
7-1 Log #1170f NEC-P07
(Entire Document)

Final Action: Reject

Submitter: Russell LeBlanc, The Peterson School

Recommendation: In articles 90 through 830, if the wording is not already there, then add the words (or other structure(s)) after the word BUILDING(S) wherever the intent of the requirement is to also include STRUCTURES as well as buildings.

Substantiation: There is a flaw in the NEC. The term "building" is used over 1000 times in the NEC, and in most of the cases the words "or other structure" should follow and apply the same requirements to bridges, billboards, towers, tanks, and other structures that are by definition NOT BUILDINGS. One specific example I can use is section 225.10 Wiring on

Buildings. I believe that this section is also intended to be applied structures, but the wording "or other structures" is not in the heading or the paragraph. There are literally thousands of other instances throughout the code that this same problem exists. This can easily be seen by doing an electronic search for the word "building". In some cases the words "or other structure" (or similar wording) are present, but in the vast majority where the requirements should also be applied to structures other than buildings, the wording is not there.

Panel Meeting Action: **Reject**

Panel Statement: The word "building" is used properly as defined in the NEC. Additionally, the submitter would need to identify each use of the word and submit a proposal to specifically address each use.

This proposal does not meet the requirements of 4.3.3(c) of the Regulations Governing Committee Projects as follows:
4.3.3 Content of Proposals. Each Proposal shall be submitted to the Council Secretary and shall include the following:
(c) Proposed text of the Proposal, including the wording to be added, revised (and how revised), or deleted.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-2 Log #921f NEC-P07
(Entire Document)

Final Action: Reject

Submitter: Joe Tedesco, Boston, MA

Recommendation: The term "adequate" and "adequately" and "inadequately" and "inadequate" should be replaced with terms that can be properly enforced and understood.

Substantiation: Terms are not defined and are considered vague and unenforceable per Table 3.2.1 in the NEC Style Manual. They are all "incorrect" 148 times in the NEC.

Panel Meeting Action: **Reject**

Panel Statement: The submitter did not provide the proposed text or wording in the recommendation in this proposal in accordance with 4.3.3(c) of the NFPA Regulations Governing Committee Projects. The submitter needs to provide the text to be added or revised for each instance where the NEC is proposed to be revised.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-3 Log #1325 NEC-P07
(100.Armored Cable, Type AC (New) and 320.2)

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I

Armored Cable, Type AC. A fabricated assembly of insulated conductors in a flexible interlocked metallic armor.
~~320.2~~

~~Armored Cable, Type AC. A fabricated assembly of insulated conductors in a flexible interlocked metallic armor. See 320.100.~~

Substantiation: The defined term is referenced in several articles of the NEC: 210.12(A), 210.12(A), 250.84(B), 250.118(8), 300.15, 300.19(A), 300.22(C)(1), 310.15(A)(4), 310.15(B)(3)(a)(4), 310.15(B)(3)(a)(5), 310.120(B)(2), 310.120(B)(2), 310.120(B)(3)(4), 314.3, 314.3, 320.2 Armored Cable, Type AC, 320, 368.56(A)(1), T392.10(A), 404.2, 404.12, 410.24(A), 410.117(C), 430.245(B), 518.4(B), 520.5(C), 530.11, 530.20, 550.15(J)(2), 550.16(A)(2), 551.47(G), 551.55(C)(1), 552.48(F), 552.48(G), 552.56(C)(1), 604(A)(1)(1), 610.11, 620.81, 645.5(E), 668.30(C)(2), 680.23(F)(1), 725.48(B)(4) (2), 800.133(A)(2), 820.133(A)(2), & 830.133(A)(2).

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Panel Meeting Action: Reject

Panel Statement: Although the submitter has correctly interpreted the NEC Style Manual, since this wiring method has its own article, the definition more appropriately belongs in the article. The 2011 National Electrical Code Style Manual in Section 2.2.2.1 allows the definition of terms which appear in two or more articles to be located in article 100. The language of section 2.2.2.1 is not mandatory. The submitter has not presented compelling evidence that the present location of this definition creates a hardship in the functional use of this document. The definitions of wiring methods under the purview of CMP-7 may from time to time need modifications or adjustments. Maintaining those definitions within their parent articles facilitates the ability of CMP-7 to contemplate such modifications and make such modifications to the existing definitions. Locating the definitions of wiring methods within their parent articles increases the usability of this code and is within the parameters of the NEC Style Manual.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

Comment on Affirmative:

SMITH, M.: Definitions for specific items listed in the table of contents should remain in the articles they are currently found in. Any move to consolidate in Article 100 would be cumbersome.

7-4 Log #1832 NEC-P07
(100.Armored Cable, Type AC (New) and 320.2)

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I Armored Cable, Type AC. A fabricated assembly of insulated conductors in a flexible interlocked metallic armor. See 320.100.

320.2

~~Armored Cable, Type AC~~. A fabricated assembly of insulated conductors in a flexible interlocked metallic armor. See 320.100.

Substantiation: The defined term is referenced in several articles of the NEC: 250.84(B), 313.3, 313.3, 320.2, 320, 386.56(A)(1), T392.10(A), 404.2(A), 404.12, 680.30(C)(2) 210.12(A), 210.12(A), 250.118(8), 300.15, 300.16(A), 300.22(C)(1), 310.15(B)(3)(a)(4), 310.15(B)(3)(a)(5), 310.120(B)(2), 310.120(B)(2), 310.120(B)(3)(4), 410.24(A), 410.117(C), 430.245(B), 518.4(B), 520.5(C), 530.11, 530.20, 550.15(J)(2), 550.16(A)(2), 551.47(G), 551.55(C)(1), 552.48(F), 552.48(G), 552.56(C)(1), 604.6(A)(1)(1), 610.11, 620.81, 645.5(E)(2), 680.23(F)(1), 725.48(B)(4)(2), 800.133(A)(1)(d)(2), 800.133(A)(2), 800.133(A)(1)(f)(2)

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-5 Log #1477 NEC-P07
(100.Concealed Knob-and-Tube Wiring (New) and 394.2)

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I

Concealed Knob-and-Tube Wiring. A wiring method using knobs, tubes, and flexible nonmetallic tubing for the protection and support of single insulated conductors.

~~394.2. Definition:~~

~~Concealed Knob-and-Tube Wiring~~. A wiring method using knobs, tubes, and flexible nonmetallic tubing for the protection and support of single insulated conductors.

Substantiation: The defined term is referenced in several articles of the NEC: 300.15, 300.16(A), 312.5(B), 314.17(C), 394.2, & 394.

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-5a Log #1326 NEC-P07 Final Action: Reject
(100.Integrated Gas Spacer Cable, Type IGS (New) and 326.2)

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I

Integrated Gas Spacer Cable, Type IGS. A factory assembly of one or more conductors, each individually insulated and enclosed in a loose fit, nonmetallic flexible conduit as an integrated gas spacer cable rated 0 through 600 volts.

~~326.2 Definition:~~

~~Integrated Gas Spacer Cable, Type IGS. A factory assembly of one or more conductors, each individually insulated and enclosed in a loose fit, nonmetallic flexible conduit as an integrated gas spacer cable rated 0 through 600 volts.~~

Substantiation: The defined term is referenced in several articles of the NEC: 230.43(2), 230.44(4), 326.2 Integrated Gas Spacer Cable, Type IGS, & 326.

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-6 Log #1327 NEC-P07 Final Action: Reject
(100.Medium Voltage Cable, Type MV (New) and 328.2)

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I

Medium Voltage Cable, Type MV. A single or multiconductor solid dielectric insulated cable rated 2001 volts or higher.

~~328.2 Definition:~~

~~Medium Voltage Cable, Type MV. A single or multiconductor solid dielectric insulated cable rated 2001 volts or higher.~~

Substantiation: The defined term is referenced in several articles of the NEC: 110.36, 300.37, T310.60, T310.104(C), 328.2, 328, 392.10(B)(2), 392.22(C), 392.80(B), T396.10(A), 396.10(B)(2), 501.10(B)(1)(5), 505.15(C)(1)(b), & 506.15(C)(6).

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-7 Log #1478 NEC-P07
(100.Messenger-Supported Wiring (New) and 396.2)

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I

Messenger-Supported Wiring. An exposed wiring support system using a messenger wire to support insulated conductors by any one of the following:

- (1) A messenger with rings and saddles for conductor support
- (2) A messenger with a field-installed lashing material for conductor support
- (3) Factory-assembled aerial cable
- (4) Multiplex cables utilizing a bare conductor, factory assembled and twisted with one or more insulated conductors, such as duplex, triplex, or quadruplex type of construction

~~396.2 Definition:~~

~~Messenger-Supported Wiring. An exposed wiring support system using a messenger wire to support insulated conductors by any one of the following:~~

- ~~(1) A messenger with rings and saddles for conductor support~~
- ~~(2) A messenger with a field-installed lashing material for conductor support~~
- ~~(3) Factory-assembled aerial cable~~
- ~~(4) Multiplex cables utilizing a bare conductor, factory assembled and twisted with one or more insulated conductors, such as duplex, triplex, or quadruplex type of construction~~

Substantiation: The defined term is referenced in several articles of the NEC: 225.6(A)(1), T225.3, 225.6(B), 225.10, 230.24(B)(1), T310.15(B)(20), 312.5(B), 314.17(B), 314.17(C), 328.10(5), 330.10(8), 330.80(B), 332.80(B), 336.10(4), 336.80, 338.12(A)(3), 338.12(B)(3), 340.12(11), 392.80(A)(2)(d), 396.2, 396, T680.8, 727.4(6), 820.47(D), 820.47(E), 820.47(F), & 820.47(G)(2).

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-8 Log #1355 NEC-P07
 (100.Metal Clad Cable, Type MC (New) and 330.2)

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I Metal Clad Cable, Type MC. A factory assembly of one or more insulated circuit conductors with or without optical fiber members enclosed in an armor of interlocking metal tape, or a smooth or corrugated metallic sheath.
~~330.2 Definition.Metal Clad Cable, Type MC.~~ A factory assembly of one or more insulated circuit conductors with or without optical fiber members enclosed in an armor of interlocking metal tape, or a smooth or corrugated metallic sheath.

Substantiation: The defined term is referenced in several articles of the NEC: 110.36, 250.92(B)(2), 300.37, 328.10(6), 330.2, 330, 368.56(2), T392.10(A), T396.10(A), 424.44(D), 504.30(A)(1)<exc2>, 552.48(F), 690.31(E) 110.53, 210.12(A)<exc1>, 210.12(A)<exc3>, 225.10, 230.43(13), 230.44(2), 230.50(B)(2)<exc>, 250.116(10), 250.116(10)b., 250.116(10)c., 300.3(B)(3), T300.5, 300.5(C)<exc2>, 300.15, 300.16(A), 300.22(B), 300.22(C)(1), 300.50(A)(1), 310.10(E), 310.15(B)(3)(a)(4), 310.15(B)(3)(a)(5), 310.104(A)<note6>, 310.120(B)(2)<exc3>, 310.120(B)(2)<exc3><info>, 310.120(B)(4)(1), 328.10(3), 336.10(7), 392.20(B)(1), 392.20(C), 392.80(B), 410.24(A), 430.245(B), 501.10(A)(1)(c), 501.10(B)(1)(5), 501.15(D)(1), 502.10(A)(3), 502.10(A)(2)(4), 502.10(B)(2)(3), 502.10(B)(1)(6), 502.10(B)(1)(6)<exc>, 503.10(A)(1)(1), 503.10(A)(1)(4), 503.10(A)(1)(4)<exc>, 503.10(A)(3)(4), 505.15(B)(1)(b), 506.15(A)(3), 506.15(A)(3)<exc>, 506.15(C)(3), 506.15(C)(6), 511.7(A)(1), 515.7(A), 516.7(A), 517.19(D), 517.19(D)(2), 517.61(B)(1), 517.61(C)(1), 520.43(B), 530.11, 530.20, 547.5(A), 550.16(A)(2), 551.55(C)(1), 552.56(C)(1), 604.6(A)(1)(2), 604.6(A)(1)(3), 610.11, 620.21, 620.81, 645.5(E)(2), 680.21(A)(1), 680.23(F)(1), 680.25(A)(1)(6), 690.31(E), 690.31(E)(2), 695.6(D), 695.14(E), 725.31(B), 725.48(B)(4)(2), 725.136(G), 725.154(D)(1), 727.4(5)

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the NEC.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-9 Log #1833 NEC-P07
(100.Metal Clad Cable, Type MC (New) and 330.2)

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I Metal Clad Cable, Type MC. A factory assembly of one or more insulated circuit conductors with or without optical fiber members enclosed in an armor of interlocking metal tape, or a smooth or corrugated metallic sheath.

~~**330.2 Definition.Metal Clad Cable, Type MC.** A factory assembly of one or more insulated circuit conductors with or without optical fiber members enclosed in an armor of interlocking metal tape, or a smooth or corrugated metallic sheath.~~

Substantiation: The defined term is referenced in several articles of the NEC: 110.36, 250.92(B)(2), 300.37, 328.10(6), 330.2, 330, 368.56(2), T392.10(A), T396.10(A), 424.44(D), 504.30(A)(1), 552.48(F), 690.31(E) 110.53, 210.12(A), 210.12(A), 225.10, 230.43(13), 230.44(2), 230.50(B)(2), 250.116(10), 250.116(10)b., 250.116(10)c., 300.3(B)(3), T300.5, 300.5(C), 300.15, 300.16(A), 300.22(B), 300.22(C)(1), 300.50(A)(1), 310.10(E), 310.15(B)(3)(a)(4), 310.15(B)(3)(a)(5), 310.104(A), 310.120(B)(2), 310.120(B)(2), 310.120(B)(4)(1), 328.10(3), 336.10(7), 392.20(B)(1), 392.20(C), 392.80(B), 410.24(A), 430.245(B), 501.10(A)(1)(c), 501.10(B)(1)(5), 501.15(D)(1), 502.10(A)(3), 502.10(A)(2)(4), 502.10(B)(2)(3), 502.10(B)(1)(6), 502.10(B)(1)(6), 503.10(A)(1)(1), 503.10(A)(1)(4), 503.10(A)(1)(4), 503.10(A)(3)(4), 505.15(B)(1)(b), 506.15(A)(3), 506.15(A)(3), 506.15(C)(3), 506.15(C)(6), 511.7(A)(1), 515.7(A), 516.7(A), 517.19(D), 517.19(D)(2), 517.61(B)(1), 517.61(C)(1), 520.43(B), 530.11, 530.20, 547.5(A), 550.16(A)(2), 551.55(C)(1), 552.56(C)(1), 604.6(A)(1)(2), 604.6(A)(1)(3), 610.11, 620.21, 620.81, 645.5(E)(2), 680.21(A)(1), 680.23(F)(1), 680.25(A)(1)(6), 690.31(E), 690.31(E)(2), 695.6(D), 695.14(E), 725.31(B), 725.48(B)(4)(2), 725.136(G), 725.154(D)(1), 727.4(5)

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-10 Log #1356 NEC-P07

Final Action: Reject

(100.Mineral-Insulated, Metal-Sheathed Cable, Type MI (New) and 332.2)

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I

Mineral-Insulated, Metal-Sheathed Cable, Type MI. A factory assembly of one or more conductors insulated with a highly compressed refractory mineral insulation and enclosed in a liquidtight and gastight continuous copper or alloy steel sheath.

~~332.2 Definition:~~

~~Mineral-Insulated, Metal-Sheathed Cable, Type MI. A factory assembly of one or more conductors insulated with a highly compressed refractory mineral insulation and enclosed in a liquidtight and gastight continuous copper or alloy steel sheath.~~

Substantiation: The defined term is referenced in several articles of the NEC: 200.6(A)(5), 225.4, 225.10, 230.44(3), 230.50(B) (2)<exc>, 250.84(A), 250.84(B), 250.118(9), 300.3(B)(3), 300.5(C)<exc1>, T300.5, 300.15, 300.15(D), 300.16(A), 300.22(B), 300.22(C)(1), 310.10(C), T310.15(B)(16), T310.15(B)(17), T310.15(B)(20), T310.104(A), 310.120(B)<exc2>, 310.120(B)(3), 332.2, 332, 368.56(A)(3), T392.10(A), T396.10(A), 410.24(A), 424.43(A), 501.10(A)(1)(b), 501.15, 501.15<info1>, 501.15(B)(2)<exc2>, 501.17(2), 502.10(A)(1) (2), 502.10(B)(1)(3), 502.10(B)(1)(6), 503.10(A)(1)(1), 503.10(A)(1)(4), 504.30(A)<exc2>, 504.30(A)(2)(4), 504.30(A)(3)<exc>, 505.15(B)(1)(d), 505.16, 505.16<info1>, 505.16(B)(1)(b)<exc2>, 505.26(2), 506.15(A) (2), 506.15(A)(2)<exc>, 506.15(C)(3), 506.15(C)(6), 511.7(A)(1), 513.7(A), 514.7<exc1>, 515.7(A), 516.4(B), 516.7(A), 517.19(D), 517.19(D)(2), 517.30(C)(3)(1), 517.30(C)(3)(3), 517.61(B)(1), 517.61(C)(1), 517.62, 518.4, 520.5(A), 520.43(B), 520.81, 525.30(A)(1), 530.11, 530.20, 550.15(H)(1), 551.47(N), 551.55(C)(1), 552.48(M), 552.56(C)(1), 555.15(B), 610.11, 620.21, 620.81, 645.5(E)(2), 680.26(B)(7), 695.6(D), 695.14(E), 708.10(C)(1)(1), 725.31(B), 725.48(B)(4)(2), 725.136(I)(1), 760.136(G)(1), 820.47(B)<exc2>, 820.133(A)(2)<exc1>, 830.47(B)<exc2>, 830.133(A)(2)<exc1>, 840.47(B)<exc2>.

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-11 Log #2379 NEC-P07

Final Action: Reject

(100.Mineral=Insulated, Metal-Sheathed Cable, Type MI and 332.2)

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I

Mineral-Insulated, Metal-Sheathed Cable, Type MI. A factory assembly of one or more conductors insulated with a highly compressed refractory mineral insulation and enclosed in a liquidtight and gastight continuous copper or alloy steel sheath.

