subchapter II: General Requirements		

		0.009	Construction and operation. (1) GEN- ERAL. All electrical power and communication equipment and lines shall be constructed, installed, operated and maintained so as to minimize hazards to life and property. All electrical installa- tions shall conform to the National Electrical Code®, incorpo- rated by reference in this chapter, and the requirements specified in this chapter. Note: The federal and state Fair Housing Acts, the federal Americans with Dis- abilities Act and the Wisconsin Commercial Building Code (chs. SPS 361 to 366) contain requirements relating to making buildings accessible to and usable by people with disabilities. Some of those requirements apply to the installation of various elec- trical devices. For example, in the federal fair housing accessibility guidelines, devices such as light switches, electrical outlets, thermostats and other environmental controls would meet the requirements if operable parts of the controls are located no higher than 48 inches, and no lower than 15 inches, above the		
		0.010	Inspection and maintenance. All elec- trical installations and equipment shall be cleaned and inspected at intervals as experience has shown to be necessary. Any equip- ment or electrical installation known to be defective so as to endanger life or property shall be promptly repaired, permanently disconnected, or isolated until repairs can be made. Construction, repairs, additions, and changes to electrical equipment and con- ductors shall be made by qualified persons only. History: Cr. Register, October, 1990, No. 418, eff. 11−1−90; CR 08−047: renum. from Comm 16.09 Register February 2009 No. 638, eff. 3−1−09.	Delete last sentence.	Superseded by Ss 101.862 sub 4 which requires licensing of electricians with exceptions
		0.011	Electrical inspection of public build- ings and places of employment. Inspection of electrical construction relating to public buildings and places of employ- ment shall comply with the requirements of subch. IV. History: Cr. Register, October, 1990, No. 418, eff. 11−1−90; am., Register, Sep- tember, 1999, No. 525, eff. 10−1−99; CR 08−047: renum. from Comm 16.10 Register February 2009 No. 638, eff. 3−1−09.		
		0.012	Use of approved materials and con- struction methods. (1) MATERIALS. Materials, equipment and products that do not comply with the requirements of this chapter shall not be used unless approved in writing by the depart- ment. Approval of materials, equipment, and products shall be based on sufficient data, tests, and other evidence that prove the material, equipment, or product meets the intent of the require- ments of this chapter. Data, tests, and other evidence shall be pro- vided by a qualified independent third party. Note: Examples of a qualified independent third party include a nationally recog- nized testing laboratory and a professional engineer. (2) METHODS OF INSTALLATION. Methods of installation that do not comply with the regulations of this chapter shall not be used unless approved by the department. (3) NEW PRODUCTS, CONSTRUCTIONS OR MATERIALS. The incor- porated National Electrical Code® may require new products, constructions, or materials that may not be available at the time this chapter is adopted. In such event, the department may permit the use of the products, constructions or materials which comply with a previous edition of the National Electrical Code®. History: Cr. Register, October, 1990, No. 418, eff. 11−1−90; CR 02−072: r. and	Substitute the following for the first sentence of SPS 316.012 sub (1) Materials, equipment and products that do not comply with the requirements of this chapter shall not be used unless approved by a petition for variance issued by the department. Substitute the following for the first sentence of SPS 316.012 sub (2) METHODS OF INSTALLATION. Methods of installation that do not comply with the regulations of this chapter shall not be used unless approved by a petition for variance issued by the department.	The department does not have an electrical product approval process, the petition for variance process is used instead.
		0.013	Electric fences. The following are depart- ment rules in addition to the requirements of the NEC®: (1) ELECTRIC FENCE CONTROLLERS. (a) Electric fence control- lers shall be of a type listed by a nationally recognized testing lab- oratory. (b) Electric fence controllers shall be installed and used in the exact manner and for the exact purpose indicated by the manufac- turer's instructions, markings, listings or labels. (2) GROUNDING. Electric fence controllers shall be grounded as specified in NEC 250, except that where stray voltages in dairy barns or milking parlors create physical problems to the animals, the use of a single made electrode shall be permitted. Note: Under s. 101.18, Stats., the Department is responsible for establishing "reasonable standards, rules or regulations for the erection, construction, repair and maintenance of electric fences as shall render them safe." History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09.	(1) ELECTRIC FENCE CONTROLLERS FOR LIVESTOCK. (a) Electric fence control- lers shall be of a type listed by a nationally recognized testing lab- oratory.	There is no current listing standard for electric fence controllers for humans used in mental health facilities and prisons.
