Public Input No. 3879-NFPA 70-2023 [Definition: Cable Routing Assembly.]

Cable Routing Assembly.

A single channel or connected multiple channels, as well as associated fittings, forming a structural system that is used to support and route communications wires and cables, optical fiber cables, data cables associated with information technology and communications equipment, Class 2, Class 3, Class 4, and Type PLTC cables, and power-limited fire alarm cables in plenum, riser, and general-purpose applications. (CMP-16)

Statement of Problem and Substantiation for Public Input

Class 4 systems were designed to coexist with all these systems in a raceway. Article 722 governs the installation of Class 4 cables, as well and most of the other cables listed in this definition. Class 4 should have been added for the 2023 code, it was an oversight to not correct this definition when Class 4 was added.

Submitter Information Verification

Submitter Full Name: Chad Jones
Organization: Cisco Systems
Street Address:
City:
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Submittal Date: Wed Sep 06 08:55:32 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7831-NFPA 70-2024
Statement: The term Class 4 is added since Class 4 systems are designed to be installed with the other cables identified in the definition.

Public Input No. 3378-NFPA 70-2023 [Definition: Communications Circuit.]

Communications Circuit.

A metallic, fiber, or wireless circuit that provides voice/data (and associated power) for communications-related services between communications equipment. (CMP-16)

Informational Note: Because communications can be carried over conductors with power, it is possible that a circuit can meet both this definition and the definition for a powering circuit (e.g., Power over Ethernet is also meets the definition of a Class 2 circuit, and a power line communications device may be used on a branch circuit). The addition of data to a powering circuit is not intended to change the treatment of the circuit in this code.

Statement of Problem and Substantiation for Public Input

The removal of the communications service provider from the definition of a communications circuit has made it possible for premises circuits to be both communications circuits and powering circuits. Power over Ethernet (PoE), and Powerline communications (PLC) devices are commonplace, both with sales of well over millions of units per year. These are largely consumer or integrator installed devices, usually connecting devices on premises, such as security systems, cameras, or extending home computer networks. The expansion of the definition of communications circuit creates potential for confusion between these power circuits, treated elsewhere in the code (e.g., chapter 7 for PoE, or chapter 3 for branch circuits with PLC), resulting in possible ignorance or avoidance of the appropriate rules. The informational note adds clarity that it is not the intent to allow the conversion of power circuits to communications circuits.

A related PI makes it clear in chapter 8 that such circuits should be treated according to their appropriate article in the code.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3382-NFPA 70-2023 [New Section after 800.3(H)]	Related Code
Public Input No. 3382-NFPA 70-2023 [New Section after 800.3(H)]	

Submitter Information Verification

Submitter Full Name: George Zimmerman
Organization: CME Consulting, Inc.
Affiliation: self
Street Address:
City:
State:
Zip:
Submittal Date: Fri Sep 01 15:49:52 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7834-NFPA 70-2024

Statement: The informational note adds clarity that the conversion of power circuits to communications circuits is not allowed.

Public Input No. 731-NFPA 70-2023 [Definition: Innerduct.]

~~Innerduct~~ Inner-Duct .

A nonmetallic raceway placed within a larger raceway. (CMP-16)

Statement of Problem and Substantiation for Public Input

"Innerduct" is not found in any dictionary of any English variant, so it is not a word in English. However, major electrical manufacturers do spell it that way. So, it is the responsibility of the electrical industry to inform dictionary publishers that the word "innerduct" exists in English, or else the spelling should be corrected to "inner-duct" in the National Electric Code.

Submitter Information Verification

Submitter Full Name: Conrad Ko
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Wed Apr 26 01:16:06 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The code uses the term “innerduct” which is why it is defined in Article 100. The term “Inner-Duct” is not used within the code and can therefore not be adopted as recommended.

Public Input No. 902-NFPA 70-2023 [Definition: Point of Entrance.]

Point of Entrance.

The point within a building at which ~~the~~ a wire, raceway, or cable emerges from an external wall, from the roof, or ~~from a concrete~~ floor ~~slab~~ . (CMP-16)

Statement of Problem and Substantiation for Public Input

Not all floors are concrete slabs. More importantly, however, this definition needs to be changed because (as of 2023) it no longer applies only to limited-energy systems. This definition now applies in the context of 230.70, so it could be argued that service conductors are now allowed in buildings as long as they are in a raceway. That has been prohibited in the NEC for over 120 years.

Submitter Information Verification

Submitter Full Name: Ryan Jackson
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Affiliation: Steel Tube Institute
Street Address:
City:
State:
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Submittal Date: Sun May 28 11:24:15 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7838-NFPA 70-2024
Statement: The term concrete is removed since not all floors are concrete slabs. The term raceway has not been added to avoid conflict with 800.48, which permits the extension of the point of entrance by using a raceway.

Public Input No. 3878-NFPA 70-2023 [Definition: Raceway, Communications. (Communications Racewa...]

Raceway, Communications. (Communications Raceway)

An enclosed channel of nonmetallic materials designed expressly for holding communications wires and cables; optical fiber cables; data cables associated with information technology and communications equipment; Class 2, Class 3, Class 4, and Type PLTC cables; and power-limited fire alarm cables in plenum, riser, and general-purpose applications. (CMP-16)

Statement of Problem and Substantiation for Public Input

Class 4 systems were designed to coexist with all these systems in a raceway. Article 722 governs the installation of Class 4 cables, as well and most of the other cables listed in this definition. Class 4 should have been added for the 2023 code, it was an oversight to not correct this definition when Class 4 was added.