332.2 Definition.

~~Mineral-Insulated, Metal-Sheathed Cable, Type MI. A factory assembly of one or more conductors insulated with a highly compressed refractory mineral insulation and enclosed in a liquidtight and gastight continuous copper or alloy steel sheath.~~

Substantiation: The defined term is referenced in several articles of the NEC: 200.6(A)(5), 225.4, 225.10, 230.44(3), 230.50(B)(2)<exc>, 250.84(A), 250.84(B), 250.118(9), 300.3(B)(3), 300.5(C)<exc1>, T300.5, 300.15, 300.15(D), 300.16(A), 300.22(B), 300.22(C)(1), 310.10(C), T310.15(B)(16), T310.15(B)(17), T310.15(B)(20), T310.104(A), 310.120(B)<exc2>, 310.120(B)(3), 332.2, 332, 368.56(A)(3), T392.10(A), T396.10(A), 410.24(A), 424.43(A), 501.10(A)(1)(b), 501.15, 501.15<info1>, 501.15(B)(2)<exc2>, 501.17(2), 502.10(A)(1)(2), 502.10(B)(1)(3), 502.10(B)(1)(6), 503.10(A)(1)(1), 503.10(A)(1)(4), 504.30(A)<exc2>, 504.30(A)(2)(4), 504.30(A)(3)<exc>, 505.15(B)(1)(d), 505.16, 505.16<info1>, 505.16(B)(1)(b)<exc2>, 505.26(2), 506.15(A) (2), 506.15(A)(2)<exc>, 506.15(C)(3), 506.15(C)(6), 511.7(A)(1), 513.7(A), 514.7<exc1>, 515.7(A), 516.4(B), 516.7(A), 517.19(D), 517.19(D)(2), 517.30(C)(3)(1), 517.30(C)(3)(3), 517.61(B)(1), 517.61(C)(1), 517.62, 518.4, 520.5(A), 520.43(B), 520.81, 525.30(A)(1), 530.11, 530.20, 550.15(H)(1), 551.47(N), 551.55(C)(1), 552.48(M), 552.56(C)(1), 555.15(B), 610.11, 620.21, 620.81, 645.5(E)(2), 680.26(B)(7), 695.6(D), 695.14(E), 708.10(C)(1)(1), 725.31(B), 725.48(B)(4)(2), 725.136(I)(1), 760.136(G)(1), 820.47(B)<exc2>, 820.133(A)(2)<exc1>, 830.47(B)<exc2>, 830.133(A)(2)<exc1>, 840.47(B)<exc2>.

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the NEC. articles of the NEC.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-12 Log #1357 NEC-P07 Final Action: Reject
 (100.Nonmetallic-Sheathed Cable, Type NM, Type NMC (New) and 334.2)

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I

Nonmetallic-Sheathed Cable. A factory assembly of two or more insulated conductors enclosed within an overall nonmetallic jacket.

Type NM. Insulated conductors enclosed within an overall nonmetallic jacket .

Type NMC. Insulated conductors enclosed within an overall, corrosion resistant, nonmetallic jacket .

334.2 Definitions.

~~Nonmetallic-Sheathed Cable.~~ A factory assembly of two or more insulated conductors enclosed within an overall nonmetallic jacket.

~~Type NM.~~ Insulated conductors enclosed within an overall nonmetallic jacket:

~~Type NMC.~~ Insulated conductors enclosed within an overall, corrosion resistant, nonmetallic jacket.

keep NMS definition in 334.2

Substantiation: The defined term is referenced in several articles of the NEC: 250.86<exc1>, 300.4(B), 300.4(B)(1), 300.4(B) (2), 300.15, 300.15(E), 300.15(H), 300.16(A), T310.104(A)<note6>, 310.120(B)(2), 314.17(C)<exc>, 334.2, 334, 340.10(4), 340.112, T392.10(A), 410.24(A), 424.43(A), 518.4(B), 520.5(C), 547.5(A), 550.15(E), 551.47(C), 551.47(G), 552.10(C)(3), 552.48(C), 552.48(F), 552.48(G), 590.4(B), 590.4(C), 760.136(G)(1), 800.133(A)(2)<exc1>, 800.179(I), 820.133(A)(2)<exc1>, & 830.133(A)(2)<exc1>

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-13 Log #1479 NEC-P07 Final Action: Reject
 (100.Open Wiring on Insulators (New) and 398.2)

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I

Open Wiring on Insulators. An exposed wiring method using cleats, knobs, tubes, and flexible tubing for the protection and support of single insulated conductors run in or on buildings.

~~398.2 Definition:~~

~~Open Wiring on Insulators.~~ An exposed wiring method using cleats, knobs, tubes, and flexible tubing for the protection and support of single insulated conductors run in or on buildings.

Substantiation: The defined term is referenced in several articles of the NEC: T225.3, 225.10, 230.43(1), 300.16(A), T310.104(a), 312.5(B), 314.3, 314.17(B), 314.17(C), 398.2, 398, 404.10(A), & 503.10(B).

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-14 Log #1358 NEC-P07
(100.Power and Control Tray Cable, Type TC (New) and 336.2)

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I

Power and Control Tray Cable, Type TC. A factory assembly of two or more insulated conductors, with or without associated bare or covered grounding conductors, under a nonmetallic jacket.

~~336.2 Definition:~~

~~Power and Control Tray Cable, Type TC.~~ A factory assembly of two or more insulated conductors, with or without associated bare or covered grounding conductors, under a nonmetallic jacket.

Substantiation: The defined term is referenced in several articles of the NEC: 310.120(B)(1)(5), 310.120(B)(1)(8), 310.120(B) (4)(2), 310.120(B)(4)(6), 336.2, 336, T392.10(A), T396.10(A), 501.10(B)(1)(5), 502.10(B)(1)(6), 503.10(a) (1)(4), 505.15(C)(1)(b), 505.15(C)(6), 511.7(A)(1), 513.7(A), 515.7(A), 516.7(A), T645.5, & 725.48(B)(4)(2),

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the NEC.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-15 Log #2377 NEC-P07
(100.Power-Limited Tray Cable Type PLTC)

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Add text to read as follows:

100 I

Power-Limited Tray Calbe Type PLTC A power limited, nonmetallic-sheathed cable, suitable for cable trays.

Substantiation: The defined term is referenced in several articles of the NEC: 310.120(B)92), 310.120(B)(2), 501.10(B)(1)(4), 503.10(A)(1)(2), 505.15(C)(1)(d), 506.15(C)(4), 511.7(A)(1), 515.7(A), 515.7(A), 40.3(C0,info>. T645.5, 725.2 Abandoned Class 2, Class 34 and PLTC Cable,k 725.25, 725.154, 725.154(C), 725.154(D), 725.154(D)(1), 725.154(D)(2), 725.154(H), T725.154(G), 725.154(I), 725.179, 725.179(E), 725.179(E), T725.179, 310.120(B)(1)(7), 310.120(B)(4)(4), T392.10(A), T396.10(A), 600.33(A)(1), 680.26(B)(7), 830.133(A)(2), 840.47(B).

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the NEC.

Panel Meeting Action: Reject

Panel Statement: CMP 7 does not have responsibility for a defined term in 725.179(E) of Article 725. Panel 3 has the responsibility for this definition.

CMP 7 recommends that the TCC refer this proposal to CMP 3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-16 Log #1359 NEC-P07
(100.Service-Entrance Cable (New) and 338.2)

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

Service-Entrance Cable. A single conductor or multiconductor assembly provided with or without an overall covering, primarily used for services, and of the following types:

Type SE. Service-entrance cable having a flame-retardant, moisture-resistant covering.

Type USE. Service-entrance cable, identified for underground use, having a moisture-resistant covering, but not required to have a flame-retardant covering.

338.2 Definitions.

~~Service-Entrance Cable.~~ A single conductor or multiconductor assembly provided with or without an overall covering, primarily used for services, and of the following types:

~~Type SE.~~ Service-entrance cable having a flame-retardant, moisture-resistant covering.

~~Type USE.~~ Service-entrance cable, identified for underground use, having a moisture-resistant covering, but not required to have a flame-retardant covering.

Substantiation: The defined term is referenced in several articles of the NEC: 230.44(1), 230.54(B)<exc>, 230.43(7), 230.50(B)(1), 230.50(B)(2), 230.51, 230.51(A), 230.54(B), 230.54(C), 230.54(D), 230.54(E)<exc>, 230.54(F), 250.40<exc>(3), 250.140(3), T310.15(B)(7), T310.15(B)(16), T310.15(B)(17), T310.15(B)(20), T310.104(A), 310.106(B), 310.120(B)(1)(3), 330.10(B)(3), 334.12(A)(3), 338.2, 338, 340.12(1), T392.10(A), T396.10(A), 547.5, 550.15(E), T640.14(A), 820.47(B), 830.47(B), 840.47(B)<exc2>, & ch9T5A

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the NEC.

Panel Meeting Action: Reject

Panel Statement: See the Panel Statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-17 Log #1328 NEC-P07
(100.Type NMC (New) and 334.2)

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I Type NMC. Insulated conductors enclosed within an overall, corrosion resistant, nonmetallic jacket.

~~334.2 Type NMC.~~ Insulated conductors enclosed within an overall, corrosion resistant, nonmetallic jacket.

Substantiation: The defined term is referenced in several articles of the NEC: 334 424.43(A) 590.4(B) 590.4(C).

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the NEC.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-18 Log #1360 NEC-P07 Final Action: Reject
(100.Underground Feeder and Branch-Circuit Cable, Type UF (New) and 340.2)

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

100 I

Underground Feeder and Branch-Circuit Cable, Type UF. A factory assembly of one or more insulated conductors with an integral or an overall covering of nonmetallic material suitable for direct burial in the earth.

~~340.2 Definition:~~

~~Underground Feeder and Branch-Circuit Cable, Type UF. A factory assembly of one or more insulated conductors with an integral or an overall covering of nonmetallic material suitable for direct burial in the earth.~~

Substantiation: The defined term is referenced in several articles of the NEC: 225.10, T300.5, T310.15(B)(16), T310.15(B) (17), T310.104(A), 310.120(B)(1)(4), 314.17(C), 314.17(C)<exc>, 338.10(B)(4)(b), 340.2, 340, T392.10(A), T396.10(A), 424.43(A), 522.24(B)(3)(1), 547.5(A), 551.80(B)<info>, 725.48(B)(3)(1), 725.136(F)(1), 725.136(I)(1), 760.136(G)(1), 800.133(A)(2)<exc1>, 820.47(B)<exc2>, 820.133(A)(2)<exc1>, 830.47(B)<exc2>, 830.133(A)(2)<exc1>, & 840.47(B)<exc2>

NEC Style Manual: 2.2.2.1 Article 100. In general, Article 100 shall contain definitions of terms that appear in two or more other articles of the *NEC*.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-19 Log #3299 NEC-P07
(320 through 340, and 396)

Final Action: Reject

Submitter: Elliot Rappaport, Coconut Creek, FL

Recommendation: Replace the phrase “equipment grounding conductor” with the phrase “equipment bonding conductor” in the Articles and Sections as identified below. Replacement of “grounding” or “ground” when used separately is covered in separate proposals.

Article 320: 320.108.108 (2x).

Article 324: 324.56(B); 324.60.

Article 330: 330.108 (2x)

Article 332: 332.108 (3x)

Article 334: 334.15(C), 334.108 (2x)

Article 336: 336.10(7) (3x);

Article 340: 340.10(2); 340.108 (2x)

Article 342: 342.2; 342.60

Substantiation: This proposal is one of a series of proposals to replace, throughout the Code, the term “grounding” with “bonding” where appropriate.

As used in the Code, “grounding” is a well defined term and refers to connecting to the earth or ground for any one of a number of reasons. Similarly, “bonding” is the connection of two bodies together to form a continuous electrical path. The term “equipment grounding conductor” has a definite purpose that is not uniquely expressed in the term. As a result, there is a misconception that “grounding” will make a system safe. On the contrary, connecting equipment to ground without providing the bonding connection back to the source can make the equipment less safe.

The purpose of the “equipment grounding conductor (EGC)” is to provide a low impedance path from a fault at equipment “likely to become energized” to the source of the electrical current (transformer, generator, etc.). If it is argued that the purpose is to connect the equipment to ground, then the requirement of 250.4(A)(5) that “the earth shall not be considered as an effective ground fault path” would no longer be valid because fault current would then be intended to flow to the ground (earth).

From the conductor sizing requirements of 250.122, and specifically 250.122(B), it is apparent that the purpose of the EGC is related to connection (bonding) to the source of power rather than connection to ground. If the principle purpose was the connection to ground, then the sizing requirements would be less important since near equipotential conditions can be achieved with much smaller conductors.

The fundamentals of these proposals are to clearly state that “systems” are “grounded” and “equipment” is “bonded”. The fact that the bonding conductor may be grounded also is secondary to the primary function of bonding.

This proposal proposes changing the word “grounding” to “bonding”, where appropriate, throughout the Code. It is clear that there are many places where “grounding” is used to identify the connection to earth (grounding electrode conductor) and “grounding” should remain. Additionally, the expression “EGC” should be changed to “EBC”, “equipment bonding conductor” for consistency.

Panel Meeting Action: Reject

Panel Statement: The phrase “equipment grounding conductor” is applicable, and it should not be replaced with “equipment bonding conductor.” The metal sheath of a cable, a metallic raceway, or a conductor can all serve dual purposes, (both as bonding jumpers and equipment grounding conductors). The substitution of the phrase “equipment bonding conductor” does not add clarity or accuracy to the intended functionality of the circuit. Additionally, this proposed change is in conflict with Section 250.118. Grounding terms are under the purview of Panel 5.

CMP 7 recommends that the TCC refer this proposal to CMP 5 and CMP 7 will correlate accordingly.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 12 Negative: 2

Explanation of Negative:

NIELSEN, D.: The IEEE has reviewed all the statements on this subject by various panels. The following represents the IEEE position on the issue of equipment grounding conductor or equipment bonding conductor.

Similar proposals have been presented in the past and have been rejected. Reasons given often relate to cost, significant changes in documentation required, or the fact that knowledgeable people understand the use of this conductor. There is no justification for retaining an incorrect and potentially hazardous electrical installation just because this definition has been used in the NEC for many years. Costs associated with documentation changes should never be an argument where safety is concerned. Further, not all electrical practitioners are knowledgeable in

the main intent of this conductor.

The intent of the proposed change is to provide a descriptive name to a construction element that has resulted in much misunderstanding with possible hazardous operating conditions in electrical installations. The use of the term "grounding" implies that grounding is its principle function. Although grounding may be desirable, providing an effective fault current path (i.e. bonding) is and should be the emphasis. There are many who assert that a connection to a water pipe meets the needs of equipment grounding, however, this connection does not perform the necessary effective fault current path back to the source.

There are two conductors described in the Code performing the same function but named differently. The "bonding jumper" is a short conductor that insures the electrical integrity of enclosure to raceway. The longer conductor, intended to provide a low impedance path to the source, is presently named a "grounding" conductor instead of its real function as a "bonding" conductor.

Technically, the definition in Article 100 may be adequate for Panel members and those that teach. Practically, the definition is confusing if the terminology does not fit the function performed. The equipment bonding conductor, as it should be called, provides its primary function whether or not it is grounded. For a grounded system, it is grounded because the system is grounded. For an ungrounded system, it is grounded to limit the voltage due to a lightning strike or contact with a higher voltage system.

Changing the name will assist in educating users of the Code as to why they are installing a conductor that needs to be continuous all of the way back to the source.

RUNYON, G.: This panel should have accepted this proposal. The primary function of the conductor presently defined as an "equipment grounding conductor" is actually a bonding function. The grounding electrode conductor grounds systems and equipment. Accepting this change will help increase usability and understanding of the associated requirements.

Comment on Affirmative:

SMITH, M.: The term "equipment grounding conductor" should remain to emphasize the importance of a proper ground connection made possible by this conductor.

7-20 Log #1153 NEC-P07
(320.23(A))

Final Action: Reject

Submitter: Russell LeBlanc, The Peterson School

Recommendation: Revise text to read as follows:

Where this space is not accessible ~~by permanent stairs or ladders~~ without having to resort to portable steps, or portable ladders and so forth, protection shall only be required within 1.8 m (6 ft) of the nearest edge of the scuttle hole or attic entrance.

Substantiation: The present wording can be confusing when it comes to "pull-down" attic stairs. Are they "permanent" stairs or ladders if they can be folded up and put away? This should settle that debate. Also, what if the attic is accessible by an elevator only, or perhaps a ramp instead of stairs? I have worked in a few homes that did have small elevators in them. The proposed wording should help clarify the intent without changing the requirement.

Panel Meeting Action: **Reject**

Panel Statement: The submitter has not presented documentation indicating the existing text creates an installation or enforcement problem throughout the industry. The phrase "permanent stairs or ladders" is self-explanatory and addresses typical field issues in a straight forward manner. Webster's Dictionary Second College Edition defines the term "permanent" as "1. to remain." The same dictionary defines the term "portable" as "1. That can be carried. 2. Easily carried or moved especially by hand." Folding stairs are attached to the structure. They can neither be carried or moved by hand from their installed location.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-21 Log #2743 NEC-P07
(320.23(A))

Final Action: Accept

Submitter: Bill McGovern, City of Plano

Recommendation: Revise text to read as follows:

Where run across the top of floor joists, or within 2.1 m (7 ft) of the floor or floor joists across the face of rafters or studding, the cable shall be protected by ~~substantial~~ guard strips that are at least as high as the cable.

Substantiation: Remove the word substantial as it subjective and difficult to enforce.

Panel Meeting Action: Accept

Panel Statement:

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-22 Log #1203 NEC-P07
(324.2.FCC System.)

Final Action: Reject

Submitter: Marcelo M. Hirschler, GBH International

Recommendation: Revise text to read as follows:

~~FCC System. A complete wiring system for branch circuits that is designed for installation under carpet squares. The FCC system includes Type FCC cable and associated shielding, connectors, terminators, adapters, boxes, and receptacles.~~

Informational Note: The FCC system includes Type FCC cable and associated shielding, connectors, terminators, adapters, boxes, and receptacles.

Substantiation: The NFPA Manual of Style requires definitions to be in single sentences. The information provided in the subsequent sentences is not really a part of the definition; it is further information that is best placed in an informational note.

Panel Meeting Action: Reject

Panel Statement: Neither the NFPA Manual of Style nor the NEC Style Manual require definitions to be one sentence.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-23 Log #581 NEC-P07
(324.41)

Final Action: Accept in Principle

Submitter: Sarah J. Jones, TE Connectivity/Enterprise Networks

Recommendation: Revise text to read as follows:

Floor-mounted Type FCC cable, cable connectors, and insulating ends shall be covered with carpet squares not larger than ~~914 mm (36 in.)~~ 1.0 m (42 in.) square. Carpet squares that are adhered to the floor shall be attached with release-type adhesives.