		0.014	Adoption of standards by reference. (1) PRIMARY STANDARDS. The following standard is hereby incor- porated by reference into this chapter, subject to the modifications specified in this chapter: (a) National Fire Protection Association® (NFPA), One Bat- terymarch Park, Quincy, MA 02169-7471, telephone 800−344−3555, www.nfpa.org: NFPA 70 National Electrical Code®, (NEC®) − 2011. Note: Copies of the standard are on file in the offices of the Department and the Legislative Reference Bureau. A copy of the code may be purchased from the orga- nization listed or may be reviewed on the organization's website at not cost if the per- son is a registered user for the site. (b) If a requirement in the standard adopted in par. (a) contains a cross-reference to another requirement modified by this chap- ter, the modification shall apply to the cross−reference unless specified otherwise in this chapter. (2) SECONDARY REFERENCES. Any codes or standards refer- enced in the standard adopted in sub. (1) (a) shall apply to the pre scribed extent of each such reference, except as modified by this chapter. (3) ALTERNATE STANDARDS. Any alternate standard that is equivalent to or more stringent than a standard incorporated by		
	Subchapter III: Changes, Additions or Omissions to the NEC®				
		0.015	Changes, additions or omissions to NEC®. Changes, additions or omissions to the National Electri- cal Code® (NEC®) are specified in this subchapter and are rules of the department and not requirements of the NEC®. Note: The referenced NEC® article or section number will correspond with the SPS designation number and title and will precede the text of the rule. Example: SPS 316.100 [NEC 100]. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09.		
		0.090	Introduction. The requirements specified in NEC 90.1, NEC 90.2 and NEC 90.4 are not included as part of this chapter. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR 13−042: am. (title) Register November 2013 No. 695, eff. 12−1−13.		

		0.100	(1) ADDITIONS. The follow- ing are department definitions in addition to the definitions in NEC 100: (a) “Department” means the department of safety and profes- sional services. (b) “Floors” means stories as specified in chs. SPS 361 to 366. (c) “Nonrated construction” means Types III, IV and V con- struction in accordance with chs. SPS 361 to 366 and is considered to b nonfire−rated for the purposes of this chapter. (d) “Private sewage system” has the meaning specified under s. 145.01 (12), Stats. Note: Under s. 145.01 (12), Stats., “private sewage system” means a sewage treat- ment and disposal system serving a single structure with a septic tank and soil absorp- tion field located on the same parcel as the structure. This term also means an alterna- tive sewage system approved by the department including a substitute for the septic tank or soil absorption field, a holding tank, a system serving more than one structure or a system located on a different parcel than the structure. A private sewage system may be owned by the property owner or a special purpose district. (2) SUBSTITUTIONS. The following department definitions are substitutions for the respective definitions in NEC 100: (a) “Building” means a structure that stands alone or is sepa- rated from adjoining structures by fire walls having not less than a 3−hour fire−resistance rating with all openings in the wall pro- tected with 3−hour rated fire door assemblies. Note: See chs. SPS 361 to 366 for fire−resistance standards. (b) “Special permission” means a petition for variance in accordance with s. SPS 316.005. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; correction in (1) (a), (b), (c), (2) (b) made under s. 13.92 (4) (b) 6., 7., Stats., Register December 2011 No. 672.	Delete SPS 316.100 (2) (a)	Separate buildings are determined by building code SPS 361 not electrical code SPS 316
		0.110	Requirements for electrical installa- tion. Substitute the following wording for the requirements in NEC 110.3 (B): Listed or labeled equipment shall be installed or used, or both, in accordance with any instructions included in the listing or labeling, provided the instructions, listing or labeling do not conflict with this chapter. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR 13−042: am. Register November 2013 No. 695, eff. 12−1−13.	Delete SPS 316.110	Language is nearly identical to NEC 110.3(B)