Submitter Information Verification

Submitter Full Name: Chad Jones
Organization: Cisco Systems
Street Address:
City:
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Zip:
Submittal Date: Wed Sep 06 08:48:20 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7844-NFPA 70-2024
Statement: The term Class 4 is added since Class 4 systems are designed to be installed with the other cables identified in the definition.

Public Input No. 4278-NFPA 70-2023 [New Definition after Definition: Communications Circuit, Pr...]

Communictions, Data (Data Communications): The transfer and reception of information in the form of a digital bitstream or a digitized analog signal transmitted over a point-to-point or point-to-multipoint arrangement. (CMP-16)

Statement of Problem and Substantiation for Public Input

A definition of data communications is needed to define that it is part of the larger term of communications. This definition is also the foundation of several related PIs to reduce ambiguity.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 4281-NFPA 70-2023 [Section No. 800.1]	
Public Input No. 4285-NFPA 70-2023 [Section No. 725.60(A)]	

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: CableSafe, Inc./OFS
Street Address:
City:
State:
Zip:
Submittal Date: Thu Sep 07 09:19:11 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7845-NFPA 70-2024
Statement: A definition of data communications is needed to define that it is part of the larger term of communications.

Public Input No. 3336-NFPA 70-2023 [New Definition after Definition: Communications Equipment.]

Communications Service Point.

The point of connection between the communications service provider's network (Outside Plant) and the premises wiring (Inside Plant). (CMP-XX)

Statement of Problem and Substantiation for Public Input

This public input is a follow up to work performed in the 2023 code cycle by a Task Group chartered by the chair of the NEC AAC to consider correlation issues between chapters 7 and 8. The work is being resubmitted to align with limited energy reorganization recommendations made in this code cycle through new correlating committee Task Groups. By identifying the communications service point, analogous to the electrical service point, the domain of the communications circuits in chapter 8 become more clearly inspectable. The definition of communications circuit in chapter 8 extends service from the communications utility or service provider, which this definition would do. In civilian telecommunications, outside plant refers to all of the physical cabling and supporting infrastructure (such as conduit, cabinets, tower or poles), and any associated hardware (such as repeaters) located between a demarcation point in a switching facility and a demarcation point in another switching center or customer premises. The term "outside plant communications cable" is also used in 805.48 to distinguish cable coming from the service provider. Depending on the type of communications service, the communications point may take several forms, and the requirements for these are detailed in a proposed new section, in a related PI.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3337-NFPA 70-2023 [New Section after 800.44]	

Submitter Information Verification

Submitter Full Name: George Zimmerman
Organization: CME Consulting, Inc.
Affiliation: (self)
Street Address:
City:
State:
Zip:
Submittal Date: Fri Sep 01 13:03:22 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7847-NFPA 70-2024

Statement: The definition has been created to distinguish communications service point from the other service points identified in the code.

Public Input No. 4290-NFPA 70-2023 [New Definition after Definition: Communications Equipment.]

Communications System: The communications equipment, communication circuits and manual and machine operations necessary for the transmission, movement, and reception of information (e.g., voice, audio, video, data). (CMP-16)

Statement of Problem and Substantiation for Public Input

This PI addresses that “communication systems” is not defined within the NEC, but the terms is used within multiple articles, including the title of Article 800.

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: CableSafe, Inc./OFS
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City:
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Submittal Date: Thu Sep 07 09:31:00 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7851-NFPA 70-2024
Statement: The term communication systems has been used in the past to refer to only audio. This definition includes video and data as communication mediums which aligns with its use in the code.

Public Input No. 480-NFPA 70-2023 [New Definition after Definition: Communications Service Pro...]

Communications Utility. An organization, designated or recognized such as by a public service commission or a public utility commission, or recognized as such under federal, state, or local law. (CMP-16)

Statement of Problem and Substantiation for Public Input

Section 90.2(D) Installations Not Covered, exempts some communications equipment installations from the NEC. It states:
90.2(D)(4) Installations of communications equipment under the exclusive control of communications utilities located outdoors or in building spaces used exclusively for such installations.

Unfortunately, communications utility is not defined in the NEC. There is an Informational Note, but that is not enforceable.

The 2020 edition of NFPA 76, Standard for the Fire Protection of Telecommunications Facilities, has a definition of utility:

3.3.19 Utility. An organization, either designated by or recognized by public service commissions or public utility commissions, or recognized as such under federal, state, or local law, that installs, operates, and maintains electric supply or communication systems such as, but not limited to, telephone, wireless, VoIP, CATV, internet, satellite, or data service.

FR-28 for the 2024 edition of NFPA 76 revises that definition:

3.3.20* Utility. An organization, designated or recognized such as by a public service commission or public utility commissions, or recognized as such under federal, state, or local law.

Several Public Comments were submitted to make minor editorial corrections:

3.3.20* Utility. An organization, designated or recognized such as by a public service commission or a public utility commissions, or recognized as such under federal, state, or local law.