Substantiation: As currently stated, text requires standardization of modular carpet square size to U.S. Customary Units, which automatically precludes the use of modular carpet products and manufacturers that standardize on SI Units. The intent of the maximum size requirement is to maintain accessibility to the cable. With regard to accessibility, the proposed SI Unit standard 1.0 m carpet square is similarly equivalent in application to the current U.S. Customary standard 36 in. carpet square requirement.

Panel Meeting Action: Accept in Principle

Revise the submitters text as follows:

Floor-mounted Type FCC cable, cable connectors, and insulating ends shall be covered with carpet squares not larger than ~~914 mm (36 in.)~~ 1.0 m (39.37 in.) square. Carpet squares that are adhered to the floor shall be attached with release-type adhesives.

Panel Statement: The panel agrees with the submitter's recommendation but changed 42 in. to 39.37 in. per the NEC style manual.

CMP-7 requests that the TCC review the 1.0 m (39.37 in.) value used throughout the code as the value is different in other articles and the NEC style manual.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Negative: 1

Explanation of Negative:

PALMIERI, C.: I am voting against the panel action to accept in principal. The submitter has not provided documentation that the increased area of carpet squares has been evaluated to ensure this wiring method is maintainable regardless of the positioning of office furnishings or other obstacles that may occupy a general floor area after installation. There is no evidence presented that the use of commonly marketed carpet squares of smaller dimensions is a burden to the installation of this wiring method. This wiring method is intended to be accessible after installation by unrestricted removal of the flooring material. There is a concern that lifting or removing the proposed larger squares may be restricted by the positioning of partitions and furnishings. The present size of 36" square was adopted with considerable opposition. During the 1984 and 1987 TCR cycles the proposed increase to 36 inches was rejected in proposal 7-18 (A1983 TCR), and 7-39 (A1986 TCR). In both of those proposals it was indicated during comment that the original UL Fact Finding Report only evaluated FCC under carpet tiles that were 18"s (inches) square. There is no evidence with in these past TCR's that any NRTL has re-evaluated the use of this system with larger squares. In fact it appears that the increase to 36" was accepted via an 8-3 vote on Comment7-25 (A1986 TCR), in which the submitter's substantiation included the following quote "I see no reason why 36 inch X 36 inch size would be less safe than the existing requirement. I agree there must be a cut off or limit on size." It appears that the submitter was concerned that future editions of the Code would be subjected to an increase in the size of the squares without reasonable investigation. The submitter of this proposal (7-23 ROP June 2013) did not provide a substantiated comparison to indicate ease for accessibility of this wiring method when installed under larger squares (39.37in.) vs. the now allowed 36" squares. Additionally the submitter did not cite a lack of availability of the 36" or smaller carpet squares. In fact a Google search yields an abundance of manufactures and product in the smaller carpet squares sizes available to consumers. I do not believe the panel should accept the increase in floor covering for this wiring method without technical documentation supporting the intended accessibility of the FCC for repair and maintenance.

Comment on Affirmative:

SMITH, M.: The TCC should correct the style manual values to be consistent with all meter to inches and inches to meter conversions.

7-24 Log #2298 NEC-P07
(326)

Final Action: Reject

Submitter: Michael J. Arledge, Greiner Electric

Recommendation: (IGS) Integrated gas spacer cable. Users barely made the odds of coming in contact with this radiation (original illegible) are nil. Please take it out. Article 326 no medal staples or romex.

Substantiation: Just as other wiring methods that are no longer used we would never(original illegible) end an IGS run.

Panel Meeting Action: Reject

Panel Statement: The submitter has not provided technical documentation nor marketing research to indicate that this cable wiring method is antiquated and or out of production. Please refer to proposal 7-11a of A1995 ROP Log #CP702.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-25 Log #2155 NEC-P07
(326.10)

Final Action: Accept in Principle

Submitter: Phil Simmons, Simmons Electrical Services

Recommendation: Revise text to read as follows:

326.10 Uses Permitted. Type IGS cable shall be permitted for use underground, including direct burial in the earth, as the following:

- (1) Service-entrance conductors
- (2) Feeder or branch-circuit conductors
- (3) Underground service conductors
- (4) ~~(3)~~ Service-lateral conductors

Substantiation: The terms “underground service conductor” was added to Article 100 and used in Article 230 during the processing of the 2008 NEC. This term needs to be added to Article 326 for proper application of the requirements.

Panel Meeting Action: Accept in Principle

Panel Statement: See the panel action and statement on Proposal 7-26.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-26 Log #1648 NEC-P07
(326.10(3))

Final Action: Accept in Principle

Submitter: Charles Palmieri, Cohasset, MA

Recommendation: 326.10 Uses Permitted. In list item (3) delete the word lateral and add the word underground after the existing word conductor to read as indicated.

(3) Service-~~lateral~~ conductors underground.

Substantiation: The adoption of list item 3 was new for the 2011 Code at the time of its adoption CMP 7 was not aware of the modifications to the definition of the term service lateral. The new definition of Service Lateral “ The underground conductors between the utility electric supply system and the service point” essentially confines that term to those conductors under the authority of the serving utility. The NEC does not have oversight of conductors under the control of a serving utility (See 90.2(B)(5). The new definition of Service Conductors Underground will more accurately address the original proposals 7-29 and 7-30 of 70-A2010 (ROP).

Panel Meeting Action: Accept in Principle

Revise the submitters text as follows:

326.10 Uses Permitted.

(3) Service-~~lateral~~ conductors, underground.

Panel Statement: The panel added the comma after the word conductor and legislative text for the word "underground" after conductors to agree with the definition.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-26a Log #3515 NEC-P07
(330.10(A)(11)(b))

Final Action: Accept

Submitter: Vince Baclawski, National Electrical Manufacturers Association (NEMA)

Recommendation: Revise text to read as follows:

(11) In wet locations where any of the following conditions are met:

a. The metallic covering is impervious to moisture.

b. A ~~moisture-impervious~~ jacket resistant to moisture is provided under the metal covering.

c. The insulated conductors under the metallic covering are listed for use in wet locations, and a corrosion resistant jacket is provided over the metallic sheath.

Substantiation: The revised wording is consistent with the requirements for jackets in UL 1569, which contains the performance requirements that define resistance to moisture.

Panel Meeting Action: Accept

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-27 Log #1517 NEC-P07
(330.10(A)(11))

Final Action: Accept

Submitter: Vince Baclawski, National Electrical Manufacturers Association (NEMA)

Recommendation: Revise text to read as follows:

(11) In wet locations where a corrosion resistant jacket is provided over the metallic covering and any of the following conditions are met:

- a. The metallic covering is impervious to moisture.
- b. A moisture-impervious jacket is provided under the metal covering.
- c. The insulated conductors under the metallic covering are listed for use in wet locations; ~~and a corrosion resistant jacket is provided over the metallic sheath.~~

Substantiation: The corrosion resistant jacket provides protection for the metal covering. The protection should be provided for all metal coverings, not only for metallic coverings over wet rated conductors.

Panel Meeting Action: Accept

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-28 Log #1916 NEC-P07
(330.12(1))

Final Action: Reject

Submitter: Phil Simmons, National Armored Cable Manufacturers Assoc.

Recommendation: Revise 330.12(1) as follows;

(1) Where subject to severe physical damage

Substantiation: The uses not permitted section of Article 330 should acknowledge the protection against physical damage provided by the metallic covering of this wiring method by limiting the cable from use where it is subject to severe physical damage (such as forklift or vehicular damage). The degree or magnitude of physical damage depends on the wiring type and the likelihood that damage prior to or after installation could severely damage or cause the wire to be inoperable. Type MC Cables have a metallic covering which provides protection to the inner insulated and non-insulated conductors against physical damage before, during, and after installation.

While the term "severe physical damage" is not defined in the NEC and thus requires evaluation by the AHJ, the phrase is used to qualify the suitability of several wiring methods including in 358.12 for EMT, in 368.12 for busways, in 370.7 for cablebus fittings, in 376.12 for metal wireways, in 380.12 for multioutlet assembly, in 386.12 for surface metal raceway, in 388.12 for surface nonmetallic raceway and in 392.12 for cable trays.

Panel Meeting Action: Reject

Panel Statement: The term "severe" is undefined in the NEC and unenforceable with regard to MC cable. The submitter has not presented evidence that adding the word "severe" aids the AHJ in determining that Type MC Cable is suitable for one installation in preference to another where the degree of physical damage must be determined.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 12 Negative: 2

Explanation of Negative:

HUNTER, C.: The submitter's substantiation was correct and the panel should have accepted the proposal. While "severe" can be considered to be a subjective term, it seems to be enforced regularly and without difficulty when used in other sections of the Code. MC Cable is subject to rigorous testing, including crush and impact testing, making it suitable for this use.

STRANIERO, G.: While the term "severe" is undefined, it is presently used and enforced elsewhere in this code. Addition of the term "severe" to the uses of MC does not interfere with the AHJ's determination of permitting the use of MC in one application over another however it does provide recognition that the metal covered cable provides a greater level of physical protection and is differentiated from other wiring methods such as SE and UF that presently have the same limitation of use where not subject to physical damage.

Comment on Affirmative:

LA DART, S.: We agree with the panel action and statement, and we urge the panel to continue to reject this proposal.

PALMIERI, C.: The panel should continue to reject this proposal. The submitter has not presented statistical data indicating a pattern that Authorities Having Jurisdiction are rejecting installations of this wiring method for locations where subject to physical damage unreasonably. The submitter's comparison to articles 358, 368, 370, 376, 380, 386, 388, and 392 all include wiring methods or systems that are unique from that of cable either by virtue of limited use or they are metal raceways or wireway. Cables introduce a significant degree of flexibility in the manner and location that they are routed and the proliferation of their use within the industry.

SMITH, M.: The term "severe" is not needed since the AHJ has to access installation conditions at the time of inspection.

7-29 Log #2949 NEC-P07
(330.30(B))

Final Action: Reject

Submitter: Dave Mercier, Southwire Company

Recommendation: Revise text to read as follows:

(B) Securing. Unless otherwise provided, cables shall be secured at intervals not exceeding 1.8 m (6 ft). Cables containing four or fewer conductors sized no larger than 10 AWG shall be secured within 300 mm (12 in.) of every box, cabinet, fitting, or other cable termination. In vertical installations, cables shall be allowed to be secured at intervals not exceeding 3 m (10 ft.) when listed and identified for the use.

Substantiation: MC Cables with integral conductor support have been used for high rise installations without offsets or directly securing the conductors under the armor. Long term testing has been performed showing no slipping with internal integral conductor support. The proposal requires the cable to be listed and identified for the intended use.

Panel Meeting Action: Reject

Panel Statement: The submitter has not provided supporting test data indicating test results to warrant a radical increase in lengths between supports for Type MC Cable. There is no mention of third party review. The provisions of 330.30(B) are unrelated to the support of the conductors within the cable assembly. Securing of the cables is necessary to maintain spacing, to limit movement during fault conditions and to comply with the requirements in 110.12 for mechanical execution of work.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

Comment on Affirmative:

SMITH, M.: Increasing the spacing between supports for this cable could result in uncontrolled whipping action in case of a fault or short circuit. The quality of a single support may not be adequately installed subjecting the cable to additional forces during these conditions.

7-30 Log #2971 NEC-P07
(330.30(B))

Final Action: Reject

Submitter: Dave Mercier, Southwire Company

Recommendation: Revise text to read as follows:

(B) Securing. Unless otherwise provided, cables shall be secured at intervals not exceeding 1.8 m (6 ft). Cables containing four or fewer conductors sized no larger than 10 AWG shall be secured within 300 mm (12 in.) of every box, cabinet, fitting, or other cable termination. In vertical installations, cables shall be allowed to be secured at intervals not exceeding 3 m (10 ft.) when listed and identified for the use.

Substantiation: MC Cables with integral conductor support have been used for high rise installations without offsets or directly securing the conductors under the armor. Long term testing has been performed showing no slipping with internal integral conductor support. The proposal requires the cable to be listed and identified for the intended use.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-29.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-31 Log #1518 NEC-P07
(330.30(D)(3) (New))

Final Action: Accept

Submitter: Vince Baclawski, National Electrical Manufacturers Association (NEMA)

Recommendation: Add new text to read as follows:

(D) **Unsupported Cables.** Type MC cable shall be permitted to be unsupported where the cable:

(3) Is Type MC of the interlocked armor type in lengths not exceeding 900 mm (3 ft) from the last point where it is securely fastened and is used to connect equipment where flexibility is necessary to minimize the transmission of vibration from equipment or to provide flexibility for equipment that requires movement after installation.

Substantiation: The construction of MC cable that includes interlocked armor and twisted conductors under the armor makes it suitable for use where flexibility is needed at terminations.

Panel Meeting Action: Accept

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-32 Log #1785 NEC-P07
(330.112)

Final Action: Accept in Principle

Submitter: Phil Simmons, National Armored Cable Manufacturers Assoc.

Recommendation: Revise text to read as follows:

330.112 Insulation. Insulated conductors shall comply with 330.112(A), ~~or (B)~~ or (C).

(A) 600 Volts. Insulated conductors in sizes 18 AWG and 16 AWG shall be of a type listed in Table 402.3, with a maximum operating temperature not less than 90°C (194°F) and as permitted by 725.49. Conductors larger than 16 AWG shall be of a type listed in Table 310.104(A) or of a type identified for use in Type MC cable.

(B) ~~2000 Over 600~~ Volts. Insulated conductors shall be of a type listed in Table 310.104(B).

(C) Over 2000 Volts. Insulated conductors shall be of a type listed in Table 310.104(C) through Table 310.104(E).

Substantiation: Type MC Cable is allowed to be made in accordance with UL-1569 with type RHH/RHW-2 insulated conductors and be rated for 2000 volts. This section of the NEC needs to be revised to recognize this permitted construction.

Panel Meeting Action: Accept in Principle

Panel Statement: See the action and statement on Proposal 7-34.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

Comment on Affirmative:

RAY, J.: This proposal should have been accepted as written. See my ballot action on proposal 7-34.

7-33 Log #3175 NEC-P07
(330.112)

Final Action: Accept in Principle

Submitter: Christel K. Hunter, Alcan Cable

Recommendation: Revise text to read as follows:

330.112 Insulation. Insulated conductors shall comply with 330.112(A), or (B) or (C).

(A) 600 Volts. Insulated conductors in sizes 18 AWG and 16 AWG shall be of a type listed in Table 402.3, with a maximum operating temperature not less than 90°C (194°F) and as permitted by 725.49. Conductors larger than 16 AWG shall be of a type listed in Table 310.104(A) or of a type identified for use in Type MC cable.

(B) 2000 Volts. Insulated conductors shall be of a type listed in Table 310.104(B).

(C) Over ~~600~~ 2000 Volts. Insulated conductors shall be of a type listed in Table 310.104(C) through Table 310.104(E).

Substantiation: As worded in the 2011 NEC, there is no guidance for the insulation types that may be used for 2000 volt rated MC Cable. The insulation types in Table 310.104(B) are allowed in UL 1569 Metal-Clad Cable, so the revised wording makes it clear which insulation types are allowed for each voltage class.

Panel Meeting Action: **Accept in Principle**

Panel Statement: See the action and statement on Proposal 7-34.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

Comment on Affirmative:

RAY, J.: This proposal should have been accepted as written. See my ballot action on proposal 7-34.

7-34 Log #972 NEC-P07
(330.112(A) and (B))

Final Action: Accept in Principle

Submitter: James T. Dollard, Jr., IBEW Local 98

Recommendation: Replace 600V with 1000V.

Substantiation: This proposal is the work of the “High Voltage Task Group” appointed by the Technical Correlating Committee. The task group consisted of the following members: Alan Peterson, Paul Barnhart, Lanny Floyd, Alan Manche, Donny Cook, Vince Saporita, Roger McDaniel, Stan Folz, Eddie Guidry, Tom Adams, Jim Rogers and Jim Dollard.

The Task Group identified the demand for increasing voltage levels used in wind generation and photovoltaic systems as an area for consideration to enhance existing NEC requirements to address these new common voltage levels. The task group recognized that general requirements in Chapters 1 through 4 need to be modified before identifying and generating proposals to articles such as 690 specific for PV systems. These systems have moved above 600V and are reaching 1000V due to standard configurations and increases in efficiency and performance. The committee reviewed Chapters 1 through 8 and identified areas where the task group agreed that the increase in voltage was of minimal or no impact to the system installation. Additionally, there were requirements that would have had a serious impact and the task group chose not to submit a proposal for changing the voltage. See table (supporting material) that summarizes all sections considered by the TG.

Note: Supporting material is available for review at NFPA Headquarters.

Panel Meeting Action: Accept in Principle

Revise code text 330.112 as follows:

330.112 Insulation. Insulated conductors shall comply with 330.112(A) or (B).

(A) ~~600~~ 1000 Volts or Less. Insulated conductors in sizes 18 AWG and 16 AWG shall be of a type listed in Table 402.3, with a maximum operating temperature not less than 90°C (194°F) and as permitted by 725.49. Conductors larger than 16 AWG shall be of a type listed in Table 310.104(A) or of a type identified for use in Type MC cable.

(B) Over ~~600~~ 1000 Volts. Insulated conductors shall be of a type listed in Table 310.104(~~EB~~) through and Table 310.104(~~EC~~).

Panel Statement: The panel has revised the code text to recognize 1000V and 2000V conductor types.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Negative: 1

Explanation of Negative:

RAY, J.: It is recognized that increasing from 600V to 1000V may be applicable to specific installations. However, adequate technical substantiation has not been provided to support the change in this Article.

7-35 Log #1373 NEC-P07
(332.25 (New))

Final Action: Reject

Submitter: Salvatore DiCristina, Rutgers University / Rep. NFPA Building Code Development Committee (BCDC)

Recommendation: Add new section:

332.25 Performance testing. Where installed as power conductors for fire pumps, emergency systems and legally required standby systems in accordance with Articles 695, 700 and 701, the completed cable installation shall be Insulation Resistance (IR) tested in accordance with the manufacturer's installation instructions and a report shall be submitted to the AHJ.

Substantiation: Note: This proposal was developed by the proponent as a member of NFPA's Building Code Development Committee (BCDC) with the committee's endorsement.

The insulating material (magnesium oxide) in MI cable is extremely sensitive to moisture and proper precautions must be taken to protect the insulating material during installation. This wiring method is often used in the wiring of critical life safety equipment such as fire pumps and emergency power systems. Cables containing moisture may result in a failure of the conductor due to direct ground fault between the conductor and the metallic grounded jacket transferred via the dampened insulating material. A standard test using a megohmmeter of the completed cable will verify its integrity. This proposal will reduce the likelihood of future ground faults of these life-safety systems.