		0.210	Branch circuits. (1) IDENTIFICATION FOR BRANCH CIRCUITS. This is a department informational note to be used under NEC 210.5 (C): Note: For 277/480 volt systems, the recommended wire colors are brown, orange and yellow. For 120/208 volt systems, the rec- ommended wire colors are black, red and blue. (2) GROUND−FAULT CIRCUIT−INTERRUPTER PROTECTION FOR PERSONNEL. This is a department exception to the requirements in NEC 210.8 (A). Exception: Ground−fault circuit−interrupter protection shall not be required for a single receptacle providing power for sump or sewage pumps where an accessible ground−fault circuit−inter- rupter protected receptacle is located within 900 mm (3 ft) of the non−GFCI protected receptacle. (3) BRANCH CIRCUITS REQUIRED. This is a department rule in addition to the requirements of NEC 210.11: Where an air condi- tioner sleeve is provided in a building wall, a receptacle outlet shall be located within 4 feet of the sleeve. If a circuit is not run to the outlet, a raceway shall be provided. When the air condi- tioner is installed in the sleeve, it shall be supplied by an individual branch circuit. A receptacle outlet installed for an air conditioner may not be counted as one of the receptacles required by NEC 210.52 (A). (4) BRANCH CIRCUIT EXTENSIONS OR MODIFICATIONS — DWELL- ING UNITS. The requirements in NEC 210.12 (B) are not included as part of this chapter. (5) LIGHTING OUTLETS REQUIRED. Substitute the following wording for NEC 210.70 (A) (1): At least one wall switch−con- trolled lighting outlet shall be installed in every habitable room, kitchen and bathroom. (6) COUNTERTOP RECEPTACLES. The requirements in NEC	Delete SPS 316.210 sub (1) Substitute the following: "(2) GROUND−FAULT CIRCUIT−INTERRUPTER PROTECTION FOR PERSONNEL. This is a department exception to the requirements in NEC 210.8 (A) and (B). Exception: Ground−fault circuit−interrupter protection shall not be required for a single receptacle providing power for sump or sewage pumps where an accessible ground−fault circuit−inter- rupter protected receptacle is located within 900 mm (3 ft) of the non−GFCI protected receptacle. Delete SPS 316.210 sub (3)	This Recommendation adds no value and creates confussion. Offers a practical alternative in many non dwelling locations. It is a design issue.
		0.210	Proposed New SPS 316.210 (7)	Substitute the following for NEC 210.52 (C) (3); "210.52(C)(3) Peninsular Countertop Spaces. At least one receptacle outlet must be installed at each peninsular countertop long dimension space with a long dimension of 2 ft or greater, and a short dimension of 1 ft or more, measured from the connected peninsular wall. A wall countertop space receptacle can serve as the receptacle for a peninsular countertop space where the spaces are contiguous and the receptacle is within 6 ft of the outside edge of the peninsular countertop. "	Solves a common problem that faces residential contractors. The problem is finding an practical location for receptacle outlets on penninsulas. Some of the common solutions are very expensive.
		0.220	Branch−circuit, feeder and service calculations. (1) GENERAL. This is a department exception to the requirements in NEC 220.10: Circuit load calculations may use unit load values lower than those identified in NEC Table 220.12 for lighting loads calculated using the maximum electrical energy conservation values specified under ch. SPS 363 for public buildings and places of employment. (2) EXCEPTION. This is a department exception to the require- ments in NEC 220.40: Exception: Under the supervision of a Wisconsin professional engineer, architect or designer of electrical systems, the feeder or service size may be computed using diversity factors or historical data of a similar type of building, other than one- and 2−family dwelling units. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR 13−042: r. and recr. (1) Register November 2013 No. 695, eff. 12−1−13.	Delete SPS 316.220 sub (1)	Similar to NEC 220.12 exception

		0.225	Outside branch circuits and feeders. (1) CLEARANCES FROM BUILDINGS FOR CONDUCTORS NOT OVER 600 VOLTS. Substitute the following wording for NEC 225.19 (A) Exception No. 4: The requirement for maintaining the vertical clearance 3 feet from the edge of the roof does not apply to the final conductor span to the building. (2) NUMBER OF SUPPLIES. The following are department rules in addition to the requirements in NEC 225.30: (a) For the purpose of this section, multiple feeders that are supplied from the same distribution point, having a total rating of 300 amperes or more, and that supply not more than 6 disconnect- ing means grouped at the same location shall be considered as one supply. (b) Multi−occupancy buildings or structures may have one set of branch circuit conductors installed from a dwelling unit to the second building or structure's respective occupied space. (3) LOCATION. This is a department rule in addition to the requirements of NEC 225.32: The building disconnect required by NEC 225.31 shall be located in accordance with s. SPS 316.230 (3). Note: See ch. PSC 114 regarding clearances of conductors of over 600 volts and for prohibition of constructing dwellings under or near overhead lines. (4) CLEARANCES OVER ROADWAYS, WALKWAYS, RAIL, WATER AND OPEN LAND. Substitute the following wording for the note to NEC 225.60 (C): Note: For clearances of conductors of over 600 volts, see ch. PSC 114. (6) CLEARANCES OVER BUILDINGS AND OTHER STRUCTURES.	Delete SPS 316.225 (1)	Similar to existing NEC 225.19(a) exception 4