In order to correlate with the anticipated definition in NFPA 76-2024, this PI proposes the following definition:

Communications Utility. An organization, designated or recognized such as by a public service commission or a public utility commission, or recognized as such under federal, state, or local law. (CMP-16)

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: Cablesafe, Inc./ofs
Affiliation: Plastics Industry Association (PLASTICS)

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City:
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Zip:
Submittal Date: Fri Mar 17 12:27:36 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7854-NFPA 70-2024

Statement: This new definition further identifies the difference between a communications utility and a communication service provider. This revision also aligns with the definition for utility, in NFPA 76.

Public Input No. 4049-NFPA 70-2023 [New Definition after Definition: Community Antenna Televisi...]

Communications System:

The communications equipment, communication circuits and manual and machine operations necessary for the transmission, movement, and reception of information (e.g., voice, audio, video, data). (CMP-16)

Statement of Problem and Substantiation for Public Input

This PI addresses that “communication systems” is not defined within the NEC, but the terms is used within multiple articles, including the title of Article 800.

Submitter Information Verification

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City:
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Submittal Date: Wed Sep 06 14:57:34 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7851-NFPA 70-2024
Statement: The term communication systems has been used in the past to refer to only audio. This definition includes video and data as communication mediums which aligns with its use in the code.

Public Input No. 4064-NFPA 70-2023 [New Definition after Definition: Data Center, Modular (MDC)...]

Data Communications

The transfer and reception of information in the form of a digital bitstream or a digitized analog signal transmitted over a point-to-point or point-to-multipoint arrangement. (CMP-16)

Statement of Problem and Substantiation for Public Input

A definition of data communications is needed to define that it is part of the larger term of communications. This definition is also the foundation of several additional PIs introduced to reduce ambiguity.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 4068-NFPA 70-2023 [Section No. 800.1]	

Submitter Information Verification

Submitter Full Name: Jeff Silveira
Organization: Bicsi
Street Address:
City:
State:
Zip:
Submittal Date: Wed Sep 06 15:29:42 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7845-NFPA 70-2024
Statement: A definition of data communications is needed to define that it is part of the larger term of communications.

Public Input No. 3329-NFPA 70-2023 [New Definition after Definition: Overcurrent.]

Outside Plant for Communications

Equipment, cables and supporting infrastructure located from the first manhole or pole outside the communications central office or switching center to the network service point at the customer building.

Informational Note 1: Further safety guidance and information on outside plant facilities is found in Parts 2 and 3 of IEEE C2 (NESC) or the California General Orders (e.g., GO 95, GO 128).

Informational Note 2 : Communications facilities supplied by power utilities through metered service points are covered by applicable sections of the NEC.

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx		

Statement of Problem and Substantiation for Public Input

See attached document.

Submitter Information Verification

Submitter Full Name: g. Scott Harding
Organization: F.B. Harding, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Fri Sep 01 09:54:38 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The term is not used in Chapter 8 and per the NFPA manual of style can not be defined.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

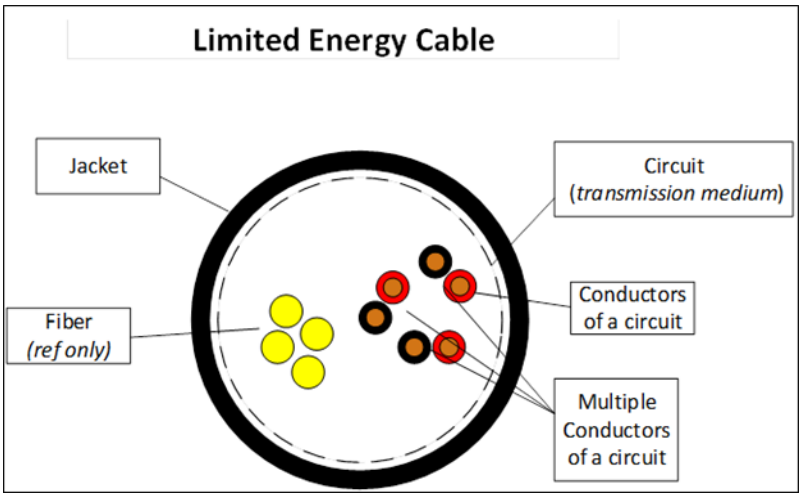
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

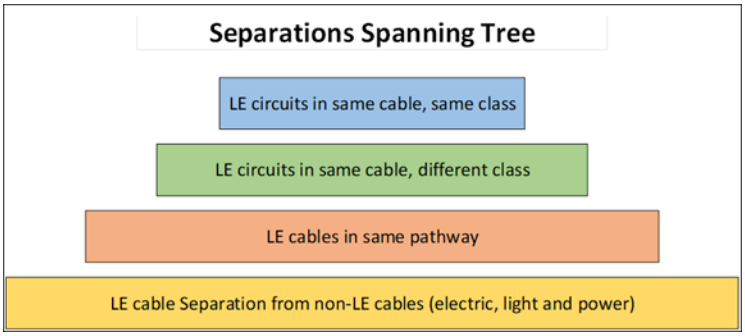
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 4499-NFPA 70-2023 [New Section after 398.104]

Article 3XX Optical Fiber Cables

Part I. General

3XX.1 Scope.

This article covers the installation of optical fiber cables. This article does not cover the construction of optical fiber cables.

3XX.3 Other Articles.

Installations of optical fiber cables shall comply with 700.3(A) through (D). Only those sections of Chapter 2 and Article 300 referenced in this article shall apply to optical fiber cables.

(1) Hazardous (Classified) Locations.