Panel Meeting Action: Reject

Panel Statement: Manufacturers instructions address installation of MI with regard to moisture migration and IR performance. 110.3(B) requires that instructions from the manufacturer be followed.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-36 Log #1846 NEC-P07
(334.1, 334.15(C), and 334.30)

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Add text to read as follows:

334.1 Scope. This article covers the use, installation, and construction specifications of nonmetallic-sheathed cable (NM).

334.15(C) In Unfinished Basements and Crawl Spaces. Where cable is run at angles with joists in unfinished basements and crawl spaces, it shall be permissible to secure cables not smaller than two 6 AWG or three 8 AWG conductors directly to the lower edges of the joists. Smaller cables shall be run either through bored holes in joists or on running boards. Nonmetallic-sheathed cable (NM) installed in the wall of an unfinished basement shall be permitted to be installed in a listed conduit or tubing or shall be protected in accordance with 300.4. Conduit or tubing shall be provided with a suitable insulating bushing or adapter at the point the cable enters the raceway. The sheath of the nonmetallic-sheathed cables (NM) extend through the conduit or tubing and into the outlet or device box not less than 6 mm (1/4 in.). The cable shall be secured within 300 mm (12 in.) of the point where the cable enters the conduit or tubing. Metal conduit, tubing, and metal outlets boxes shall be connected to an equipment grounding conductor complying with the provisions of 250.86 and 250.148.

334.30 Securing and Supporting. Nonmetallic-sheathed cable (NM) shall be supported and secured by staples, cable ties, straps, hangers, or similar fittings designed and installed so as not to damage the cable, at intervals not exceeding 1.4 m 4 1/2 ft and within 300 mm (12 in.) of every outlet box, junction box, cabinet, or fitting. Flat cables shall not be stapled on edge.

Substantiation: "nonmetallic sheathed" is referred to in several ways" "nonmetallic sheathed cable", "type NM" "type MNC" type "NMS" "NM"...

Nonmetallic sheathed also appears to be used for other than NM cable in some cases.

Suggest that "NM" be added to all references. This will make finding all references to "nonmetallic sheathed cable" easier and more reliable

Panel Meeting Action: Reject

Panel Statement: The wiring method's name and type designation are included in the Table of contents, in the respective articles, and in the index. Including the type letters everywhere the wiring method is mentioned does not add clarity. See the action and statement from A 2010 Proposal 7-99.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

Comment on Affirmative:

SMITH, M.: The addition of the nomenclature "NM" is not an accurate synonym for non-metallic sheathed cables since there are additionally other types, namely "NMC" and "NMS".

7-37 Log #809 NEC-P07
(334.10(1))

Final Action: Accept in Principle

Submitter: Richard E. Loyd, Sun Lakes, AZ

Recommendation: Add new text to read as follows:

334.10 Uses Permitted.

Type NM, Type NMC, and Type NMS cables shall be permitted to be used in the following:

(1) One- and two-family dwellings and their attached or detached garages, and their storage buildings except as prohibited in 334.12.

Substantiation: This change is necessary for consistence since this suggested text appears at the end of both 334.10(2) and (3) and the text added to the 2011 NEC assumes that all residential out buildings are dry locations and do not contain chemicals and other materials that may be harmful to the materials used in this wiring method.

Type NM may or may not be a suitable wiring method in all detached garage and storage building environments. This added text will make installers aware of the limitations of use.

Panel Meeting Action: Accept in Principle

Revise the code text of 334.10, (2), and (3) and 334.12 (A)(1) to read as follows:

334.10 Uses Permitted. Type NM, Type NMC, and Type NMS cables shall be permitted to be used in the following except as prohibited in 334.12:

(2) Multifamily dwellings permitted to be of Types III, IV, and V construction ~~except as prohibited in 334.12:~~

(3) Other structures permitted to be of Types III, IV, and V construction ~~except as prohibited in 334.12:~~

The remaining text in 334.10 is not changed.

In Section 334.12 (A) (1) delete the word "and" between (2) and (3) and insert it between (3) and newly added item (5) as follows:

(1) In any dwelling or structure not specifically permitted in 334.10(1), (2), ~~and~~(3) and (5).

Panel Statement: The panel accepts the submitter's proposal in principle. Upon review, it has been determined that 334.10 essentially is a specific list of building types as found in Annex E. The conditions of use within those building types is defined in the 5 listed items of 334.10. Deleting the words "except as prohibited" from list items (2) and (3) and including those words in the opening (parent) paragraphs text addresses the submitters concerns. Upon review, the panel has determined that, during the 2011 cycle with the relocation of the previous exception to 334.12(A)(1) as a new use permitted in 334.10 (5), there is a need for editorial clarification to the language of 334.12(A)(1).

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-38 Log #3245 NEC-P07
(334.10(1))

Final Action: Reject

Submitter: James Grant, Strafford, NH

Recommendation: Revise text to read as follows:

334.10

(1) One- and two-family dwelling and their ~~attached or detached garages, and their storage buildings~~ accessory structures.

Substantiation: The term "Accessory Structure" used in this proposal is defined in the ICC Residential Code as "A structure not greater than 3,000 square feet (279 m²) in floor area, and not over two stories in height, the use of which is customarily accessory to and incidental to that of the dwelling(s) and which is located on the same lot". The terms "accessory and incidental" limit the use of building such that the occupancies that would require other wiring methods to be employed would not be included. The change would allow for unattached sunrooms, detached garages with living space above, and the like to utilize NM.

Panel Meeting Action: Reject

Panel Statement: The panel understands that the submitter intended to add the term accessory structure but did not underline this change. The panel does not agree with replacing the terms in the submitters recommendation to expand to unlimited conditions of use. Nonmetallic-sheathed cable is allowed in those structures mentioned in the submitters substantiation (see 334.10(3)). Accessory structures are not defined in the NEC, and the NEC does not use definitions from the ICC Residential Code.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-39 Log #1456 NEC-P07
(334.10(3))

Final Action: Reject

Submitter: Russell LeBlanc, The Peterson School

Recommendation: Revise text to read as follows:

(3) Other structures permitted to be of Types III, IV, and V construction except as prohibited in 334.12. Cables shall be ~~concealed~~ installed within walls, floors, or ceilings that provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies.

Substantiation: This is an overly restrictive requirement especially considering all of the different types of building systems used in today's construction. Many components have interlocking panels or bolted, screwed, or hinged panels or hatches that may be removable and thus would not permit NM to be used since the cable would no longer be considered concealed. For example: I believe that NM cables can be safely installed behind a solid gypsum board type ceiling even if that ceiling happens to have a small metal hatch(2ft x 2ft for example) type of an access panel. The ceiling would still be able to provide the required 15 minute thermal barrier, and would also provide all the protection needed for the cables. Yet, this is NOT permitted by the NEC since the cable in this instance would be not considered concealed.

Panel Meeting Action: Reject

Panel Statement: The term "concealed" as defined in Article 100, does not provide a requirement that inaccessibility be permanent or that a building or a structure be damaged to provide access to an installed wiring method. The installation of cable behind wall panels that provide the required 15 minute finish rating may be acceptable and compliant with this section (See 300.23). The exiting language provides latitude to the installer and the authority having jurisdiction to address individual installations and site conditions as contemplated in Section 90.4.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-40 Log #1455 NEC-P07
(334.12(A)(2))

Final Action: Reject

Submitter: Russell LeBlanc, The Peterson School

Recommendation: Revise text to read as follows:

(2) ~~Exposed in~~ Above dropped or suspended ceilings with removable tiles in other than one- and two-family and multifamily dwellings.

Substantiation: This is an overly restrictive requirement especially considering all of the different types of building systems used in today's construction. Many components have interlocking panels or bolted, screwed, or hinged panels or hatches that may be removable and thus would not permit NM to be used since the cable would no longer be considered concealed. For example: I believe that NM cables can be safely installed behind a solid gypsum board type ceiling even if that ceiling happens to have a small metal hatch(2ft x 2ft for example) type of an access panel. The ceiling would still be able to provide the required 15 minute thermal barrier, and would also provide all the protection needed for the cables. Yet, this is NOT permitted by the NEC since the cable in this instance would be considered exposed.

Panel Meeting Action: Reject

Panel Statement: The submitter has not presented technical documentation indicating a history of problems with the present text. The term "exposed" is appropriate in this section. See the definition of "exposed in Article 100." The use of the term "exposed" eliminates the need for the submitters deleted and added text.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-41 Log #1807 NEC-P07
(334.15(B))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

334.15(B) Protection from Physical Damage. Cable shall be protected from physical damage where necessary by rigid metal conduit, intermediate metal conduit, electrical metallic tubing (EMT), Schedule 80 PVC conduit, Type RTRC marked with the suffix -XW, or other approved means. Where passing through a floor, the cable shall be enclosed in rigid metal conduit, intermediate metal conduit, electrical metallic tubing, Schedule 80 PVC conduit, Type RTRC marked with the suffix -XW, or other approved means extending at least 150 mm (6 in.) above the floor.

Substantiation: "electrical metallic tubing" is also referred to as "EMT"

Suggest that "EMT" be added to all references. This will make finding all references to "electrical metallic tubing" easier and more reliable.

[The following files are related: 100_EMT, 225_EMT, 230_EMT, 250_EMT, 300_EMT, 334_EMT, 374_EMT, 392_EMT, 398_EMT, 424_EMT, 426_EMT, 427_EMT, 430_EMT, 502_EMT, 503_EMT, 506_EMT, 517_EMT, 520_EMT, 550_EMT, 551_EMT, 552_EMT, 600_EMT, 610_EMT, 620_EMT, 645_EMT, 680_EMT, 695_EMT, 725_EMT, 760_EMT]

Panel Meeting Action: Reject

Panel Statement: The wiring method's name and type designation are included in the table of contents, in the respective articles, and in the index. Including the type letters everywhere the wiring method is mentioned does not add clarity.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

Comment on Affirmative:

SMITH, M.: Adding these nomenclatures to each instance of the wording indicated does not add clarity to the code and could be misrepresented such as mentioned in Affirmative comment 7-36.

7-42 Log #2361 NEC-P07
(334.15(B) and (C))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Add text to read as follows:

334.15

(B) Protection from Physical Damage. Cable shall be protected from physical damage where necessary by rigid metal conduit (RMC), intermediate metal conduit, electrical metallic tubing, Schedule 80 PVC conduit, Type RTRC marked with the suffix -XW, or other approved means. Where passing through a floor, the cable shall be enclosed in rigid metal conduit (RMC), intermediate metal conduit, electrical metallic tubing, Schedule 80 PVC conduit, Type RTRC marked with the suffix -XW, or other approved means extending at least 150 mm (6 in.) above the floor.

(C) In Unfinished Basements and Crawl Spaces. Where cable is run at angles with joists in unfinished basements and crawl spaces, it shall be permissible to secure cables not smaller than two 6 AWG or three 8 AWG conductors directly to the lower edges of the joists. Smaller cables shall be run either through bored holes in joists or on running boards. Nonmetallic-sheathed cable installed on the wall of an unfinished basement shall be permitted to be installed in a listed conduit (RMC) or tubing or shall be protected in accordance with 300.4. Conduit or tubing shall be provided provided with a suitable insulating bushing or adapter at the point the cable enters the raceway. The sheath of the nonmetallic-sheathed cable shall extend through the conduit or tubing and into the outlet or device box not less than 6 mm (¹/₄ in.). The cable shall be secured within 300 mm (12 in.) of the point where the cable enters the conduit or tubing. Metal conduit (RMC), tubing, and metal outlet boxes shall be connected to an equipment grounding conductor complying with the provisions of 250.86 and 250.148.

Substantiation: "Rigid Metal Conduit" is also referred to as "RMC" "Metallic Conduit"

Suggest that "RMC" be added to all references. This will make finding all references to "Rigid Metal Conduit" easier and more reliable.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-43 Log #2390 NEC-P07
(334.15(B) and (C))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Add text to read as follows:

334.15

(B) Protection from Physical Damage. Cable shall be protected from physical damage where necessary by rigid metal conduit, intermediate metal conduit (IMC), electrical metallic tubing, Schedule 80 PVC conduit, Type RTRC marked with the suffix -XW, or other approved means. Where passing through a floor, the cable shall be enclosed in rigid metal conduit, intermediate metal conduit (IMC), electrical metallic tubing, Schedule 80 PVC conduit, Type RTRC marked with the suffix -XW, or other approved means extending at least 150 mm (6 in.) above the floor.

(C) In Unfinished Basements and Crawl Spaces. Where cable is run at angles with joists in unfinished basements and crawl spaces, it shall be permissible to secure cables not smaller than two 6 AWG or three 8 AWG conductors directly to the lower edges of the joists. Smaller cables shall be run either through bored holes in joists or on running boards. Nonmetallic-sheathed cable installed on the wall of an unfinished basement shall be permitted to be installed in a listed conduit (IMC) or tubing or shall be protected in accordance with 300.4. Conduit (IMC) or tubing shall be provided provided with a suitable insulating bushing or adapter at the point the cable enters the raceway. The sheath of the nonmetallic-sheathed cable shall extend through the conduit or tubing and into the outlet or device box not less than 6 mm (1/4 in.). The cable shall be secured within 300 mm (12 in.) of the point where the cable enters the conduit or tubing. Metal conduit (IMC) , tubing, and metal outlet boxes shall be connected to an equipment grounding conductor complying with the provisions of 250.86 and 250.148.

Substantiation: "Intermediate Metal Conduit" is also referred to as "IMC" "Metallic Conduit"

Suggest that "IMC" be added to all references. This will make finding all references to "Intermediate Metal Conduit" easier and more reliable.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-44 Log #2382 NEC-P07
(334.15(C))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Add text to read as follows:

334.15

(C) In Unfinished Basements and Crawl Spaces. Where cable is run at angles with joists in unfinished basements and crawl spaces, it shall be permissible to secure cables not smaller than two 6 AWG or three 8 AWG conductors directly to the lower edges of the joists. Smaller cables shall be run either through bored holes in joists or on running boards. Nonmetallic-sheathed cable installed on the wall of an unfinished basement shall be permitted to be installed in a listed conduit or tubing or shall be protected

in accordance with 300.4. Conduit or tubing (EMT) shall be provided provided with a suitable insulating bushing or adapter at the point the cable enters the raceway. The sheath of the nonmetallic-sheathed cable shall extend through the conduit or tubing and into the outlet or device box not less than 6 mm (1/4 in.). The cable shall be secured within 300 mm (12 in.) of the point where the cable enters the conduit or tubing. Metal conduit, tubing (EMT), and metal outlet boxes shall be connected to an equipment grounding conductor complying with the provisions of 250.86 and 250.148.

Substantiation: "electrical metallic tubing" is also referred to as "EMT"

Suggest that "EMT" be added to all references. This will make finding all references to "electrical metallic tubing" easier and more reliable.

[The following files are related: 100_EMT, 225_EMT, 230_EMT, 250_EMT, 300_EMT, 334_EMT, 374_EMT, 392_EMT, 398_EMT, 424_EMT, 426_EMT, 427_EMT, 430_EMT, 502_EMT, 503_EMT, 506_EMT, 517_EMT, 520_EMT, 550_EMT, 551_EMT, 552_EMT, 600_EMT, 610_EMT, 620_EMT, 645_EMT, 680_EMT, 695_EMT, 725_EMT, 760_EMT]

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-45 Log #2557 NEC-P07
(334.15(C))

Final Action: Reject

Submitter: Patrick Murphy, City of Richmond

Recommendation: Revise text to read as follows:

(C) In Unfinished Basements and Crawl Spaces. Where cable is run at angles with joists in unfinished basements ~~and crawl spaces~~, it shall be

Substantiation: This creates an unnecessary cost and hardship on the contractors involved. In 21 years of doing inspections I have yet to see a damaged cable that a running board would have prevented in a crawl space. It is rare for anyone to go into a crawl space unlike a basement and damage just doesn't happen. It is not needed. In my jurisdiction we have not had any problems with cables in crawl spaces and the state has deleted this section from the code as being unnecessary.

Panel Meeting Action: Reject

Panel Statement: The panel views the term "crawl space" as too broad a term to lessen the current requirements. Lacking a specific definition for a "crawl space" and on the absence of technical substantiation for lessening current code requirements the submitters proposal is rejected. This is a safety issue. The current text provides for protection of the cables and personnel in "crawl spaces." A "crawl space" is not defined in the NEC, and wiring methods and personnel are to be protected in accordance with all possible "conditions of use", where crawl spaces may vary widely in height.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-46 Log #3212 NEC-P07
(334.15(C))

Final Action: Reject

Submitter: Greg Birkland, J-Horn Electric

Recommendation: Revise text to read as follows:

Smaller cables shall be run either through bored holes in joist or on a running board or through listed devices designed for the support of NM cable attached to the bottom of ceiling joist.

Substantiation: The listed device would be less expensive for the installer, would put less stress on the cable sheath and would not compromise the integrity of the wood joist by deleting the bored holes.

Panel Meeting Action: Reject

Panel Statement: The current language in 334.30 does not require cable supports to be listed. The language in section 334.15(C) does not restrict installers from using listed fittings or other products as intended when supporting nonmetallic sheath cable. The panel does not agree that a product that will provide support will also provide sufficient protection for cables run at an angle to joists when used to support those cables at the bottom (face) of the joist without suitable guarding as provided for in the existing text of 334.15(C).

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-47 Log #3415 NEC-P07
(334.30)

Final Action: Reject

Submitter: Steve Carle, Advanced Currents Corp.

Recommendation: Revise text to read as follows:

334.30 Securing and Supporting.

Nonmetallic-sheathed cable shall be supported and secured by staples, cable ties, straps, hangers, or similar fittings designed and installed so as to not damage the cable, at intervals not exceeding 1.4 m (4 ½ ft) and within 300 mm (12 in.) of every outlet box, junction box, cabinet, or fitting. Flat cables shall not be stapled on edge.

Sections of cable protected from physical damage by raceway shall not be required to be secured within the raceway.

(D) Connector Fitting with Incorporated Box.

A connector fitting with incorporated box identified for the use shall be permitted where the cable is secured in place at intervals not exceeding 1.4 m (4 ½ ft) and within 300 mm (12 in.) from the connector fitting, and there shall be at least a 300 mm (12 in.) loop of unbroken cable which allows the connector fitting to be pulled forward at least 150 mm (6 in.) from its installed position for field inspection of connections or to permit replacement.

Substantiation: Just like the "Wiring Device Without a Separate Outlet Box" needs a service loop of wire as described in 334.30 (C), so does this new methodology defined in companion proposals. This service loop allows for safe field inspection and serviceability of the connections and devices.