		0.230	Services. (1) NUMBER OF SERVICES. (a) These are department informational notes to be used under NEC 230.2 (intro.): Note: See definition of building in s. SPS 316.100 (2) (a). Note: It is recommended that the electric utility or cooperative supplying electric current be contacted prior to service equipment installations for any special requirements. (b) Substitute the following wording for NEC 230.2 (B) (2): Two or more service drops or laterals for the same class of service if located more than 150 feet apart, measured in a straight line, and provided that all electrical wiring supplied by each service has no common raceway or connection with any other service. (c) This is a department rule in addition to the requirements of NEC 230.2 (B): For a building which is not more than 3 stories in height and which contains only 3 or more attached, vertically separated, side−by−side or back−to−back dwelling units, with each dwelling unit served by an individual exterior exit within 6 feet of the exit discharge grade, a separate service drop or lateral shall be permitted for each 2 attached units. (2) NUMBER OF SERVICE−ENTRANCE CONDUCTOR SETS. The requirements specified in NEC 230.40 Exception No. 3 are not included as part of this chapter. (3) SERVICE EQUIPMENT — DISCONNECTING MEANS. (a) Gen- eral. This is a department rule in addition to the requirements of NEC 230.70: Disconnecting means shall be provided to discon-nect the utility wiring from the premises wiring at any point where utility wiring terminates and premises wiring extends overhead or underground to more than one building or structure. (b) Location. This is a department rule in addition to the requirements of NEC 230.70 (A): Raceways containing service conductors	Delete "Note: See definition of building in s. SPS 316.100 (2) (a)." Delete this: "(c) This is a department rule in addition to the requirements of NEC 230.2 (B): For a building which is not more than 3 stories in height and which contains only 3 or more attached, vertically separated, side−by−side or back−to−back dwelling units, with each dwelling unit served by an individual exterior exit within 6 feet of the exit discharge grade, a separate service drop or lateral shall be permitted for each 2 attached units." Revise to read: "(a) Two− or multi−family dwellings. Except as provided in par. (b), for 2−family or multi−family dwellings, the service equip- ment shall have a total rating of not less than 150 amperes, 3−wire or 4−wire." Delete SPS 316.230 (4) (b) exception.	Definition of building defaults to the building codes. Determination of buildings is defined by the building codes. Clarify application of the rule. Covered by other code requirements.
		0.250	Grounding and bonding. (1) SUPPLE- MENTAL ELECTRODE REQUIRED. The exception in NEC 250.53 (A) (2) is not included as part of this chapter. (2) SUPPLEMENTAL ELECTRODE. This is a department rule in addition to the requirements in NEC 250.53 (A) (3): A single elec-trode consisting of a rod, pipe or plate shall be augmented by one additional electrode of any of the types in NEC 250.52 (A) (4) to (A) (8).		
		0.300	Wiring methods. (1) ELECTRICAL REQUIREMENTS FOR PRIVATE SEWAGE SYSTEMS. These department rules apply to private sewage systems and are in addition to the requirements of NEC 300: (a) Wiring methods. All effluent pump circuit wiring shall comply with the approved wiring methods as specified in NEC 300 and all of the following requirements: 1. Effluent pumps shall be supplied by a separate branch cir- cuit supplying no other loads. 2. Alarm wiring may not be connected to the pump circuit. 3. All aboveground cables and flexible cords shall be enclosed to protect against physical damage. 4. The neutral conductor may not be common to both alarm and pump circuits. 5. Where the wiring enclosure for the alarm and pump circuit is located outside the pump chamber, any openings into the pump chamber for circuit wiring shall be sealed or plugged to prevent the passage of gas or vapor into the wiring enclosure. Note: This prohibits use of a multi−wire branch circuit to supply both the alarm and pump.	Substitute the following for SPS 316.300 (2) protection against physicall damage. Delete first sentence, add new exception #4 to read "NEC 300.4 (D) Exception No. 4 This distance does not need to be maintained within 8 inches of a device, junction box, splice or termination point."	Align Wisconsin installation requirements with other states.