Listed optical fiber cables shall be permitted to be installed in hazardous (classified) locations. The cables shall be sealed in accordance with 501.15, 502.15, or 505.16, as applicable.

(1) Cables in Ducts for Dust, Loose Stock, or Vapor Removal.

The requirements of 300.22(A) for wiring systems shall apply to conductive optical fiber cables.

(1) Hybrid Cables.

Hybrid optical fiber cables shall be classified as electrical cables in accordance with the type of electrical conductors. They shall be constructed, listed, and marked in accordance with the appropriate article for each type of electrical cable.

(1) Vertical Support for Fire-Resistive Cables.

Vertical installations of circuit integrity (CI) cables installed in a raceway or cables of fire-resistive cable systems shall be installed in accordance with their listing.

3XX.21 Access to Electrical Equipment Behind Panels Designed to Allow Access. Access to electrical equipment shall not be denied by an accumulation of optical fiber cables that prevents removal of panels, including suspended ceiling panels.

3XX.24 Mechanical Execution of Work.

(1) General.

Optical fiber cables shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables* , ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises* , and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard* , for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for discrete combustible components installed in accordance with 300.22(C)

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

(1) Circuit Integrity (CI) Cable.

Circuit integrity (CI) cable shall be supported at a distance not exceeding 610 mm (24 in.). Cable shall be secured to the noncombustible surface of the building structure. Cable supports and fasteners shall be steel.

3XX.25 Abandoned Cables.

The accessible portion of abandoned optical fiber cables shall be removed. Where cables are identified for future use with a tag, the tag shall be of sufficient durability to withstand the environment involved.

3XX.26 Spread of Fire or Products of Combustion.

Installations of optical fiber cables and communications raceways in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around penetrations of optical fiber cables and communications raceways through fire-resistant–rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating.

Informational Note: Directories of electrical construction materials published by qualified testing laboratories contain many listing installation restrictions necessary to maintain the fire-resistive rating of assemblies where penetrations or openings are made. Building codes also contain restrictions on membrane penetrations on opposite sides of a fire resistance–rated wall assembly. An example is the 600-mm (24-in.) minimum horizontal separation that usually applies between boxes installed on opposite sides of the wall. Assistance in complying with 770.26 can be found in building codes, fire resistance directories, and product listings.

3XX.27 Temperature Limitation of Optical Fiber Cables.

Optical fiber cable shall not be used in such a manner that its operating temperature exceeds that of its rating.

Part II. Cables Outside and Entering Buildings

3XX.44 Overhead (Aerial) Optical Fiber Cables.

Overhead optical fiber cables containing a non–current-carrying metallic member entering buildings shall comply with 800.44(A) and (B).

(1) On Poles and In-Span.

Where outside plant optical fiber cables and electric light or power conductors are supported by the same pole or are run parallel to each other in-span, the conditions described in 3XX.44(A)(1) through (A)(4) shall be met.

(1) Relative Location.

Where practicable, the outside plant optical fiber cables shall be located below the electric light or power conductors.

(1) Attachment to Cross-Arms.

Attachment of outside plant optical fiber cables to a cross-arm that carries electric light or power conductors shall not be permitted.

(1) Climbing Space.

The climbing space through outside plant optical fiber cables shall comply with the requirements of 225.14(B).

(1) Clearance.

Supply service drops and sets of overhead service conductors of 0 to 750 volts running above and parallel to optical fiber cable service drops shall have a minimum separation of 300 mm (12 in.) at any point in the span, including the point of their attachment to the building. Clearance of not less than 1.0 m (40 in.) shall be maintained between the two services at the pole.

(1) Above Roofs.

Outside plant optical fiber cables shall have a vertical clearance of not less than 2.5 m (8 ft) from all points of roofs above which they pass.

Exception No. 1: The requirement of 3XX.44(B) shall not apply to auxiliary buildings such as garages and the like.

Exception No. 2: A reduction in clearance above only the overhanging portion of the roof to not less than 450 mm (18 in.) shall be permitted if (1) not more than 1.2 m (4 ft) of optical fiber cable service drop cable passes above the roof overhang, and (2) the cable is terminated at a through- or above-the-roof raceway or approved support.

Exception No. 3: Where the roof has a slope of not less than 100 mm in 300 mm (4 in. in 12 in.), a reduction in clearance to not less than 900 mm (3 ft) shall be permitted.

Informational Note: See ANSI/IEEE C2-2017, *National Electric Safety Code, Part 2, Safety Rules for Overhead Lines, for additional information regarding overhead wires and cables.*

3XX.47 Underground Optical Fiber Cables Entering Buildings.

Underground optical fiber cables entering buildings shall comply with 3XX.47(A) and (B).

(1) Underground Systems with Electric Light, Power, Class 1, or Non–Power-Limited Fire Alarm Circuit Conductors.

Underground conductive optical fiber cables entering buildings with electric light, power, Class 1, or non–power-limited fire alarm circuit conductors in a raceway, handhole enclosure, or manhole shall be located in a section separated from such conductors by means of brick, concrete, or tile partitions or by means of a suitable barrier.

(1) Direct-Buried Cables and Raceways.

Direct-buried conductive optical fiber cables shall be separated by at least 300 mm (12 in.) from conductors of any electric light, power, non - power-limited fire alarm circuit conductors, or Class 1 circuit.