Note: This is a companion proposal to 100, 300.15 and 314.16.

Note: Supporting material is available for review at NFPA Headquarters.

Panel Meeting Action: Reject

Panel Statement: The loop proposed by the submitter is not prohibited in the current language of this section and 334.30 only requires that the cable be supported within 12 in. of the outlet box, junction box, cabinet, or fitting.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-48 Log #2362 NEC-P07
(Table 334.30(B)(2))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Add text to read as follows:

Table 334.30(B)(2) Supports for Rigid Metal Conduit (RMC)

Substantiation: "Rigid Metal Conduit" is also referred to as "RMC" "Metallic Conduit"

Suggest that "RMC" be added to all references. This will make finding all references to "Rigid Metal Conduit" easier and more reliable.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-49 Log #1550 NEC-P07
(334.40(B))

Final Action: Accept

Submitter: David Clements, International Association of Electrical Inspectors

Recommendation: Revise text to read as follows:

(B) Devices of Insulating Material. Switch, outlet, and tap devices of insulating material shall be permitted to be used without boxes in exposed cable wiring and for ~~rewiring in~~ repair wiring in existing buildings where the cable is concealed ~~and fished~~. Openings in such devices shall form a close fit around the outer covering of the cable, and the device shall fully enclose the part of the cable from which any part of the covering has been removed. Where connections to conductors are by binding-screw terminals, there shall be available as many terminals as conductors.

Substantiation: Rewire is defined as providing new wire. Justification for a concealed splice when rewiring occurs seems to be difficult and the concealed splice seems to be unwarranted. However, rewiring in some cases is a burden to owners because of damage to finished surfaces. A safe repair would be a practical solution for an unsafe, existing condition. A concealed splice would always seem to be a last resort and this change would limit the application to those situations.

Panel Meeting Action: Accept

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-50 Log #1551 NEC-P07
(334.40(B))

Final Action: Accept in Principle

Submitter: David Clements, International Association of Electrical Inspectors

Recommendation: Revise text to read as follows:

(B) **Devices of Insulating Material.** Switch, outlet, and ~~tap~~ nonmetallic-sheathed cable interconnector devices of insulating material shall be permitted to be used without boxes in exposed cable wiring and for rewiring in existing buildings where the cable is concealed and fished. Openings in such devices shall form a close fit around the outer covering of the cable, and the device shall fully enclose the part of the cable from which any part of the covering has been removed. Where connections to conductors are by binding-screw terminals, there shall be available as many terminals as conductors.

Substantiation: Current text uses the term "tap" devices. Based on the use of the term "tap" in other locations across the NEC, and the fact that product standards call the device a nonmetallic-sheathed cable interconnector, using that term in the NEC will clarify the permitted product for this requirement. See UL Guide Information for (QAAV).

Panel Meeting Action: Accept in Principle

Revise the code text to read as follows:

(B) **Devices of Insulating Material.** Self-contained switches, outlet self-contained receptacles, and tap nonmetallic-sheathed cable interconnector devices that are listed shall be permitted to be used without boxes in exposed cable wiring and for rewiring in existing buildings where the cable is concealed and fished.

The remainder of this section is unchanged.

Panel Statement: The panel has included the terms "listed" and "self contained" to ensure products that are used in accordance with 334.40 (B) have been tested to the standard for such devices. The panel has deleted the term "outlet" and replaced it with "self-contained receptacles" where the term "outlet" does not describe the intended product. The panel agrees with deleting the term "tap" and replaced it with the term "nonmetallic-sheathed cable interconnector".

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-51 Log #2089 NEC-P07
(334.40(B))

Final Action: Accept

Submitter: Donald R. Cook, Shelby County Development Services

Recommendation: Revise text to read as follows:

(B) **Devices of Insulating Material.** Switch, outlet, and tap devices of insulating material shall be permitted to be used without boxes in exposed cable wiring and for ~~rewiring in~~ repair wiring in existing buildings where the cable is concealed ~~and fished~~. Openings in such devices shall form a close fit around the outer covering of the cable, and the device shall fully enclose the part of the cable from which any part of the covering has been removed. Where connections to conductors are by binding-screw terminals, there shall be available as many terminals as conductors.

Substantiation: Rewire is defined as providing new wire. Justification for a concealed splice when rewiring occurs seems to be difficult and the concealed splice seems to be unwarranted. However, rewiring in some cases is a burden to owners because of damage to finished surfaces. A safe repair would be a practical solution for an unsafe, existing condition. A concealed splice would always seem to be a last resort and this change would limit the application to those situations.

Panel Meeting Action: Accept

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-52 Log #2090 NEC-P07
(334.40(B))

Final Action: Accept in Principle

Submitter: Donald R. Cook, Shelby County Development Services

Recommendation: Revise text to read as follows:

(B) **Devices of Insulating Material.** Switch, outlet, and ~~tap~~ nonmetallic-sheathed cable interconnector devices of insulating material shall be permitted to be used without boxes in exposed cable wiring and for rewiring in existing buildings where the cable is concealed and fished. Openings in such devices shall form a close fit around the outer covering of the cable, and the device shall fully enclose the part of the cable from which any part of the covering has been removed. Where connections to conductors are by binding-screw terminals, there shall be available as many terminals as conductors.

Substantiation: Current text uses the term “tap” devices. Based on the use of the term “tap” in other locations across the NEC, and the fact that product standards call the device a nonmetallic-sheathed cable interconnector, using that term in the NEC will clarify the permitted product for this requirement. See UL Guide Information for (QAAV).

Panel Meeting Action: Accept in Principle

Panel Statement: See the panel action and statement in Proposal 7-50.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-53 Log #3406 NEC-P07
(336.10)

Final Action: Reject

Submitter: Randall K. Wright, RKW Consulting

Recommendation: Add text to read as follows:

- (4) In outdoor locations supported by a messenger wire.
- (5) For Class 1 circuits as permitted in Parts II and III of Article 725.
- (6) For Class 2 circuits in electric signs as permitted by 600.33
- ~~(6)~~ (7) For non-power-limited fire alarm circuits if conductors comply with the requirements of 760.49.
- ~~(7)~~ (8) In industrial.....

Substantiation: To allow the use of PLTC outside a raceway or cable tray as permitted by 600.33 when used for the secondary wiring of an electric sign powered by a listed Class 2 power supply.

Panel Meeting Action: Reject

Panel Statement: The submitter has not provided technical documentation of a need for this new language. The code currently contains language that addresses the concerns of this proposal. Section 336.10 (5) permits Tray Cable as a Class I Wiring Method. Section 725.130 (A) permits Class I wiring methods to be installed as a Class II Circuit.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-54 Log #1500 NEC-P07
(336.10(7))

Final Action: Reject

Submitter: Ken Maynard, Maynard Electrical Installation

Recommendation: Add new text to read as follows:

Type TC-ER shall be permitted between junction box and utilization equipment or device. Type TC-ER shall be permitted between wireway and utilization equipment or device.

Substantiation: TC-ER cable meets or exceeds the listing requirements of LFMC, MC, FMC, and most cords and cables that are permitted to do so. TC-ER is a much better product for wiring small motors and devices when it comes to performing maintenance on equipment.

Panel Meeting Action: **Reject**

Panel Statement: Type TC-ER does not meet or exceed the listing requirements of LFMC, MC, FMC, and most cords. Type TC-ER only meets the crush and impact requirements of Type MC Cable. Additionally, the submitter has not editorially indicated where within Section 336.10(7) the proposed language should be inserted. The submitter does not specifically address the physical protection requirements in the opening paragraph of 336.10(7).

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

Comment on Affirmative:

CYBULA, T.: Replace the second sentence of the panel statement reading: "Additionally, the submitter has not editorially indicated where within Section 336.10(7) the proposed language should be inserted." with "Additionally, this proposal does not meet the requirements of 4.3.3(c) of the regulations Governing Committee Projects as follows: 4.3.3 Content of Proposals. Each Proposal shall be submitted to the Council Secretary and shall include the following: (c) Proposed text of the Proposal, including the wording to be added, revised (and how revised), or deleted."

7-55 Log #2959 NEC-P07
(336.10(9) (New))

Final Action: Reject

Submitter: Robert L. Seitz, Artech Engineering

Recommendation: Add the following text

(9) Under the conditions stated in 336.10(7) Type TC tray cable that complies with the crush and impact requirements of Type MC cable, has a braided armor sheath as described in 330.118 and is identified for such use with the marking Type TC-HL shall be permitted between a cable tray and the utilization equipment or device, where permitted by other articles of this Code. The cable shall be secured at intervals not exceeding 1.8 m (6 ft). Equipment ground shall be as stated in 336.10(7). Equipment grounding for the utilization equipment shall be provided by an equipment grounding conductor within the cable. In cables containing conductors sized 6 AWG or smaller, the equipment grounding conductor shall be provided within the cable or, at the time of installation, one or more insulated conductors shall be permanently identified as an equipment grounding conductor in accordance with 250.119(B).

Exception: Where not subject to physical damage, Type TC-HL shall be permitted to transition between cable trays and between cable trays and utilization equipment or devices for a distance not to exceed 1.8 m (6 ft) without continuous support. The cable shall be mechanically supported where exiting the cable tray to ensure that the minimum bending radius is not exceeded.

Substantiation: Power cables of smaller conductor size, shielded pairs and triads and control cables with small number of conductors are often connected to devices that must be removed or moved to permit maintenance activities to be performed. There is need for an additional cable construction for use in industrial establishments that provides additional durability and benefit of a flexible metallic armor beneath the outer jacket. The existing restriction against armor in Tray Cable only references the types of armor described for MC cable in Article 330.

The same proposal was made for the 2011 NEC, and the author of this proposal asks the committee to reconsider its action and the basis of that action. The Panel Statement from 2011 ROP was "*The prohibition of a metallic sheath or armor on Type TC cable was intentional to provide a distinct construction difference between Type MC cable and Type TC cable based on the permitted installation uses of each cable type. Applications cited are outside scope of the NEC*" Author's request is to not prohibit a braided or woven sheath or armor on Type TC cable as the armor construction is significantly different than that described in NEC 336.116. There is no way a braided armor on Cable type TC can be confused with the metallic sheath or armor permitted on Cable type MC, which is described in 336.116.

UL 1277 *Electrical Power and Control Tray Cables with Optional Optical-Fiber Members* 10.5.1 does disallow any metal sheath or armor. A change in requirements in NEC 336 would cause revision of this paragraph to more closely agree with the limitation to those armors as described NEC 330.116.

The allowance for a braided armor for tray cable should in no way compromise tray cable installations.

The intent of this revision is to permit a cable type that can be installed in hazardous locations that included shielded instrument conductors and control conductor configurations to be used in a manner permitted for extra hard usage cord. Instrument and control configurations are not available in extra hard usage cord.

Companion proposals for 336.100 Uses permitted and 336.118 as part of the Construction Specification are offered by this author.

Panel Meeting Action: Reject

Panel Statement: A metallic shield is not prohibited by 336.100. Additionally, see the panel statement on Proposal 7-58.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-56 Log #793 NEC-P07
(336.24)

Final Action: Reject

Submitter: Paul E. Guidry, Fluor Enterprises, Inc. / Rep. Associated Builders and Contractors

Recommendation: Add new exception at end of section 336.24.

336.24 Bending Radius. Bends in Type TC cable shall be made so as not to damage the cable. For Type TC cable without metal shielding, the minimum bending radius shall be as follows:

- (1) Four times the overall diameter for cables 25 mm (1 in.) or less in diameter
- (2) Five times the overall diameter for cables larger than 25 mm (1 in.) but not more than 50 mm (2 in.) in diameter
- (3) Six times the overall diameter for cables larger than 50 mm (2 in.) in diameter

Type TC cables with metallic shielding shall have a minimum bending radius of not less than 12 times the cable overall diameter.

Exception: Minimum bending radii for Type TC cable with metallic foil shielding shall comply with manufacturer's instructions and may be less than 12 times the cable overall diameter.

Substantiation: Many small (#18AWG - #10AWG) Type TC cables are being manufactured with aluminum/polyester foil shields for instrumentation. I don't believe the intent of this section as it exists today was for foil shielded conductors. The manufacturers of these cables typically recommend minimum bending radii of much less than 12X the O.D of the cable. I believe the intent of this section was to cover only medium and high voltage cables. With this exception it would allow the installer to comply with 110.3(B) and also 336.24. There are inspectors enforcing the 12X rule for these small cables.

Panel Meeting Action: Reject

Panel Statement: Technical substantiation was not provided to add an exception. The intent is to cover Type TC Cables. The submitter has not provided supporting data indicating the proposed reduced bending radius will comply with current acceptance standards of Tray Cable. The submitter's substantiation indicates that this foiled cable is used in instrument applications. CMP 7 suggests that the submitter direct this proposal to CMP 3 and address Section 727.6 to increase the accepted conductor sizes to No. 10 AWG, and 727.10 to address bending concerns.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-57 Log #2960 NEC-P07
(336.100)

Final Action: Reject

Submitter: Robert L. Seitz, Artech Engineering

Recommendation: Add new text

A metallic sheath or armor as defined in 330.116 shall not be permitted either under or over the non metallic jacket. Metallic shield(s) shall be permitted over groups of conductors, under the outer jacket, or both. A braided or basket weave armor shall be permitted beneath the outer jacket.

Substantiation: Power cables of smaller conductor size, shielded pairs and triads and control cables with small number of conductors are often connected to devices that must be removed or moved to permit maintenance activities to be performed. There is need for an additional cable construction for use in industrial establishments that provides additional durability and benefit of a flexible metallic armor beneath the outer jacket. The existing restriction against armor in Tray Cable only references the types of armor described for MC cable in Article 330.

The same proposal was made for the 2011 NEC, and the author of this proposal asks the committee to reconsider its action and the basis of that action. The Panel Statement from 2011 ROP was "*The prohibition of a metallic sheath or armor on Type TC cable was intentional to provide a distinct construction difference between Type MC cable and Type TC cable based on the permitted installation uses of each cable type. Applications cited are outside scope of the NEC*". Author's request is to not prohibit a braided or woven sheath or armor on Type TC cable as the armor construction is significantly different than that described in NEC 336.116. There is no way a braided armor on Cable type TC can be confused with the metallic sheath or armor permitted on Cable type MC, which is described in 336.116.

UL 1277 Electrical Power and Control Tray Cables with Optional Optical-Fiber Members 10.5.1 does disallow any metal sheath or armor. A change in requirements in NEC 336 would cause revision of this paragraph to more closely agree with the limitation to those armors as described NEC 330.116.

The allowance for a braided armor for tray cable should in no way compromise tray cable installations.

The intent of this revision is to permit a cable type that can be installed in hazardous locations that included shielded instrument conductors and control conductor configurations to be used in a manner permitted for extra hard usage cord. Instrument and control configurations are not available in extra hard usage cord.

Companion proposals for 336.10 Uses permitted and 336.118 as part of the Construction Specification are offered by this author.

Panel Meeting Action: Reject

Panel Statement: A metallic shield is not prohibited by 336.100. Additionally, see the panel statement on Proposal 7-58.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-58 Log #2961 NEC-P07
(336.118 (New))

Final Action: Reject

Submitter: Robert L. Seitz, Artech Engineering

Recommendation: Add new text

336.118 Braided Armor. The armor shall be constructed of wire 0.32 mm diameter +- 0.01 mm, forming a basket weave that shall firmly grip the cable. Percent coverage should be between 88% and 94%.. Wire shall be commercial bronze or tinned copper.

Substantiation: Power cables of smaller conductor size, shielded pairs and triads and control cables with small number of conductors are often connected to devices that must be removed or moved to permit maintenance activities to be performed. There is need for an additional cable construction for use in industrial establishments that provides additional durability and benefit of a flexible metallic armor beneath the outer jacket. The existing restriction against armor in Tray Cable only references the types of armor described for MC cable in Article 330.

The same proposal was made for the 2011 NEC, and the author of this proposal asks the committee to reconsider its action and the basis of that action. The Panel Statement from 2011 ROP was "*The prohibition of a metallic sheath or armor on Type TC cable was intentional to provide a distinct construction difference between Type MC cable and Type TC cable based on the permitted installation uses of each cable type. Applications cited are outside scope of the NEC*" There is no way a braided armor on Cable type TC can be confused with the metallic sheath or armor permitted on Cable type MC

The allowance for a braided armor for tray cable should in no way compromise tray cable installations.

The intent of this revision is to permit a cable type that can be installed in hazardous locations that includes shielded instrument conductors and control conductor configurations to be used in a manner permitted for extra hard usage cord. Instrument and control configurations are not available in extra hard usage cord.

Companion proposals for 336.10 Uses permitted and 336.118 as part of the Construction Specification are offered by this author

Panel Meeting Action: Reject

Panel Statement: The exclusion of a metallic sheath or armor on the cable was specifically intended to differentiate Type TC cable from Type MC cable. The use of metallic tapes or braids for shielding purposes is permitted under the current code. The submitter refers to proposals during the 2011 cycle, Proposal 7-125 and Comment 7-43 to Section 336.100. Those proposals were directed towards shipboard cable and its use afloat. As mentioned in Comment 7-43 such installations are beyond the scope of this document. It appears that the cable which is the subject of this proposal was developed for marine applications and the panel is not aware that this cable has been evaluated for use as premises wiring under the purview of this code. The submitter has not provided technical documentation that tray cable for hazardous locations (specifically) is listed or incorporated within NRTL Listing Guides (The Listing Guide mentions MC-HL and ITC-HL). Additionally, the submitter has not presented historical data indicating that the existing tray cables recognized in this code cannot address the installers concerns. The submitter's substantiation indicates that the current Standards UL 1277 disallows the proposed cable with metal sheathing. Also tray cable for hazardous locations is not listed in the UL Cable and Wiring Guide Tables 1, 2 and 3.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-59 Log #817 NEC-P07
(338.10(B)(4)(b))

Final Action: Reject

Submitter: Dennis Alwon, Alwon Electric Inc.

Recommendation: Revise text to read as follows:

(b) Exterior Installations. In addition to the provisions of this article, service-entrance cable used for feeders or branch circuits, where installed as exterior wiring, shall be installed in accordance with Part I of Article 225. The cable shall be supported in accordance with 334.30. Type USE cable installed as underground feeder and branch circuit cable shall comply with Part II of Article 340, excluding 340.80

Substantiation: Why should USE cable be subject to the 60C ampacity rating of UF, NM and SEU and only as a feeder or branch circuit. I thought the concept for the 60C rating is because of insulation around a cable. When USE enters a building, if it is dual rated, then it must be in conduit so why would a cable rated 90C in dry location now be subject to 60C rating. Also underground it is rated 75C but now it must be limited to 60C when used as a feeder or branch circuit. I believe this was an oversight but I may be incorrect. It won't be the first time.