		0.310	Conductors for general wiring. This is a department rule in addition to the requirements in NEC 310.15 (B) (3) (a): The derating factors shown in NEC Table 310.15 (B) (3) (a) do not apply to branch circuits supplying an individual dwelling unit except under the following conditions: Exception No. 6: The derating factors shown in NEC Table 310.15 (B) (3) (a) do not apply to branch circuits supplying an individual dwelling unit except under the following conditions: (1) Where more than two NM cables containing two or more current−carrying conductors are installed, without maintaining spacing between the cables, through the same opening in wood framing that is to be fire− or draft−stopped using thermal insula- tion, caulk or sealing foam, the allowable ampacity of each con- ductor shall be adjusted in accordance with Table 310.15 (B) (3) (a) and the provisions of 310.15 (A) (2) shall not apply. (2) Where more than two NM cables containing two or more current−carrying conductors are installed in contact with thermal insulation without maintaining spacing between cables, the allowable ampacity of each conductor shall be adjusted in accord- ance with Table 310.15 (B) (3) (a). History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR 13−042: am. (title), (intro.) Register November 2013 No. 695, eff. 12−1−13; correc-tions in (intro.), (1), (2) under s. 13.92 (4) (b) 7. Register November 2013 No. 695	Substitute the following for SPS 316.310 "Conductors for general wiring.This is a department exception to the requirements in NEC 310.15 (B) (2) and (3): The ampacity adjustment factors shown in NEC Table 310.15 (B) (3) (a) do not apply to branch circuits associated with an individual dwelling unit except under the following conditions: (1) Where more than two NM cables containing two or more current−carrying conductors are installed, without maintaining spacing between the cables, through the same opening in wood framing that is to be fire− or draft−stopped using thermal insula- tion, caulk or sealing foam, the allowable ampacity of each con- ductor shall be adjusted in accordance with Table 310.15 (B) (3) (a) and the provisions of 310.15 (A) (2) shall not apply. (2) Where more than two NM cables containing two or more	Editorial. NEC 310.15(B)(2) and (3) has been revised. The exceptions have been written as positive statements consistent with the NEC manual of style. In other words, NEC 310.15(B)(2)(and (3) currently have no Exceptions 1-5.
		0.312	Cabinets, cutout boxes and meter socket enclosures. (1) CABLES. Substitute the following wording for NEC 312.5 (C) Exception (intro.): Exception: Cables with entirely nonmetallic sheaths may enter an enclosure through one or more nonflexible raceways of not less than 12 inches and not more than 10 feet in length, provided all of the following conditions are met: (2) OMISSION. The requirements specified in NEC 312.5 (C) Exception paragraph (b) are not included as part of this chapter. (3) FITTING. Substitute the following wording for NEC 312.5 (C) Exception paragraph (c): A fitting is provided on each end of the raceway to protect the cable from abrasion. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09.		

		0.314	Outlet, device, pull and junction boxes; conduit bodies; fittings; and handhole enclosu- res. (1) CONDUCTORS ENTERING BOXES, CONDUIT BODIES, OR FIT- TINGS. This is a department exception to the requirements of NEC 314.17 (B) and (C): Exception: Nonmetallic sheathed cable is not required to be secured to the box or conduit body where it is installed in accord- ance with the wiring method specified in s. SPS 316.312. (2) OUTLET BOXES. This is a department rule in addition to the requirements of NEC 314.27 (A): In a dwelling unit, a ceiling out-let box installed for use as a lighting fixture outlet in a habitable room or kitchen and located where a ceiling fan could be installed shall be a type listed for ceiling fan support. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; correction in (1) made under s. 13.92 (4) (b) 7., Stats., Register December 2011 No. 672; CR 13−042: am. (title) Register November 2013 No. 695, eff. 12−1−13.	Delete SPS 316.314 (2)	Design issue
		0.334	Nonmetallic−sheathed cable: Types NM, NMC and NMS. (1) USES PERMITTED. Substitute the fol- lowing wording for NEC 334.10 (3): Other structures permitted to be of Types III, IV, and V construction except as prohibited in NEC 334.12. (2) TYPES NM, NMC, AND NMS. The requirements specified in NEC 334.12 (A) (2) are not included as part of this chapter. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR 13−042: am. (2) (title) Register November 2013 No. 695, eff. 12−1−13.		