Exception No. 1: Separation shall not be required where the electric service conductors are installed in raceways or have metal cable armor.

Exception No. 2: Separation shall not be required where electric light or power branch-circuit or feeder conductors, non-power-limited fire alarm circuit conductors, or Class 1 circuit conductors are installed in a raceway or in metal-sheathed, metal-clad, or Type UF or Type USE cables.

3XX.48 Unlisted Cables Entering Buildings.

(1) Conductive and Nonconductive Cables.

Unlisted conductive and nonconductive outside plant optical fiber cables shall be permitted to be installed in building spaces, other than risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air, where the length of the cable within

the building, measured from its point of entrance, does not exceed 15 m (50 ft) and the cable enters the building from the outside and is terminated in an enclosure.

The point of entrance shall be permitted to be extended from the penetration of the external wall, roof, or floor slab by continuously enclosing the entrance optical fiber cables in rigid metal conduit (RMC) or intermediate metal conduit (IMC) to the point of emergence.

Informational Note: Splice cases or terminal boxes, both metallic and plastic types, typically are used as enclosures for splicing or terminating optical fiber cables.

(1) Nonconductive Cables in Raceway.

Unlisted nonconductive outside plant optical fiber cables shall be permitted to enter the building from the outside and shall be permitted to be installed in any of the following raceways:

(1) Intermediate metal conduit (IMC)

(1) Rigid metal conduit (RMC)

(1) Rigid polyvinyl chloride conduit (PVC)

(1) Electrical metallic tubing (EMT)

Unlisted nonconductive outside plant cables installed in rigid polyvinyl chloride conduit (PVC) or electrical metallic tubing (EMT) shall not be installed in risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air.

3XX.49 Metal Entrance Conduit Grounding.

Metal conduit containing optical fiber entrance cable shall be connected by a bonding conductor or grounding electrode conductor to a grounding electrode or, where present, the building grounding electrode system in accordance with 3XX.100(B).

Part III. Protection

3XX.93 Grounding, Bonding, or Interruption of Non–Current-Carrying Metallic Members of Optical Fiber Cables.

Optical fiber cables entering the building or terminating on the outside of the building shall comply with 3XX.93(A) or (B).

(1) Entering Buildings.

In installations where an optical fiber cable is exposed to contact with electric light or power conductors and the cable enters the building, the non–current-carrying metallic members shall be either grounded or bonded as specified in 3XX.100 or interrupted by an insulating joint or equivalent device. The grounding or interruption shall be as close as practicable to the point of entrance.

(1) Terminating on the Outside of Buildings.

In installations where an optical fiber cable is exposed to contact with electric light or power conductors and the cable is terminated on the outside of the building, the non–current-carrying metallic members shall be either grounded or bonded as specified in3XX.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of termination of the cable.

Part IV. Grounding Methods

3XX.100 Entrance Cable Bonding and Grounding.

If required, the non-current-carrying metallic members of optical fiber cables entering buildings shall be bonded or grounded as specified in 3XX.100(A) through (D).

(1) Bonding Conductor or Grounding Electrode Conductor.

(1) Insulation.

The bonding conductor or grounding electrode conductor shall be listed and shall be permitted to be insulated, covered, or bare.

(1) Material.

The bonding conductor or grounding electrode conductor shall be copper or other corrosion-resistant conductive material, stranded or solid.

(1) Size.

The bonding conductor or grounding electrode conductor shall not be smaller than 14 AWG. It shall have a current-carrying capacity not less than that of the grounded metallic member(s). The bonding conductor or grounding electrode conductor shall not be required to exceed 6 AWG.

(1) Length.

The bonding conductor or grounding electrode conductor shall be as short as practicable. In one- and two-family dwellings, the bonding conductor or grounding electrode conductor shall be as short as practicable not to exceed 6.0 m (20 ft) in length.

Informational Note: Similar bonding conductor or grounding electrode conductor length limitations applied at apartment buildings and commercial buildings help to reduce voltages that may develop between the building's power and communications systems during lightning events.

Exception: In one- and two-family dwellings if it is not practicable to achieve an overall maximum bonding conductor or grounding electrode conductor length of 6.0 m (20 ft), a separate ground rod meeting the minimum dimensional criteria of 3XX.100(B)(3)(2) shall be driven, the grounding electrode conductor shall be connected to the separate ground rod in accordance with 3XX.100(C), and the separate ground rod shall be bonded to the power grounding electrode system in accordance with 3XX.100(D).

(1) Run in Straight Line.

The bonding conductor or grounding electrode conductor shall be run in as straight a line as practicable.

(1) Physical Protection.

Bonding conductors and grounding electrode conductors shall be protected where exposed to physical damage. Where the bonding conductor or grounding electrode conductor is installed in a metal raceway, both ends of the raceway shall be bonded to the contained conductor or to the same terminal or electrode to which the bonding conductor or grounding electrode conductor is connected.

(1) Electrode.

The bonding conductor and grounding electrode conductor shall be connected in accordance with 3XX.100(B)(1), (B)(2), or (B)(3).

(1) In Buildings or Structures with an Intersystem Bonding Termination.

If the building or structure served has an intersystem bonding termination as required by 250.94, the bonding conductor shall be connected to the intersystem bonding termination.

Informational Note: See Informational Note Figure 800.100(B)(1) for an illustration of the application of the bonding conductor in buildings or structures equipped with an intersystem bonding termination.