Panel Meeting Action: Reject

Panel Statement: The submitter is referring to single conductor USE per Table 310.104(A), whereas 338.10(B)(4)(b) is referring to a USE cable assembly with a plastic covering as defined in 338.2. Single conductor USE is not limited to the ampacity in 340.80.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-60 Log #1297 NEC-P07
(338.10(B)(4)(a))

Final Action: Reject

Submitter: Derrick L. Atkins, Milaca, MN

Recommendation: Revise text to read as follows:

Interior Installations. In addition to the provisions of the article, Type SE service-entrance cable used for interior wiring shall comply with the installation requirement of Part II of Article 334, excluding 334.80. Where installed in thermal insulation, the ampacity shall be in accordance with the 60°C (140°F) conductor temperature rating and the provisions of 310.15(A)(2) Exception shall not apply. The maximum conductor temperature rating shall be permitted to be used for ampacity adjustment and correction purposes, if the final derated ampacity does not exceed that for a 60°C (140°F) rated conductor.

Substantiation: When SE cable is installed in thermal insulation, the cable is subject to increased heating effects in a similar manner as nonmetallic sheathed cable which is required to be used at a 60°C ampacity. SE cable installed in a dwelling unit may only be installed in a short section of thermal insulation as it leaves a service panel in an exterior wall before entering the interior wall and ceiling spaces or as it leaves an attached garage where the service panel is located and enters the interior of the house and passes through the insulated wall between the house and the garage, however, the cable should be used at the 60°C ampacity as the short section is at risk of overheating due to the thermal insulation.

Panel Meeting Action: Reject

Panel Statement: The submitter has not provided any technical substantiation that would indicate that the application of 310.15(A)(2) exception creates a hazard.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-61 Log #2501 NEC-P07
(338.10(B)(4))

Final Action: Reject

Submitter: Terry W. Cromer, NC Association of Electrical Contractors

Recommendation: Revise text to read as follows:

(4) *Interior Installations.* In addition to the provisions of this article, Type SE service-entrance cable used for interior wiring shall comply with the installation requirements of Part II of Article 334, excluding 334.80.

Where ~~installed~~ imbedded in thermal insulation greater than 1.5 m (5 ft), the ampacity shall be in accordance with the 60°C (140°F) conductor temperature rating. The maximum conductor temperature rating shall be permitted to be used for ampacity adjustment and correction purposes, if the final derated ampacity does not exceed that for a 60°C (140°F) rated conductor.

Substantiation: 1) The conductors within SE Cable are rated 90 degrees (and only used at the 75 degree rating Table 310.15(B)(16) and are marked on each conductor within the cable unlike NM Cable which has no marking on the individual conductors within the cable (only on outside of the cable)

2) These branch circuits are usually only installed within insulation less than 1.5 m (5 ft) and are usually 30 to 50 feet in length.

3) Table 310.15(B)(7) permits the installation of SE type cable at the 75 degree Centigrade for a main power feeder within a dwelling. Utilizing SE type cable as a branch circuit conductor does not change the construction nor the rating of the cable. The standard used to test and list SE type cable is ANSI/UL854 which is a minimum 75 degree Centigrade outer jacket and 90 degree Centigrade conductors. NM cable is listed per ANSI/UL 719 which list the outer jacket at 60 degree Centigrade and the conductors at 90 degree Centigrade for termination purposes. SE type cable construction is not the same as NM cable and it's use should be permitted within it's listing and marking without restriction.

Panel Meeting Action: Reject

Panel Statement: The submitter has not presented technical documentation to support excluding the 60 degree ampacity limitation for cable installations where 5 ft or less of a cable is run in contact with thermal insulation without maintaining spacing between the cables.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 12 Negative: 1 Abstain: 1

Explanation of Negative:

NIELSEN, D.: Over-current protection protects Type SE conductors where conductors are adjusted for ampacity and correction based on maximum temperature rating. The exclusion of Article 334.80 is applicable since Type SE is not Type NM/NMC/NMS. The present language was added in the 2011 cycle. Technical documentation was submitted at the meeting supporting the basis for thermal insulation not posing an issue. The proposal should have been approved as Accept in Principal with the text to read as follows:

~~Where installed in thermal insulation, the ampacity shall be in accordance with the 60°C (140°F) conductor temperature rating. The maximum conductor temperature rating shall be permitted to be used for ampacity adjustment and correction purposes, if the final derated ampacity does not exceed that for a 60°C (140°F) rated conductor.~~

Explanation of Abstention:

HUNTER, C.: The Aluminum Association could not reach consensus.

Comment on Affirmative:

SMITH, M.: Putting any limits of distance on imbedded insulation could be misrepresented after final inspections have occurred and insulation is added after occupancy. CMP-7 has requested a NFPA Projects that is currently in the process to evaluate these cables and conditions.

7-62 Log #2545 NEC-P07
(338.10(B)(4))

Final Action: Reject

Submitter: Terry W. Cromer, NC Association of Electrical Contractors

Recommendation: Revise text to read as follows:

(4) *Interior Installations.* In addition to the provisions of this article, Type SE service-entrance cable used for interior wiring shall comply with the installation requirements of Part II of Article 334, excluding 334.80.

Where ~~installed~~ imbedded in 4 inches or more of thermal insulation a distance greater than 1.5 m (5 ft), the ampacity shall be in accordance with the 60 C (140 F) conductor temperature rating. The maximum conductor temperature rating shall be permitted to be used for ampacity adjustment and correction purposes, if the final derated ampacity does not exceed that for a 60 C (140 F) rated conductor.

Substantiation: 1) The restriction to limit SE cable to 60 degrees should never have been accepted by the panel, there was no technical justification or field failures presented to justify the change. The conductors available on the market today within SE Cable have insulation rated 90 degrees (and are only used at the 75 degree rating per Table 310.15(B)(16)). Since the code panel seems unwilling to revert to the previous language and allow SE cable to be used per its listing, I have submitted this proposal in the hopes that a compromise might be reached.

2) These branch circuits are usually not installed in thermal insulation for the entire circuit, and perhaps only a few inches or feet will even be in contact with thermal insulation. On a circuit which only has a short distance installed within insulation (less than 1.5 m (5 ft)), there is no reason to derate the entire circuit, which is typically 30 to 50 feet in length. This allows heat dissipation over the length of the circuit, a practice that is recognized in many other sections of the code, such as 310.15(A)(2) Exception.

3) Table 310.15(B)(7) permits the installation of SE type cable without derating for installation in insulation for a main power feeder within a dwelling. Utilizing SE type cable as a branch circuit conductor does not change the construction nor the rating of the cable. The standard used to test and list SE type cable is ANSI/UL854 which requires a minimum 75 degree Centigrade outer jacket, and manufacturers currently supply 90 degree Centigrade conductors inside the cable. NM cable is listed per ANSI/UL 719 which list the outer jacket at 60 degree Centigrade and the conductors at 90 degree Centigrade for ampacity determination purposes. SE type cable construction is not the same as NM cable and its use should be permitted within its listing and marking without restriction.

Panel Meeting Action: Reject

Panel Statement: The submitter has not presented technical documentation to support excluding the 60 degree ampacity limitation for cable installations embedded in 4 inches or more of thermal insulation for a distance greater than 5 ft. without maintaining spacing between the cables.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Abstain: 1

Explanation of Abstention:

HUNTER, C.: The Aluminum Association could not reach consensus.

7-63 Log #3084 NEC-P07
(338.10(B)(4)(a))

Final Action: Reject

Submitter: Frederic P. Hartwell, Hartwell Electrical Services, Inc.

Recommendation: Revise as follows:

(a) *Interior Installations.* In addition to the provisions of this article, Type SE service-entrance cable used for interior wiring shall comply with the installation requirements of Part II of Article 334, ~~excluding 334.80~~

Where installed in thermal insulation, the ampacity shall be in accordance with the 60°C (140°F) conductor temperature rating. ~~The maximum conductor temperature rating shall be permitted to be used for ampacity adjustment and correction purposes, provided the final derated ampacity does not exceed that for a 60°C (140°F) rated conductor.~~

Substantiation: The NEMA/UL study covered in Proposal 4-97 of the A86TCR for the 1987 NEC, and as circulated to CMP 7 with Comment 7-37 in the 2011 NEC cycle, showed among other things that 2 AWG 90°C Aluminum SEU cable embedded in cellulose insulation would incinerate at its Table ampacity (100A) and run above its rated ampacity at far lower current values. For example, a 67 A load resulted in a 93°C temperature measurement, and even this proposal would allow a 60°C number of 75A for this application. The NEC result is far too high for insulation embedment. And the “excluding 334.80” phrase is deleted because there is no thermodynamic difference between SE cable and NM cable for these purposes. In fact, SE cables are typically worse in this regard than NM cables because the SE cables are typically larger in the expectation of carrying larger currents. Since the heat developed in a wire is I^2R , larger currents (contribution increased quadratically) overwhelm decreased resistances (contribution decreased linearly). The result is also far too low for cables run in the open, hence the revolt in the prior cycle when cables had to start at 60°C. A comment in the voting on Comment 7-48 in the 2011 cycle referred to a possibility of a research study on this topic. This submitter hopes that CMP 7 will have been able to organize such an effort.

Panel Meeting Action: Reject

Panel Statement: The submitter has not provided technical substantiation to support the proposed changes. The submitter refers to a NEMA research document multiple times. This research was not available to the panel, nor is there any record of it being reviewed in the 2008 code cycle. The Proposal 4-97 using this research was rejected by the CMP in the 1987 NEC A86TCR which is public record.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Negative: 1

Explanation of Negative:

STRANIERO, G.: The proposal should have been “Accept in Part”. The Panel should have accepted the deletion of “excluding 334.80”. The 2011 Code language falls short when SE cables are installed as branch circuits in that it does not require all of the ampacity adjustment requirements found in 334.80.

7-64 Log #3163 NEC-P07
(338.10(B)(4)(a))

Final Action: Reject

Submitter: Christel K. Hunter, Alcan Cable

Recommendation: Revise text to read as follows:

(4) Installation Methods for Branch Circuits and Feeders.

(a) *Interior Installations.* In addition to the provisions of this article, Type SE service-entrance cable used for interior wiring shall comply with the installation requirements of Part II of Article 334, excluding 334.80.

Where installed in thermal insulation that completely surrounds the cable for more than 600 mm (24 in), the ampacity shall be in accordance with the 60°C (140°F) conductor temperature rating. The maximum conductor temperature rating shall be permitted to be used for ampacity adjustment and correction purposes, if the final derated ampacity does not exceed that for a 60°C (140°F) rated conductor.

Substantiation: This proposal makes this language more enforceable and provides specific installation guidelines to installers. The distance of 24 inches was chosen as a commonly used length, similar to the rules for bundling of conductors.

Panel Meeting Action: Reject

Panel Statement: The submitter has not presented technical documentation to support excluding the 60 degree ampacity limitation for cable installations where 2 ft or less of cable is run in contact with thermal insulation without maintaining spacing between the cables.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Abstain: 1

Explanation of Abstention:

HUNTER, C.: The Aluminum Association could not reach consensus.

7-65 Log #3378 NEC-P07
(338.12(B)(1) and (2))

Final Action: Reject

Submitter: Dennis Alwon, Alwon Electric Inc.

Recommendation: Revise text to read as follows:

(B) Underground Service-Entrance Cable. Underground service-entrance cable (USE) shall not be used under the following conditions or in the following locations:

(1) For interior wiring except if the USE is dual rated.

(2) For aboveground installations except where USE is dual rated or where USE cable emerges from the ground and is terminated in an enclosure at an outdoor location and the cable is protected in accordance with 300.5(D).

Substantiation: Most USE cable today is rated for underground but has markings of RHH/RHW. These wires are recognized in Chapter 3 Table 310.104(A). The way it is written in the 2011 NEC it could be argued that the dual rated is not allowed in the interior. This change would clarify what, I believe, the intent is supposed to be.

Panel Meeting Action: Reject

Panel Statement: The submitter is referring to a single conductor USE per Table 310.104(A), whereas 338.10(B)(4)(b) is referring to a USE cable assembly with a plastic covering as defined in 338.2. Single conductor USE and USE-2 with markings such as RHH and RHW are permitted to be used for interior wiring and aboveground installations. Although "dual rated" is not defined in the NEC it is understood that the submitter is referring to single conductors with multiple type designations. In list item (2) the panel rejects the words "where USE is dual rated" this subject was addressed through the 1996 edition of the code to then 338-1 (b) (See Proposal 7-110 A95 ROP).

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-66 Log #48 NEC-P07
(382.2, 382.10(C), 382.15(B), and 382.30(B))

Final Action: Reject

NOTE: This Proposal appeared as Comment 7-57 (Log #2815) on Proposal 7-144 in the 2010 Annual Meeting National Electrical Code Committee Report on Proposals. This comment was held for further study during the processing of the 2011 NATIONAL ELECTRICAL CODE. The Recommendation in Proposal 7-144 was: Revise text to read as follows:

382.2 Definitions.

Concealable Nonmetallic Extension. A listed assembly of two, three, or four insulated circuit conductors within a nonmetallic jacket, an extruded thermoplastic covering, or a sealed nonmetallic covering. The classification includes surface extensions intended for installation under flooring materials, mounting directly on the surface of walls or ceilings, and concealed with paint, texture, joint compound, plaster, wallpaper, tile, wall paneling, or other similar materials.

382.10 Uses Permitted.

(C) Residential or Offices. For nonmetallic surface extensions mounted directly on the surface of walls or ceilings, the building shall be occupied for residential or office purposes and shall not exceed three floors abovegrade.

~~Where identified for the use, concealable nonmetallic extensions shall be permitted more than three floors abovegrade:~~

Concealable Nonmetallic Extensions, where identified for the use, shall be permitted to be used in the following:

(1) More than three floors above grade

(2) Under flooring materials when installed on hard, sound, smooth, continuous floor surfaces made of concrete, ceramic, or composition flooring, wood, and similar materials.

382.15 Exposed.

(B) Concealable Nonmetallic Extensions. One or more extensions shall be permitted to be run in any direction from an existing outlet. Where identified for the use, nonmetallic extensions may be concealed with under flooring materials or wall materials such as paint, texture, concealing compound, plaster, wallpaper, tile, wall paneling, or other similar materials ~~and installed per 382.15(A).~~

382.30 Securing and Supporting.

(B) Concealable Nonmetallic Extensions. All surface-mounted concealable nonmetallic extension components shall be firmly anchored to the subfloor, wall or ceiling using an adhesive or mechanical anchoring system identified for this use.

Submitter: Richard Temblador, Southwire Company

Recommendation: This proposal should be accepted as submitted.

Substantiation: A Fact-Finding Report has been completed based on the installation of Concealable Nonmetallic Extensions under flooring materials. The proposed expanded use of concealable nonmetallic extensions broadens its use to serve as a safe alternative to extension cords. Branch circuit wiring can be safely extended using concealable flat wire nonmetallic extension for power or lighting where needed, and as needed, to accommodate decorating schemes, placement of specific equipment or furniture to suit ever-changing lifestyles.

A copy of the fact-finding report in support of Proposal 7-144 has been provided.

Note: Supporting material is available for review at NFPA Headquarters.

Panel Meeting Action: Reject

Panel Statement: Information has not been provided to accept the extended use of this product.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-67 Log #2937 NEC-P07

Final Action: Reject

(382.2.Concealable Nonmetallic Extension, 382.10(C), 382.15(B), and 382.30(B))

Submitter: Dave Mercier, Southwire Company

Recommendation: Revise text to read as follows:

382.2 Definitions.

Concealable Nonmetallic Extension. A listed assembly of two, three, or four insulated circuit conductors within a nonmetallic jacket, an extruded thermoplastic covering, or a sealed nonmetallic covering. The classification includes surface extensions intended for installation under flooring materials, mounting directly on the surface of walls or ceilings, and concealed with paint, texture, joint compound, plaster, wallpaper, tile, wall paneling, or other similar materials.

382.10 Uses Permitted.

(C) Residential or Offices. For nonmetallic surface extensions mounted directly on the surface of walls or ceilings, the building shall be occupied for residential or office purposes and shall not exceed three floors abovegrade. ~~Where identified for the use, concealable nonmetallic extensions shall be permitted more than three floors abovegrade.~~ Concealable Nonmetallic Extensions, where identified for the use, shall be permitted to be used in the following:

(1) More than three floors above grade

(2) Under flooring materials when installed on hard, sound, smooth, continuous floor surfaces made of concrete, ceramic, or composition flooring, wood, and similar materials.

382.15 Exposed.

(B) Concealable Nonmetallic Extensions. One or more extensions shall be permitted to be run in any direction from an existing outlet. Where identified for the use, nonmetallic extensions may be concealed ~~with~~ under flooring materials or wall materials such as paint, texture, concealing compound, plaster, wallpaper, tile, wall paneling, or other similar materials and installed per 382.15(A).

382.30 Securing and Supporting.

(B) Concealable Nonmetallic Extensions. All surface-mounted concealable nonmetallic extension components shall be firmly anchored to the subfloor, wall or ceiling using an adhesive or mechanical anchoring system identified for this use

Substantiation: This proposal seeks to revise Article 382 to recognize the use of concealable nonmetallic extensions that can be concealed under flooring materials.

The proposed expanded use of concealable nonmetallic extensions broadens its use to serve as a safe alternative to extension cords. Branch circuit wiring can be safely extended using concealable flat wire nonmetallic extension for power or lighting where needed, and as needed, to accommodate decorating schemes, placement of specific equipment or furniture to suit ever-changing lifestyles.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-66.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-68 Log #1211 NEC-P07
(382.2. Concealable Nonmetallic Extension)

Final Action: Reject

Submitter: Marcelo M. Hirschler, GBH International

Recommendation: Revise text to read as follows:

Concealable Nonmetallic Extension. A listed assembly of two, three, or four insulated circuit conductors within a nonmetallic jacket, an extruded thermoplastic covering, or a sealed nonmetallic covering. ~~The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings, and concealed with paint, texture, joint compound, plaster, wallpaper, tile, wall paneling, or other similar materials:~~

Informational Note: The classification includes surface extensions intended for mounting directly on the surface of walls or ceilings, and concealed with paint, texture, joint compound, plaster, wallpaper, tile, wall paneling, or other similar materials.