		0.358	Uses permitted. This is a department rule in addition to the requirements of NEC 358.12: Electrical metallic tubing may not be used in direct contact with earth, in concrete slabs or floors poured on earth, or in exterior concrete walls below grade. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09.		
		0.400	Flexible cords and cables. This is a department exception in addition to the exception in NEC 400.8 (4): Exception No. 2: Flexible cords and cables permitted by NEC 400.7 (A) that are connected to sources other than busways may be attached to adequately supported equipment or building sur-faces provided the type of cord or cable, the attachment to the building and equipment, and the support comply with the provi- sions of NEC 368.56 (B). History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR 13−042: am. (title) Register November 2013 No. 695, eff. 12−1−13.		
		0.406	Receptacles, cord connectors and attachment plugs (caps). The requirements in NEC 406.4 (D) (4) are not included as part of this chapter. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR 13−042: Register November 2013 No. 695, eff. 12−1−13.		
		0.450	Transformers and transformer vaults (including secondary ties). (1) OVERCURRENT PROTECTION. This is a department rule in addition to the requirements in NEC Table 450.3 (A) Note 3: The qualified person shall be either an employee at that location or an employee contracted for this pur- pose who is readily available. (2) LOCATION. Substitute the following wording for NEC 450.41: Vaults containing oil-insulated transformers shall be located where the vaults can be ventilated to the outside air with- out using flues or ducts, except where a petition for variance is approved. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR 13−042: am. (title), (1) Register November 2013 No. 695, eff. 12−1−13.		
		0.511	Commercial garages, repair and sto- rage. (1) The requirements specified in NEC 511.3 (C) (1) (a) are not included as part of this chapter. (2) Substitute the following wording for NEC 511.3 (C) (2) (a): The ceiling area shall be unclassified where ventilation is pro- vided from a point not more than 18 inches from the highest point in the ceiling. The ventilation shall conform to chapters SPS 361 to 366. Note: The Commercial Building Code, chapters SPS 361 to 366, adopts and refer- ences the International Mechanical Code, IMC, for the design of ventilation systems. The adopted provisions of the International Mechanical Code under section 502.16 prescribe provisions for repair garages for natural gas− and hydrogen− fueled vehicles. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR	Substitute the following for SPS 316. 511 (1) "Substitute the following wording for NEC 511.3 (C) (1) (a): The floor area shall be unclassified where ventilation is provided from a point not more than 12 inches from the lowest point of the floor area. The ventilation shall conform to chapters SPS 361 to 366.	Make requirements for declassifying floor areas consistent wtith previous exception in ceiling area.
		0.547	This is a depart- ment exception to the requirements in NEC 547.5 (G): Exception: Ground−fault circuit−interrupter protection is not required for a single receptacle providing power for an electric fence controller used for livestock containment where an accessi- ble ground−fault circuit−interrupter protected receptacle is located within 900 mm (3 ft) of the non−GFCI protected recep- tacle. History: CR 13−042: cr. Register November 2013 No. 695, eff. 12−1−13.		
		0.620	Elevators, dumbwaiters, escalators, moving walks, platform lifts and stairway chairlifts. (1) This is a department exception to the requirements in NEC 620:Exception: Wherever NEC 620 requires disconnecting means with overcurrent protection to be located in an elevator machine room, control room, machinery space or control space and the ele- vator does not have such a room or space directly accessible from a building floor level, such devices shall be located instead in lockable cabinets or electrical rooms accessible only to qualified persons. (2) This is a department informational note to be used under NEC 620.25: Note: See NEC 620.53, 620.54 and 620.55 for additional require- ments. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR	Delete SPS 316.620 (2)	Redundant, adds no value.