(1) In Buildings or Structures with Grounding Means.

If an intersystem bonding termination is established, 250.94(A) shall apply.

If the building or structure served has no intersystem bonding termination, the bonding conductor or grounding electrode conductor shall be connected to the nearest accessible location on one of the following:

(1) The building or structure grounding electrode system as covered in 250.50.

(2) The power service accessible means external to enclosures using the options identified in 250.94(A), Exception

(3) The nonflexible metal power service raceway

(4) The service equipment enclosure

(5) The grounding electrode conductor or the grounding electrode conductor metal enclosure of the power service

(6) The grounding electrode conductor or the grounding electrode of a building or structure disconnecting means that is connected to a grounding electrode as covered in 250.32.

(7) The grounded interior metal water piping system, within 1.5m (5 ft) from its point of entrance to the building, as covered in 250.52.

Informational Note: See Informational Note Figure 800.100(B)(2) for an illustration of the application of the bonding conductor in buildings or structures not equipped with an intersystem bonding termination or terminal block providing access to the building grounding electrode system.

(1) In Buildings or Structures Without Intersystem Bonding Termination or Grounding Means.

If the building or structure served has no intersystem bonding termination or grounding means, as described in3XX.100(B)(2), the grounding electrode conductor shall be connected to either of the following:

(1) To any one of the individual grounding electrodes described in 250.52(A)(1), (A)(2), (A)(3), or (A)(4).

(1) If the building or structure served has no grounding means, as described in 770.100(B)(2) or (B)(3)(1), to any one of the individual grounding electrodes described in 250.52(A)(7) and (A)(8) or to a ground rod or pipe not less than 1.5 m (5 ft) in length and 12.7 mm (½ in.) in diameter, driven, where practicable, into permanently damp earth and separated from lightning protection system conductors as covered in 800.53 and at least 1.8 m (6 ft) from electrodes of other systems. Steam, hot water pipes, or lightning protection system conductors shall not be employed as electrodes for non–current-carrying metallic members.

(1) Electrode Connection.

Connections to grounding electrodes shall comply with 250.70.

(1) Bonding of Electrodes.

A bonding jumper not smaller than 6 AWG copper or equivalent shall be connected between the grounding electrode and power grounding electrode system at the building or structure served where separate electrodes are used.

Exception: At mobile homes as covered in 770.106.

Informational Note No. 1: See 250.60 for connection to a lightning protection system.

Informational Note No. 2: Bonding together of all separate electrodes limits potential differences between them and between their associated wiring systems.

3XX.106 Grounding and Bonding of Entrance Cables at Mobile Homes.

(1)

(a) Grounding.

Grounding shall comply with 3XX.106(A)(1) and (A)(2).

(1) Installations Without Mobile Home Service Equipment.

If there is no mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, the non-current-carrying metallic members of optical fiber cables entering the mobile home shall be grounded in accordance with 3XX.100(B)(3).

(1) Installations Without Mobile Home Disconnecting Means.

If there is no mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, the non-current-carrying metallic members of optical fiber cables entering the mobile home shall be grounded in accordance with 3XX.100(B)(3).

(1)

(a) Bonding.

The grounding electrode shall be bonded to the metal frame or available grounding terminal of the mobile home with a copper conductor or other equivalent corrosion-resistant material not smaller than 12 AWG under either of the following conditions:

(1) If there is no mobile home service equipment or disconnecting means as in 3XX.106(A).

(2) If the mobile home is supplied by cord and plug

Part V. Installation Methods Within Buildings

3XX.110 Raceways, Cable Routing Assemblies, and Cable Trays for Optical Fiber Cables.

(1) Types of Raceways.

Optical fiber cables shall be permitted to be installed in any raceway that complies with either 3XX.110(A)(1) or (A)(2).

(1) Raceways Recognized in Chapter 3.

Optical fiber cables shall be permitted to be installed in any raceway included in Chapter 3. The raceways shall be installed in accordance with Chapter 3.

(1) Communications Raceways.

Optical fiber cables shall be permitted to be installed in listed communications raceways selected in accordance with Table 800.154(b).

(1) **Raceway Fill for Optical Fiber Cables.**

Raceway fill for optical fiber cables shall comply with either 3XX.110(B)(1) or (B)(2).

(1)

(a) **Without Electric Light or Power Conductors.**

Where optical fiber cables are installed in raceway without electric light or power conductors, the raceway fill requirements of Chapters 3 and 9 shall not apply.

(1)

(a) **Nonconductive Optical Fiber Cables with Electric Light or Power Conductors.**

Where nonconductive optical fiber cables are installed with electric light or power conductors in a raceway, the raceway fill requirements of Chapters 3 and 9 shall apply.

(1) **Cable Routing Assemblies.**

Optical fiber cables shall be permitted to be installed in listed cable routing assemblies selected in accordance with Table 800.154(c).

(1) **Cable Trays.**

Optical fiber cables shall be permitted to be installed in metal or listed nonmetallic cable tray systems.

3XX.111 Innerduct for Optical Fiber Cables.

Listed plenum communications raceways, listed riser communications raceways, and listed general-purpose communications raceways selected in accordance with Table 800.154(b) shall be permitted to be installed as innerduct in any type of listed raceway permitted in Chapter 3.

3XX.113 Installation of Optical Fiber Cables.