Substantiation: The NFPA Manual of Style requires definitions to be in single sentences. The information provided in the subsequent sentences is not really a part of the definition; it is further information that is best placed in an informational note.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-22.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-69 Log #3426 NEC-P07
(393)

Final Action: Reject

Submitter: Luis Berardo Urzua, Diversified Solutions Group, LLC

Recommendation: Proposal:

Article 393 Cable Holder Strip

I. General

393.1 Scope. this article covers the use and installation of cable holder strips.

393.2 Definition. Cable Holder Strip. A flame retardant, non-metallic flat unit used to securely fasten, route, separate and organize cables and wiring to wood, metal or fiberglass framing. The flat unit has housings with slotted openings for receiving and holding cables and wiring of different sizes.

393.3 Size of Cable Holder Strip. The flat strip shall be permitted to have a size of 370.50 mm long by 22 mm wide by 6.75 mm high.

393.4 Size of cable Holder Strip Housings. The cable holder strip shall be permitted to have three different-sized housings with the following measurements:

(1) Small-sized Housing measuring 12 mm wide by 15.50 mm high by 22 mm long.

(2) Medium-sized Housing measuring 15.50 mm wide by 18 mm high by 22 mm long.

(3) Large-sized Housing measuring 20 mm wide by 18.50 high by 22 mm long.

II. Installation.

393.10 Uses Permitted. Cable holder strip shall be permitted as a support system for service conductor cables and wiring. Cable holder strips shall not be limited to industrial establishments. Cable holder strips shall be identified for their intended use. Cable holder strips shall be permitted for indoor use.

(A) Wiring Methods. The wiring methods in Table 393.10(A) shall be permitted to be fastened by cable holder strips under conditions described in their respective articles and sections.

INSERT TABLE 393.10(A) HERE

(B) Wiring Capacity. The housing size of 393.4(1)(2) and (3) of the cable holder strip shall be permitted to hold a capacity of cables as illustrated in Table 393.310(B).

INSERT TABLE 393.10(B) HERE

393.11 Uses Not Permitted. Cable holder strip shall not be used in the following:

(1) Where subject to physical damage

(2) Where subject to ambient temperatures other than those for which the cable holder strip is listed

(3) For cables and wiring whose insulation temperature limitations exceed those for which the cable holder strip is listed.

393.12 Size and Cables and Wiring. No cable or wiring larger than that for which the Cable holder strip is designed shall be installed in any cable holder strip.

393.18 Cable Holder Strip Installation

(A) Installed As Needed. Cable holder strips shall be installed as needed on framing to fasten, route, separate and organize cables and wiring to wood, metal or fiberglass framing in accordance with the requirements of 300.4 and 300.11. When housings of the cable holder strip are not used in their full capacities they shall be secured with plastic ties. When housings of the cable holder strip are installed overhead they shall be installed with plastic ties.

(1) Installation in Compliance with the Code. Cable Holder strips shall be installed to fasten cables and wiring to wood, metal or fiberglass framing in parallel and affixed at 175 mm from the top or bottom of a service equipment and 101 mm from sides of the service equipment.

(2) Installation as Mounting Supports for Service-entrance Cables. Cables Holder strips shall be installed to support service entrance cables within 300 mm of every service head, gooseneck or connection to a raceway or enclosure and at intervals not exceeding 750 mm as specified in 230.51(A).

(3) Installation as Securing Supports for Type AC Cables. Cable Holder strips shall be installed to secure Type AC

cables within 300 mm of every outlet box, junction box, cabinet or fitting and at intervals not exceeding 1.4 m as specified in 320.30(B) and (C).

(4) Installation as Securing Supports for Type FCC Cables. Cable Holder strips shall be installed to secure and anchor Type FCC cables to the floor joist or wall as specified in 324.30.

(5) Installation as Securing Supports for Optical Fiber Cables. Cable Holder strips shall be installed to secure Optical Fiber cables as specified in 770.24.

Cable Holder strips shall be installed to secure Communication Circuit cables as specified in 800.24

(6) Installation as Securing Supports for Communication Circuit Cables. Cable Holder strips shall be installed to secure Communication Circuit cables as specified in 800.24.

(7) Installation as Securing supports for Coaxial Cables. Cable Holder strips shall be installed to secure Coaxial cables as specified in 820.24.

(8) Installation as Securing Supports for Network-Powered Broadband Cables. Cable Holder strips shall be installed to secure Network-Powered Broadband cables as specified in 830.24.

(B) Completed Before Installation. Each cable holder strip shall be installed on framing before the fastening of cables or wiring.

(C) Accessible. Case Holders Strips shall be accessible.

(D) Adequate Access. Sufficient Space shall be provided and maintained about cable holder strips to permit adequate access for fastening and maintaining the cables and wiring. When using the full cable holder strip, it shall be secured with 6 screws.

(E) Qualified Persons. Only qualified persons shall install the cable holder strips.

Substantiation: Today's technicians take excessive amounts of time securing and organizing jumbled masses of different gauged cables and wires for residential and commercial construction. It is a time consuming process. These cables and wires need to be carefully organized for future maintenance and affixed to walls and ceilings at defined measurements away from service boxes as specified by the NEC.

Metal staples are currently used to affix the cables and wiring. It is impossible to calculate the proper tightness of the metal staple with a hammer (See Pic 1). These metal staples will often penetrate cables and wiring during installation, making them unusable. When this occurs, the entire cable or wire must be replaced. Often, if the metal staples are not carefully hammered, the cables or wire may be pricked or over hammered without detection, causing a fire hazard. Furthermore, metal staples can only secure cables and wiring onto wood surfaces.

Cable holder strips are fire-resistant, non-metallic cable and wiring holders. The cable holder strips are a solution to these problems of routing, separating, securing, organizing different gauges of cables and wires in a more safe and efficient manner.

The strip can be used to separate cables and wires on rafters, plywood and metal surfaces. The cable holder strip can be easily cut and used in two or three sections. Screws, nails, or self-tapping screws for metal surfaces, will secure the strip. The flat strip has different sized housings with slotted openings for receiving and holding one or more cables and wiring of different gauges. The wires and cables are inserted into the edged housing slots and then housed in their respective housings. The slot openings are large enough to allow cables in, but small enough to temporarily hold them until they are fastened with plastic ties. Once the cables are put into the device, they must then be fastened with plastic ties on one side. The cable holder strip has multiple tongues under each housing that allows plastic ties to be fastened.

The Cable holder strip allows cables and wires of different gauges to be easily organized by quick insertion into different housings. The cable holder strip prevents any damage to cable and wire because no hammering force is applied to secure the cables. Cables can be added or replaced easily at anytime by simply cutting the plastic ties on one side of the device. New ties can then be reapplied.

The Cable Holder strip was devised to facilitate a need for safety and efficiency in an industry that continues to increase the amount of cables needed in modern day buildings. The Cable Holder will keeper will keep the job neat, which is very useful in rooms with large amounts of cables to be installed.

STAFF NOTE: The submitter has provided a sample of the Cable Holder Strip mentioned in the proposal. If you would like to examine it, your staff liaison will have access to it during the ROP Meeting in January.

Note: Supporting material is available for review at NFPA Headquarters.

Panel Meeting Action: Reject

Panel Statement: There are many wiring methods on the market that will provide a safe and practical installation. There is no need for the new Article 393 to appear in the NEC. Installers are required to make the installation in a neat and workman like manner, and it is not necessary to have prescriptive text within the NEC to regulate the various installation methods. It appears the submitter is requesting approval of a specific product and this is not the role of NFPA since they are not a product evaluation organization.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

Comment on Affirmative:

SMITH, M.: NFPA and this code panel cannot endorse a specific product for reference in the code. To do so could compromise the integrity of the system in place.

7-70 Log #1737 NEC-P07
(Table 396.10(A))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

Table 396.10(A)

Armored cable Type AC 320

Substantiation: "armored cable" is referred to in several ways: "armored cable" & "type AC "

Suggest that "Type AC " be added to all references. This will make finding all references to "armored cable" easier and more reliable.

[The files that propose this change include AC_250, AC_314, AC_392, AC_404, & AC_668]

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-71 Log #1744 NEC-P07
(Table 396.10(A))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

Table 392.10(A)

Metal-clad cable Type MC 336

Substantiation: "metal clad cable" is referred to in several ways: "metal clad cable" & "type MC"

Suggest that "MC" be added to all references. This will make finding all references to "metal clad cable" easier and more reliable.

[These files form a group for this purpose MC_110, MC_250, MC_250, MC_300, MC_392, MC_396, MC_424, MC_504, MC_551, MC_552, MC_725, MC_800, MC_820, MC_830, MC_840]

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-72 Log #1899 NEC-P07
(Table 396.10(A))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

Table 396.10(A)

Mineral-insulated, metal-sheathed cable Type MI 336

Substantiation: "Mineral-Insulated Metal-Sheathed Cable" is also referred to as "MI" and "Article 332"

Suggest that "MI" be added to all references. This will make finding all references to "Mineral-Insulated Metal-Sheathed Cable" easier and more reliable.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-73 Log #1910 NEC-P07
(Table 396.10(A))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

Table 396.10(A)

Medium-voltage cable Type MV 328

Substantiation: "Medium Voltage Cable" is also referred to as "MV"

Suggest that "MV" be added to all references. This will make finding all references to "Medium Voltage Cable" easier and more reliable.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-74 Log #1914 NEC-P07
(Table 396.10(A))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

Table 396.10(A)

Multiconductor underground feeder and branch-circuit cable Type UF 340

Substantiation: "Underground Feeder and Branch-Cable" is also referred to as "UF"

Suggest that "UF" be added to all references. This will make finding all references to "Underground Feeder and Branch-Cable" easier and more reliable.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-75 Log #2386 NEC-P07
(Table 396.10(A))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Add text to read as follows:

Table 396.10(A)

Power and control tray cable Type TC 336

Substantiation: "Power and Control Tray Cable" is also referred to as "TC"

Suggest that "TC" be added to all references. This will make finding all references to "Power and Control Tray Cable" easier and more reliable.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-76 Log #2874 NEC-P07
(Table 396.10(A))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

Table 396.10(A)

Power-limited tray cable Type PLTC 725.154(C) and 725.179(E)

Substantiation: "Power-Limited Tray Cable" is also referred to as "PLTC" and perhaps as "Metal-Sheathed"

Suggest that "PLTC" be added to all references. This will make finding all references to "Power-Limited Tray Cable" easier and more reliable.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-77 Log #982 NEC-P07
(398.10)

Final Action: Reject

Submitter: James T. Dollard, Jr., IBEW Local Union 98

Recommendation: Replace 600V with 1000V.

Substantiation: This proposal is the work of the “High Voltage Task Group” appointed by the Technical Correlating Committee. The task group consisted of the following members: Alan Peterson, Paul Barnhart, Lanny Floyd, Alan Manche, Donny Cook, Vince Saporita, Roger McDaniel, Stan Folz, Eddie Guidry, Tom Adams, Jim Rogers and Jim Dollard.

The Task Group identified the demand for increasing voltage levels used in wind generation and photovoltaic systems as an area for consideration to enhance existing NEC requirements to address these new common voltage levels. The task group recognized that general requirements in Chapters 1 through 4 need to be modified before identifying and generating proposals to articles such as 690 specific for PV systems. These systems have moved above 600V and are reaching 1000V due to standard configurations and increases in efficiency and performance. The committee reviewed Chapters 1 through 8 and identified areas where the task group agreed that the increase in voltage was of minimal or no impact to the system installation. Additionally, there were requirements that would have had a serious impact and the task group chose not to submit a proposal for changing the voltage. See table (supporting material) that summarizes all sections considered by the TG.

Note: Supporting material is available for review at NFPA Headquarters.

Panel Meeting Action: Reject

Panel Statement: The inclusion of 1000 Volts (or less) in this article without additional consideration of existing dimensions and requirements for guarding, spacing and suitability of equipment and supporting hardware will promote confusion and inconsistency during installation and inspection when such systems are operated at elevated voltage levels. The panel is not aware that associated hardware or apparatus that would be used in such an installation has been evaluated for use at voltages above 600 V. The panel suggests that the submitter approach the task group to editorially define and present supporting documentation for this proposals effect on all areas within Article 398 that an increase in operating voltage above 600V may impact.

Although the panel understands the growing technology that inspired this proposal it does not address the suitability of the present language of article 398 regarding the operation of all associated equipment and devices employed in an installation of “Open Wiring On Insulators”. CMP -7 questions if a limit to 1000 V is adequate. The submitter has not presented statistical data indicating the course that will be taken in the near future regarding these alternative power sources.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Negative: 1

Explanation of Negative:

NIELSEN, D.: Preventing the change from 600 Volts nominal (or less) to 1000 Volts nominal (or less) provides a gap in code requirements between 600 Volts to 1000 Volts for Open wiring on Insulators. Article 399 Outdoor Overhead Conductors over 600 Volts nominal was changed to over 1000 Volts, nominal. The proposed Panel action creates an inconsistency. The present text provides for the protection and support of single insulated conductors run in or on buildings.

7-78 Log #2365 NEC-P07
(398.15(C))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Add text to read as follows:

398.15(C)

(4) Rigid metal conduit, intermediate metal conduit, rigid nonmetallic conduit (RMC), or electrical metallic tubing. When installed in metal piping, the conductors shall be encased in continuous lengths of approved flexible tubing.

Substantiation: "Rigid Metal Conduit" is also referred to as "RMC" "Metallic Conduit"

Suggest that "RMC" be added to all references. This will make finding all references to "Rigid Metal Conduit" easier and more reliable.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-79 Log #1810 NEC-P07
(398.15(C)(4))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

398.15(C)(4) Rigid metal conduit, intermediate metal conduit, rigid nonmetallic conduit, or electrical metallic tubing (EMT). When installed in metal piping, the conductors shall be encased in continuous lengths of approved flexible tubing.

Substantiation: "electrical metallic tubing" is also referred to as "EMT"

Suggest that "EMT" be added to all references. This will make finding all references to "electrical metallic tubing" easier and more reliable.

[The following files are related: 100_EMT, 225_EMT, 230_EMT, 250_EMT, 300_EMT, 334_EMT, 374_EMT, 392_EMT, 398_EMT, 424_EMT, 426_EMT, 427_EMT, 430_EMT, 502_EMT, 503_EMT, 506_EMT, 517_EMT, 520_EMT, 550_EMT, 551_EMT, 552_EMT, 600_EMT, 610_EMT, 620_EMT, 645_EMT, 680_EMT, 695_EMT, 725_EMT, 760_EMT]

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-80 Log #1911 NEC-P07
(398.15(C)(4))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Revise text to read as follows:

398.15(C)(4) Rigid metal conduit, intermediate metal conduit, rigid nonmetallic conduit, or electrical metallic tubing (EMT). When installed in metal piping, the conductors shall be encased in continuous lengths of approved flexible tubing.

Substantiation: "electrical metallic tubing" is also referred to as "EMT"

Suggest that "EMT" be added to all references. This will make finding all references to "electrical metallic tubing" easier and more reliable.

[The following files are related: 100_EMT, 225_EMT, 230_EMT, 250_EMT, 300_EMT, 334_EMT, 374_EMT, 392_EMT, 398_EMT, 424_EMT, 426_EMT, 427_EMT, 430_EMT, 502_EMT, 503_EMT, 506_EMT, 517_EMT, 520_EMT, 550_EMT, 551_EMT, 552_EMT, 600_EMT, 610_EMT, 620_EMT, 645_EMT, 680_EMT, 695_EMT, 725_EMT, 760_EMT]

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-81 Log #2393 NEC-P07
(398.15(C)(4))

Final Action: Reject

Submitter: James F. Williams, Fairmont, WV

Recommendation: Add text to read as follows:

398.15(C)

(4) Rigid metal conduit, intermediate metal conduit (IMC), rigid nonmetallic conduit, or electrical metallic tubing. When installed in metal piping, the conductors shall be encased in continuous lengths of approved flexible tubing.

Substantiation: "Intermediate Metal Conduit" is also referred to as "IMC" "Metallic Conduit"

Suggest that "IMC" be added to all references. This will make finding all references to "Intermediate Metal Conduit" easier and more reliable.

Panel Meeting Action: Reject

Panel Statement: See the panel statement on Proposal 7-41.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-82 Log #1031 NEC-P07
(399 -Title)

Final Action: Accept in Principle

Submitter: James T. Dollard, Jr., IBEW Local 98

Recommendation: Replace 600V with 1000V.

Substantiation: This proposal is the work of the “High Voltage Task Group” appointed by the Technical Correlating Committee. The task group consisted of the following members: Alan Peterson, Paul Barnhart, Lanny Floyd, Alan Manche, Donny Cook, Vince Saporita, Roger McDaniel, Stan Folz, Eddie Guidry, Tom Adams, Jim Rogers and Jim Dollard.

The Task Group identified the demand for increasing voltage levels used in wind generation and photovoltaic systems as an area for consideration to enhance existing NEC requirements to address these new common voltage levels. The task group recognized that general requirements in Chapters 1 through 4 need to be modified before identifying and generating proposals to articles such as 690 specific for PV systems. These systems have moved above 600V and are reaching 1000V due to standard configurations and increases in efficiency and performance. The committee reviewed Chapters 1 through 8 and identified areas where the task group agreed that the increase in voltage was of minimal or no impact to the system installation. Additionally, there were requirements that would have had a serious impact and the task group chose not to submit a proposal for changing the voltage. See table (supporting material) that summarizes all sections considered by the TG.

Note: Supporting material is available for review at NFPA Headquarters.

Panel Meeting Action: Accept in Principle

Revise the submitters text as follows:

Replace 600 with 1000.

Panel Statement: The panel understands the submitter’s intent but revised the text to eliminate the "V".

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Negative: 1

Explanation of Negative:

RAY, J.: It is recognized that increasing from 600V to 1000V may be applicable to specific installations. However, adequate technical substantiation has not been provided to support the change in this Article.

7-83 Log #3085 NEC-P07
(399)

Final Action: Reject

Submitter: Frederic P. Hartwell, Hartwell Electrical Services, Inc.

Recommendation: Delete this article.

Substantiation: This is a companion proposal to one that relocates this material into Part III of Article 225; with editorial changes to accommodate the revised location, but no technical changes were suggested. This material is too limited to constitute a stand-alone article, and it does not cover a wiring method, which leads to the conclusion that it is in the wrong chapter of the Code. This material is long overdue for inclusion in the NEC and the submitter has no problem with the concepts presented. However, it should be incorporated into the existing article of the NEC that not only has extensive coverage of closely related material, is also under the control of a code making panel with exhaustive technical expertise to address to issues presented. Obviously this is up to the Correlating Committee in the end, but this topic is too important to allow the “NIH” concept (“not invented here”) to drive what is in the best interest of the document. It is apparent that much work will be forthcoming in this area, and this is a natural fit for CMP 4.