		0.675	Electrically driven or controlled irriga- tion machines. This is a department rule in addition to the requirements in NEC 675.8: A service disconnecting means with overcurrent protection shall be provided at the service point in accordance with NEC 230 subchapter VI. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR 13−042: am. Register November 2013 No. 695, eff. 12−1−13.		
		0.680	Swimming pools, fountains and simi- lar installations. (1) PERIMETER SURFACES. This is a depart- ment rule in addition to the requirements of NEC 680.26 (B) (2). The requirements specified in NEC 680.26 (B) (2) does not apply to a listed self-contained spa or hot tub constructed with nonme- tallic walls. (2) POOL WATER. This is a department rule in addition to the requirements of NEC 680.26 (C). The requirements specified in NEC 680.26 (C) does not apply to a listed self-contained spa or hot tub constructed with nonmetallic walls. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR 13−042: am. (title) Register November 2013 No. 695, eff. 12−1−13.		
		0.680	Proposed New SPS 316.680 (1)	The following department definition is a substitution for the respective definition in NEC 680.2. Storable Swimming, Wading, Immersion Pool, or Storable/Portable Spas and Hot Tubs. Those that are constructed on or above the ground and are capable of holding water to a maximum depth of 1.0 m (42 in); or a pool, spa, or hot tub with nonmetallic liner or inflatable fabric walls regardless of dimensions.	This definition was revised to use termonology used in the state of Wisconsin to describe a typical above ground pool that is capable of being dissasembled and stored but is not normally done so in normal use.
		0.680	Proposed New SPS 316.680 (2). [Note to codewriter renumber SPS 316.680 (2) to SPS 316.680 (3)	The following department definition is a substitution for the respective definition in NEC 680.2. "Permanently installed swimming, wading, immersion, and therapeutic pools. Those that are constructed in the ground or partially in the ground, and all pools installed inside of a building, regardless of water depth, whether or not served by electrical circuits of any nature.	This is a companion proposal to new SPS 316. 680.1
		0.700	Emergency systems. (1) WIRING, EMER- GENCY SYSTEM. This is a department rule in addition to the require- ments of NEC 700.10 (B): (a) Except as provided in par. (b), emergency circuit wiring shall be listed raceways, Type AC cable or Type MC cable. (b) Emergency lighting fixtures may use flexible cord connec- tions in compliance with NEC 410.62 (C) for electric discharge luminaries. (2) GENERAL REQUIREMENTS. This is a department rule in addi- tion to the requirements in NEC 700.12 (intro.): The enclosure of the alternate source of power located outdoors for emergency sys- tems shall be located at least 10 feet horizontally from any com- bustible portion of a Type III, Type IV, or Type V building and at least 20 feet from an outdoor electrical transformer, electrical metering, service equipment or normal power distribution equip- ment. These dimensions may be reduced where a noncombustible barrier is installed that extends at least 3 feet beyond each side of the alternate power source and transformer. The height of the ba rier shall be at least one foot above the top of the transformer, elec- trical metering, service equipment, or alternate power source, whichever is higher. (3) GENERAL REQUIREMENTS, DUAL SUPPLIES. The require- ments in NEC 700.12 (B) (3) are not included as part of this chap ter. Note: See chs. SPS 361 to 366 for further requirements. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09; CR 13−042: am. (1) (intro.), (3) Register November 2013 No. 695, eff. 12−1−13.		
		0.701	Legally required standby systems. (1) ADDITION. This is a department rule in addition to the require- ments in NEC 701.12 (intro.): The enclosure of the alternate source of power located outdoors for legally required standby sys- tems shall be located at least 10 feet horizontally from any com- bustible portion of a Type III, Type IV, or Type V building and at least 20 feet from an outdoor electrical transformer, electrical metering, service equipment or normal power distribution equip- ment. These dimensions may be reduced where a noncombustible barrier is installed that extends at least 3 feet beyond each side of the alternate power source and transformer. The height of the ba rier shall be at least one foot above the top of the transformer, elec- trical metering, service equipment, or alternate power source, whichever is higher.		