Installation of optical fiber cables shall comply with 3XX.113(A) through (J). Installation of raceways and cable routing assemblies shall comply with 3XX.110.

(1) **Listing.**

Optical fiber cables installed in buildings shall be listed in accordance with 3XX.179 and installed in accordance with the limitations of the listing.

Exception: Optical fiber cables that are installed in compliance with 3XX.48 shall not be required to be listed.

(1) **Ducts Specifically Fabricated for Environmental Air.**

Installations of optical fiber cables in ducts specifically fabricated for environmental air shall be in accordance with 3XX.113(B)(1) and (B)(2).

(1) **Uses Permitted.**

The following cables shall be permitted in ducts specifically fabricated for environmental air as described in 300.22(B) if they are directly associated with the air distribution system:

(1) **Up to 1.22 m (4 ft) of Types OFNP and OFCP**

(1) **Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in raceways that are installed in compliance with 300.22(B).**

Informational Note: For information on fire protection of wiring installed in fabricated ducts, see NFPA 90A-2018, *Standard for the Installation of Air-Conditioning and Ventilating Systems* .

(1) Uses Not Permitted.

Types OFNR, OFCR, OFNG, OFCG, OFN, and OFC shall not be permitted to be installed in ducts specifically fabricated for environmental air as described in 300.22(B).

Informational Note: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for information on fire protection of wiring installed in fabricated ducts.

(1) Other Spaces Used for Environmental Air (Plenums).

Installations of optical fiber cables in other spaces used for environmental air shall be in accordance with 3XX.113(C)(1) and (C)(2).

(1) Uses Permitted.

The following cables shall be permitted in other spaces used for environmental air as described in 300.22(C).

(1) Types OFNP and OFCP.

(1) Types OFNP and OFCP installed in plenum communications raceways.

(1) Types OFNP and OFCP installed in plenum cable routing assemblies.

(1) Types OFNP and OFCP supported by open metal cable tray systems.

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in raceways that are installed in compliance with.

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC supported by solid bottom metal cable trays with solid metal covers in other spaces used for environmental air (plenums), as described in 300.22(C).

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in plenum riser and general-purpose communications raceways supported by solid bottom metal cable trays with solid metal covers in other spaces used for environmental air (plenums), as described in 300.22(C).

(1) Uses Not Permitted.

Types OFNR, OFCR, OFNG, OFCG, OFN, and OFC shall not be permitted to be installed in other spaces used for environmental air (plenums).

Informational Note: See NFPA 90A-2018, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for information on fire protection of wiring installed in other spaces used for environmental air.

(1) Risers — Cables in Vertical Runs.

Installations of optical fiber cables in vertical runs shall be in accordance with 3XX.113(D)(1) and (D)(2).

(1) Uses Permitted.

The following cables shall be permitted in vertical runs penetrating one or more floors and in vertical runs in a shaft:

(1)

(a) Types OFNP, OFCP, OFNR, and OFCR.

(b) Types OFNP, OFCP, OFNR, and OFCR installed in the following:

(1)

(a) Plenum communications raceways

(b) Plenum cable routing assemblies

(c) Riser communications raceways

(d) Riser cable routing assemblies

(1) Uses Not Permitted.

Types OFNG, OFCG, OFN, and OFC shall not be permitted to be installed in vertical runs.

Informational Note: See 3XX.26 for firestop requirements for floor penetrations.

(1) Risers — Cables Permitted in Metal Raceways.

The following cables and innerducts shall be permitted in metal raceways in a riser having firestops at each floor:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(1)

(a) Plenum communications raceways (innerduct)

(b) Riser communications raceways (innerduct)

(c) General-purpose communications raceways (innerduct)

Informational Note: See 3XX.26 for firestop requirements for floor penetrations.

(1) Risers — Cables Permitted in Fireproof Shafts.

The following cables shall be permitted to be installed in fireproof riser shafts having firestops at each floor:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(3)

i. Plenum communications raceways

ii. Plenum cable routing assemblies

iii. Riser communications raceways

iv. Riser cable routing assemblies

v. General-purpose communications raceways

vi. General-purpose cable routing assemblies

Informational Note: See 3XX.26 for firestop requirements for floor penetrations.

(1) **Risers – Cables Permitted in One- and Two-Family Dwellings.**

The following cables shall be permitted in one- and two-family dwellings:

(1) **Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC**

(2) **Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in in the following:**

(3)

i. **Plenum communications raceways**

ii. **Plenum cable routing assemblies**

iii. **Riser communications raceways**

iv. **Riser cable routing assemblies**

v. **General-purpose communications raceways**

vi. **General-purpose cable routing assemblies**

(1) **Cable Trays-Cables Permitted.**

The following cables shall be permitted to be supported by cable trays:

(1) **Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC**

(1) **Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:**

(2) **Plenum communications raceways**

(3) **Riser communications raceways**

(4) **General-purpose communications raceways**

(1) **Distributing Frames and Cross-Connect Arrays-Cables Permitted.**

The following cables shall be permitted to be installed in distributing frames and cross-connect arrays:

(1)

(a)

i.

i. **Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC**

ii. **Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:**

(1)

(a)

i.

i. **Plenum communications raceways**

ii. Plenum cable routing assemblies

iii. Riser communications raceways

iv. Riser cable routing assemblies

v. General-purpose communications raceways

vi. General-purpose cable routing assemblies

(2) Other Building Locations-Cables Permitted.