Panel Meeting Action: Reject

Panel Statement: This article covers a wiring method and therefore is appropriate for CMP 7. However, the panel agrees that the removal of this article and its renumbering is beyond the scope of this panels authority in accordance with The Regulations Governing Committee Projects.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

Comment on Affirmative:

RAY, J.: The panel’s action to reject creates a correlation issue with the action of CMP 4 to the companion Proposal 4-95.

7-84 Log #983 NEC-P07
(399.1)

Final Action: Accept in Principle

Submitter: James T. Dollard, Jr., IBEW Local Union 98

Recommendation: Replace 600V with 1000V.

Substantiation: This proposal is the work of the "High Voltage Task Group" appointed by the Technical Correlating Committee. The task group consisted of the following members: Alan Peterson, Paul Barnhart, Lanny Floyd, Alan Manche, Donny Cook, Vince Saporita, Roger McDaniel, Stan Folz, Eddie Guidry, Tom Adams, Jim Rogers and Jim Dollard.

The Task Group identified the demand for increasing voltage levels used in wind generation and photovoltaic systems as an area for consideration to enhance existing NEC requirements to address these new common voltage levels. The task group recognized that general requirements in Chapters 1 through 4 need to be modified before identifying and generating proposals to articles such as 690 specific for PV systems. These systems have moved above 600V and are reaching 1000V due to standard configurations and increases in efficiency and performance. The committee reviewed Chapters 1 through 8 and identified areas where the task group agreed that the increase in voltage was of minimal or no impact to the system installation. Additionally, there were requirements that would have had a serious impact and the task group chose not to submit a proposal for changing the voltage. See table (supporting material) that summarizes all sections considered by the TG.

Note: Supporting material is available for review at NFPA Headquarters.

Panel Meeting Action: Accept in Principle

Revise the submitters text as follows:

Replace 600 with 1000.

Panel Statement: The panel understands the submitter's intent but revised the text to eliminate the "V".

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Negative: 1

Explanation of Negative:

RAY, J.: It is recognized that increasing from 600V to 1000V may be applicable to specific installations. However, adequate technical substantiation has not been provided to support the change in this Article.

7-85 Log #2115 NEC-P07
(399.2.Outdoor Overhead Conductors)

Final Action: Accept in Principle

Submitter: Dennis A. Nielsen, Lawrence Berkeley National Laboratory

Recommendation: Revise text to read as follows:

399.2 Definition

Outdoor Overhead Conductors. Single conductors, insulated, ~~covered, or bare,~~ exposed in open air installed outdoors on support structures.

Substantiation: The definition should clarify the wiring that is represented by the installation requirements in the rest of the article for transmission and distribution of electrical power to utilization equipment.

Panel Meeting Action: Accept in Principle

Revise the code text to read as follows:

399.2 Definition

Outdoor Overhead Conductors. Single conductors, insulated, covered, or bare, installed outdoors on support structures in free air.

Panel Statement: The panel has revised text using the term "in free air" to be consistent with other sections of the code and the tables.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-86 Log #984 NEC-P07
(399.10)

Final Action: Accept in Principle

Submitter: James T. Dollard, Jr., IBEW Local Union 98

Recommendation: Replace 600V with 1000V.

Substantiation: This proposal is the work of the “High Voltage Task Group” appointed by the Technical Correlating Committee. The task group consisted of the following members: Alan Peterson, Paul Barnhart, Lanny Floyd, Alan Manche, Donny Cook, Vince Saporita, Roger McDaniel, Stan Folz, Eddie Guidry, Tom Adams, Jim Rogers and Jim Dollard.

The Task Group identified the demand for increasing voltage levels used in wind generation and photovoltaic systems as an area for consideration to enhance existing NEC requirements to address these new common voltage levels. The task group recognized that general requirements in Chapters 1 through 4 need to be modified before identifying and generating proposals to articles such as 690 specific for PV systems. These systems have moved above 600V and are reaching 1000V due to standard configurations and increases in efficiency and performance. The committee reviewed Chapters 1 through 8 and identified areas where the task group agreed that the increase in voltage was of minimal or no impact to the system installation. Additionally, there were requirements that would have had a serious impact and the task group chose not to submit a proposal for changing the voltage. See table (supporting material) that summarizes all sections considered by the TG.

Note: Supporting material is available for review at NFPA Headquarters.

Panel Meeting Action: Accept in Principle

Replace 600 with 1000 in two locations in Section 399.10, and replace 600 with 1000 in one location in the informational note following 399.10.

Panel Statement: The panel clarified that two locations in 399.10 needed 600 replaced with 1000 and one location in the informational note.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Negative: 1

Explanation of Negative:

RAY, J.: It is recognized that increasing from 600V to 1000V may be applicable to specific installations. However, adequate technical substantiation has not been provided to support the change in this Article.

7-87 Log #2116 NEC-P07
(399.10)

Final Action: Accept in Part

Submitter: Dennis A. Nielsen, Lawrence Berkeley National Laboratory

Recommendation: Revise text to read as follows:

399.10 Uses Permitted. ~~Outdoor~~ Overhead conductors over 600 Volts, nominal, shall be permitted only for systems rated over 600 volts, nominal, as follows:

- (1) Outdoors in free air
- (2) For service conductors, feeders or branch circuits

Substantiation: The first permitted use specifies Outdoors. The use of the work Outdoors in the preceding sentence is not necessary.

The the added wording "in free air" clarifies the wiring that is represented by the installation requirements in the rest of the article I for transmission and distribution of electrical power to utilization equipment. This also allows clarification for transition to indoors by use of other wireways, raceways, busway conduit systems and their respective installation requirements and appropriate conduction types.

Panel Meeting Action: Accept in Part

Revise the submitters text to read as follows:

399.10 Uses Permitted. Outdoor overhead conductors over 600 Volts, nominal, shall be permitted only for systems rated over 600 volts, nominal, as follows:

- (1) Outdoors in free air
- (2) For service conductors, feeders or branch circuits

Panel Statement: The panel accepts the addition of "in free air" in item (1) to be consistent with the tables. The panel rejects the deletion of the word "Outdoor" in 399.10 Uses Permitted because it does not provide clarity and is consistent with the definitions.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-88 Log #985 NEC-P07
(399.12)

Final Action: Accept in Principle

Submitter: James T. Dollard, Jr., IBEW Local Union 98

Recommendation: Replace 600V with 1000V.

Substantiation: This proposal is the work of the "High Voltage Task Group" appointed by the Technical Correlating Committee. The task group consisted of the following members: Alan Peterson, Paul Barnhart, Lanny Floyd, Alan Manche, Donny Cook, Vince Saporita, Roger McDaniel, Stan Folz, Eddie Guidry, Tom Adams, Jim Rogers and Jim Dollard.

The Task Group identified the demand for increasing voltage levels used in wind generation and photovoltaic systems as an area for consideration to enhance existing NEC requirements to address these new common voltage levels. The task group recognized that general requirements in Chapters 1 through 4 need to be modified before identifying and generating proposals to articles such as 690 specific for PV systems. These systems have moved above 600V and are reaching 1000V due to standard configurations and increases in efficiency and performance. The committee reviewed Chapters 1 through 8 and identified areas where the task group agreed that the increase in voltage was of minimal or no impact to the system installation. Additionally, there were requirements that would have had a serious impact and the task group chose not to submit a proposal for changing the voltage. See table (supporting material) that summarizes all sections considered by the TG.

Note: Supporting material is available for review at NFPA Headquarters.

Panel Meeting Action: Accept in Principle

Panel Statement: See panel action and statement on Proposal 7-84.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Negative: 1

Explanation of Negative:

RAY, J.: It is recognized that increasing from 600V to 1000V may be applicable to specific installations. However, adequate technical substantiation has not been provided to support the change in this Article.

7-89 Log #2117 NEC-P07
(399.12)

Final Action: Reject

Submitter: Dennis A. Nielsen, Lawrence Berkeley National Laboratory

Recommendation: Add text to read as follows:

399.12 Uses not Permitted. Overhead conductors, over 600 Volts, nominal, shall not be permitted to be installed indoors. Conductors installed in raceways, conduits or other wiring methods shall be in accordance with their respective installation requirements.

Substantiation: The commas should be changed from after conductors and before nominal to after nominal as shown. This is consistent with 399.10 Uses Permitted.

The added information clarifies that wiring installed within other systems follow their system requirements and allows the transition to indoors as applicable to the distribution for utilization equipment.

Panel Meeting Action: Reject

Panel Statement: The panel has revised text to include the term "in free air" in Proposal 7-85 and the other wiring methods are covered in other articles.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-90 Log #986 NEC-P07
(399.30)

Final Action: Accept in Principle

Submitter: James T. Dollard, Jr., IBEW Local Union 98

Recommendation: Replace 600V with 1000V.

Substantiation: This proposal is the work of the "High Voltage Task Group" appointed by the Technical Correlating Committee. The task group consisted of the following members: Alan Peterson, Paul Barnhart, Lanny Floyd, Alan Manche, Donny Cook, Vince Saporita, Roger McDaniel, Stan Folz, Eddie Guidry, Tom Adams, Jim Rogers and Jim Dollard.

The Task Group identified the demand for increasing voltage levels used in wind generation and photovoltaic systems as an area for consideration to enhance existing NEC requirements to address these new common voltage levels. The task group recognized that general requirements in Chapters 1 through 4 need to be modified before identifying and generating proposals to articles such as 690 specific for PV systems. These systems have moved above 600V and are reaching 1000V due to standard configurations and increases in efficiency and performance. The committee reviewed Chapters 1 through 8 and identified areas where the task group agreed that the increase in voltage was of minimal or no impact to the system installation. Additionally, there were requirements that would have had a serious impact and the task group chose not to submit a proposal for changing the voltage. See table (supporting material) that summarizes all sections considered by the TG.

Note: Supporting material is available for review at NFPA Headquarters.

Panel Meeting Action: Accept in Principle

Panel Statement: See the panel action and statement on Proposal 7-84.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Negative: 1

Explanation of Negative:

RAY, J.: It is recognized that increasing from 600V to 1000V may be applicable to specific installations. However, adequate technical substantiation has not been provided to support the change in this Article.

7-91 Log #2118 NEC-P07
(399.30)

Final Action: Reject

Submitter: Dennis A. Nielsen, Lawrence Berkeley National Laboratory

Recommendation: Add text to read as follows:

399.30 Support.

(A) Conductors. Documentation of the engineered design by a licensed professional engineer engaged primarily in the design of

such systems for the spacing between conductors shall be available upon request of the authority having jurisdiction and shall

include consideration of the following:

- ! (1) Applied Voltage
- (2) Conductor size
- (3) Distance between support structures
- (4) Type of structure
- (5) Wind/ice loading
- (6) Surge protection
- (7) System Grounding

Substantiation: The added information clarifies that wiring installed as a system for transmission and distribution of electrical power to utilization equipment shall consider system grounding for protection: ungrounded and grounded.

Panel Meeting Action: Reject

Panel Statement: The panel determined that this is not the appropriate section to address system grounding. The panel suggests that per the suggestion of the submitter who is a member of CMP 7, that a system grounding section be developed.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14

7-92 Log #2123 NEC-P07
(399.30)

Final Action: Reject

Submitter: Gregory L. Runyon, American Chemistry Council

Recommendation: Revise text to read as follows:

~~399.30~~ Support:

~~(A) Conductors. Documentation of the engineered design by a licensed professional engineer engaged primarily in the design of such systems for the spacing between conductors shall be available upon request of the authority having jurisdiction and shall include consideration of the following:~~

- ~~(1) Applied voltage~~
- ~~(2) Conductor size~~
- ~~(3) Distance between support structures~~
- ~~(4) Type of structure~~
- ~~(5) Wind/ice loading~~
- ~~(6) Surge protection~~

~~B) Structures. Structures of wood, metal, concrete, or combinations of those materials, shall be provided for support of overhead conductors over 600 volts, nominal. Documentation of the engineered design by a licensed professional engineer engaged primarily in the design of such systems and the installation of each support structure shall be available upon request of the authority having jurisdiction and shall include consideration of the following:~~

- ~~(1) Soil conditions~~
- ~~(2) Foundations and structure settings~~
- ~~(3) Weight of all supported conductors and equipment~~
- ~~(4) Weather loading and other conditions such as but not limited to ice, wind, temperature, and lightning~~
- ~~(5) Angle where change of direction occurs~~
- ~~(6) Spans between adjacent structures~~
- ~~(7) Effect of dead-end structures~~
- ~~(8) Strength of guys and guy anchors~~
- ~~(9) Structure size and material(s)~~
- ~~(10) Hardware~~

~~(C) Insulators. Insulators used to support conductors shall be rated for all of the following:~~

- ~~(1) Applied phase-to-phase voltage~~
- ~~(2) Mechanical strength required for each individual installation~~
- ~~(3) Impulse withstand BIL in accordance with Table 490.24~~

~~Informational Note. 399.30(A), (B), and (C) are not all inclusive lists.~~

Substantiation: The deleted text provides overly restrictive documentation requirements for overhead lines, which do not necessarily improve the safety of the installation. It is unreasonable to require all outdoor overhead lines to be designed by licensed professional engineers. Industrial facilities often use qualified overhead line construction crews to install overhead lines. These lines are installed per utility installation practices or in accordance with industry standards such as the National Electrical Safety Code. The Informational Note must be stricken because it is vague and unenforceable. It leaves the requirements wide open for AHJs to establish additional requirements not included in the Code.

Panel Meeting Action: Reject

Panel Statement: The requirements are provided to assure overhead installations are mechanically and electrically safe.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Negative: 1

Explanation of Negative:

RUNYON, G.: The NEC is not intended to be a design manual, yet we are listing all the details that need to be documented for the design. These systems have been designed and safely installed for years by contractors primarily engaged in these types of systems. There should be no requirement that they be only "designed by a licensed professional engineer". If this section is to remain, the wording should be changed to add "or other qualified persons engaged primarily in the design, installation, or maintenance of such systems."

Comment on Affirmative:

PALMIERI, C.: The panel should continue to reject this proposal. The current requirements are essential to those

individuals to whom responsibility of inspection has been entrusted. A simple affidavit by an engineer certainly is a key requirement to the safe installation and inspection of these systems but documentation of the intricacies which are not specifically addressed in the current language is just as important to assist the installers and AHJ's in the process of installing and commissioning these systems. These overhead outdoor systems are no longer under the exclusive control of large industrial entities or the traditional utility. This emerging work is there for all within the industry to perform and it is anticipated that many may lack the historical experience and benefit of past installations. At present it does not appear to be an excessive burden when one considers the dynamics of this economy. To ask the design engineer to assist in a level of comfort for all involved ensuring the safeguarding of life and property should be considered a small price to pay.

SMITH, M.: Any removal of the items listed in the article could hinder the AHJ's ability to access a proper installation. The majority of the members of CMP-7 agree this information is needed.

7-93 Log #390 NEC-P07
(399.30(A), (B), and (C))

Final Action: Reject

Submitter: Gerald Newton, electrician2.com (National Electrical Resource Center)

Recommendation: Revise text to read as follows:

(A) ~~Conductors Installations~~. Documentation of the engineered design by a licensed professional engineer engaged primarily in the design of such systems ~~for the spacing between conductors~~ shall be available upon request of the authority having jurisdiction. The design shall comply with requirements found in ANSI/IEEE C2-2007, *National Electrical Safety Code*, consideration of the following:

- (1) Applied voltage
- (2) Conductor size
- (3) Distance between support structures
- (4) Type of structure
- (5) Wind/ice loading
- (6) Surge protection

(B) ~~Structures~~. Structures of wood, metal, concrete, or combinations of those materials, shall be provided for support of overhead conductors over 600 volts, nominal. Documentation of the engineered design by a licensed professional engineer engaged primarily in the design of such systems and the installation of each support structure shall be available upon request of the authority having jurisdiction and shall include consideration of the following:

- (1) Soil conditions
- (2) Foundations and structure settings
- (3) Weight of all supported conductors and equipment
- (4) Weather loading and other conditions such as but not limited to ice, wind, temperature, and lightning
- (5) Angle where change of direction occurs
- (6) Spans between adjacent structures
- (7) Effect of dead-end structures
- (8) Strength of guys and guy anchors
- (9) Structure size and material(s)
- (10) Hardware

(C) ~~Insulators~~. Insulators used to support conductors shall be rated for all of the following:

- (1) Applied phase-to-phase voltage
- (2) Mechanical strength required for each individual installation
- (3) Impulse withstand BIL in accordance with Table 490.24

Informational Note: ~~399.30(A), (B), and (C) are not all-inclusive lists.~~

Substantiation: Attempting to provide specifics in the NEC for structures and insulators is of no value since it does not include the complex rules as covered in Part 2 of the National Electrical Safety Code. The scope of the NESC includes rule Section 1. 011.Scope A. as follows:

Section 1. 011.Scope

A. These rules cover supply and communication lines, equipment, and associated work practices employed by a public or private electric supply, communications, railway, or similar utility in the exercise of its function as a utility. They cover similar systems under the control of qualified persons, such as those associated with an industrial complex or utility interactive system.

Panel Meeting Action: Reject

Panel Statement: See panel statement on Proposal 7-92.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 13 Negative: 1

Explanation of Negative:

RUNYON, G.: See my Explanation of Negative Vote on Proposal 7-92.

Comment on Affirmative:

PALMIERI, C.: See my affirmative comment on Proposal 7-92.

7-94 Log #1983 NEC-P07
(399.30(D) (New))

Final Action: Reject

Submitter: Thomas L. Adams, Macomb, IL

Recommendation: Add new text to read as follows:

399.30(D) Clearances from Fire Hydrants. Supporting structures and poles shall have a clearance of not less than 1.22 m (4 ft) from fire hydrants.

Exception: Where conditions do not permit, a clearance of not less than 900 mm (3 ft) shall be permitted.

Substantiation: Clearances from fire hydrants are needed to provide room for the installation of fire hoses. The 4 ft clearance allows the firefighters to install a gate valve unit to one side of a fire hydrant so a second truck can attach without water being turned off to the first truck. The 3 ft clearance allows the attachment of a valve unit, but not with the same capability. Both the 4 ft and 3 ft numbers were taken from a similar requirement in the NESC.

Panel Meeting Action: Reject

Panel Statement: Establishment of clearances about a fire hydrant is not under the purview of the NEC or CMP 7.

Number Eligible to Vote: 14

Ballot Results: Affirmative: 14