	Subchapter IV: Electrical Inspection				
		0.900	Purpose. Pursuant to s. 101.82, Stats., the purpose of this subchapter is to establish rules for the inspection of electrical construction of farms, public buildings and places of employment. History: Cr. Register, September, 1999, No. 525, eff. 10−1−99; CR 08−047: renum. from Comm 16.60 Register February 2009 No. 638, eff. 3−1−09.		
		0.905	Scope. This subchapter specifies the elec- trical construction to be inspected, the inspection procedures to be followed and the procedures for connection of electric service. History: Cr. Register, September, 1999, No. 525, eff. 10−1−99; CR 08−047: renum. from Comm 16.61 Register February 2009 No. 638, eff. 3−1−09.		

		0.910	Application. This subchapter applies to persons, independent inspection agencies, municipalities and state governmental agencies engaged in the inspection of electri- cal construction for the purposes of administering and enforcing this chapter on farms and in public buildings and places of employment, and to companies or utilities providing connection of electric service. History: Cr. Register, September, 1999, No. 525, eff. 10−1−99; CR 08−047: renum. from Comm 16.62 Register February 2009 No. 638, eff. 3−1−09.		
		0.915	Definitions. In this subchapter: (1) “Certified inspector” means a certified commercial elec- trical inspector. (2) “Commercial electrical inspector” means a person who conducts inspections of electrical construction of farms, public buildings and places of employment. (3) “Department” means the department of safety and profes- sional services. (4) “Electrical construction” means the installation of electri- cal wiring. (5) “Electrical contractor” means any person, firm or corpora- tion engaged in the business of erecting, installing, altering, repairing, servicing or maintaining electrical wiring.		
		0.920	Authority. (1) DEPARTMENTAL AUTHORITY. Pursuant to ss. 101.82 and 101.84, Stats., the department is granted the authority and jurisdiction over the inspection of elec- trical construction of farms, public buildings and places of employment. (2) MUNICIPAL AUTHORITY. (a) Jurisdiction conditions. Pur- suant to s. 101.86 (1), Stats., municipalities may exercise jurisdic- tion over inspection of electrical construction in public buildings and places of employment by passage of ordinances, providing all of the following conditions are complied with: 1. The municipality’s ordinances meet the minimum require- ments of this subchapter. 2. The municipality notifies the department at least 30 days prior to the date upon which the municipality intends to assume the		
		0.930	Electrical plan review. Upon request, the department may perform electrical plan review for dwellings, public buildings, places of employment and electrical services. History: CR 08−047: cr. Register February 2009 No. 638, eff. 3−1−09.		
		0.940	nspections. (1) PERSONS AUTHORIZED TO PERFORM INSPECTIONS. (a) General. Inspections performed for a municipality, independent inspection agency or the department for the purpose of administering and enforcing this chapter shall be performed by a certified inspector. (b) Right of entry. A certified inspector performing inspec- tions under par. (a) may, during reasonable hours, enter any build- ing or premises in the discharge of his or her official duties for the purpose of making inspections, re−inspections or testing of elec- trical construction. Note: Section SPS 305.63 contains requirements pertaining to the certification of commercial electrical inspectors. (2) MUNICIPAL INSPECTIONS. (a) Electrical wiring requiring inspection. Municipalities exercising jurisdiction under s. SPS		
		0.950	Connection of electric service. The company or utility furnishing electric current shall obtain proof that electrical wiring complies with this chapter before furnishing the service, as follows: (1) CERTIFICATE REQUIRED. The electrical wiring required to be inspected under s. SPS 316.940 (2) (a) may not be connected for use until a certificate is filed with the company or utility fur- nishing electric current. The certified inspector authorized to per- form the inspection shall complete and file the certificate with the company or utility. (2) STATEMENT REQUIRED. Electrical wiring not requiring a certificate under sub. (1) may not be connected for use until a writ- ten statement is filed with the company or utility furnishing elec- tric current indicating that the electrical wiring complies with this chapter. The electrical contractor or other person doing the wiring shall complete and file the written statement with the company or		
		0.960	Technical assistance. The department shall provide technical assistance to the extent possible with the available resources to any person, upon written request, regarding interpretation and application of this chapter. The technical assist- ance may consist of telephone, written, in−office or on−site review of specific problems. History: Cr. Register, September, 1999, No. 525, eff. 10−1−99; CR 08−047: renum. from Comm 16.67 Register February 2009 No. 638, eff. 3−1−09.		