The following cables shall be permitted to be installed in building locations other than the locations covered in 3XX.113(B) through (I):

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in:

(3) Plenum communications raceways

(4) Plenum cable routing assemblies

(5) Riser communications raceways

(6) Riser cable routing assemblies

(7) General-purpose communications raceways

(8) General-purpose cable routing assemblies

(9) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in a raceway of a type recognized in Chapter 3.

3XX.114 Grounding.

Non-current-carrying conductive members of optical fiber cables shall be bonded to a grounded equipment rack or enclosure or grounded in accordance with the grounding methods specified by 3XX.100(B) using a conductor specified in 3XX.100(A).

3XX.133 Installation of Optical Fibers and Electrical Conductors.

(1) In Cable Trays and Raceways.

Conductive optical fiber cables contained in an armored or metal-clad-type sheath and nonconductive optical fiber cables shall be permitted to occupy the same cable tray or raceway with conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits operating at 1000 volts or less. Conductive optical fiber cables without an armored or metal-clad-type sheath shall not be permitted to occupy the same cable tray or raceway with conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits, unless all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are separated from all of the optical fiber cables by a permanent barrier or listed divider.

(1) In Cabinets, Outlet Boxes, and Similar Enclosures.

Nonconductive optical fiber cables shall not be permitted to occupy the same cabinet, outlet box, panel, or similar enclosure housing the electrical terminations of an electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit unless one or more of the following conditions exist:

(1) **The nonconductive optical fiber cables are functionally associated with the electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit.**

(1) **The conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits operate at 1000 volts or less.**

(1) **The nonconductive optical fiber cables and the electrical terminations of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit are installed in factory- or field-assembled control centers.**

(1) **The nonconductive optical fiber cables are installed in an industrial establishment where conditions of maintenance and supervision ensure that only qualified persons service the installation.**

When optical fibers are within the same hybrid cable for electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits operating at 1000 volts or less, they shall be permitted to be installed only where the functions of the optical fibers and the electrical conductors are associated.

Optical fibers in hybrid optical fiber cables containing only current-carrying conductors for electric light, power, or Class 1 circuits rated 1000 volts or less shall be permitted to occupy the same cabinet, cable tray, outlet box, panel, raceway, or other termination enclosure with conductors for electric light, power, or Class 1 circuits operating at 1000 volts or less.

Optical fibers in hybrid optical fiber cables containing current-carrying conductors for electric light, power, or Class 1 circuits rated over 1000 volts shall be permitted to occupy the same cabinet, cable tray, outlet box, panel, raceway, or other termination enclosure with conductors for electric light, power, or Class 1 circuits in industrial establishments, where conditions of maintenance and supervision ensure that only qualified persons service the installation.

(1) **With Other Circuits.**

Conductive and nonconductive optical fiber cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly, with conductors of any of the following:

(1) **Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with 645.5(E)(2) or Parts I and II of Article 725.**

(2) **Power-limited fire alarm systems in compliance with Parts I and III of Article 760.**

(3) **Communications circuits in compliance with Parts I and V of Article 805.**

(4) **Community antenna television and radio distribution systems in compliance with Parts I and V of Article 820.**

(5) **Low-power network-powered broadband communications circuits in compliance with Parts I and V of Article 830.**

(1) **Support of Optical Fiber Cables.**

Raceways shall be used for their intended purpose. Optical fiber cables shall not be strapped, taped, or attached by any means to the exterior of any conduit or raceway as a means of support.

Exception: Overhead (aerial) spans of optical fiber cables shall be permitted to be attached to the exterior of a raceway-type mast intended for the attachment and support of such cables.

3XX.154 Applications of Listed Optical Fiber Cables.

Permitted and nonpermitted applications of listed optical fiber cables shall be as indicated in Table 3XX.154(a). The permitted applications shall be subject to the installation requirements of 3XX.110 and 3XX.113. The substitutions for optical fiber cables in Table 3XX.154(b) and illustrated in Figure 3XX.154 shall be permitted.

Table 3XX.154(a) Applications of Listed Optical Fiber Cables in Buildings

Applications		Listed Optical Fiber Cable Type		
		OFNP OFCP	OFNR OFCR	OFNG OFCG OFN OFC
In ducts specifically fabricated for environmental air as described in 300.22(B)	In fabricated ducts	Y*	N	N
	In metal raceway that complies with 300.22(B)	Y*	Y*	Y*
In other spaces used for environmental air (plenums) as described in 300.22(C)	In other spaces used for environmental air	Y*	N	N
	In metal raceway that complies with 300.22(C)	Y*	Y*	Y*
	In plenum communications raceway	Y*	N	N
	In plenum cable routing assemblies	Y*	N	N
	Supported by open metal cable trays	Y*	N	N
	Supported by solid bottom metal cable trays with solid metal covers	Y*	Y*	Y*
In risers	In vertical runs	Y*	Y*	N
	In metal raceways	Y*	Y*	Y*
	In fireproof shafts	Y*	Y*	Y*
	In plenum communications raceway	Y*	Y*	N
	In plenum cable routing assemblies	Y*	Y*	N
	In riser communications	Y*	Y*	N

	raceways			
	In riser cable routing assemblies	Y*	Y*	N
	In one- and two-family dwellings	Y*	Y*	Y*
Within buildings in other than air-handling spaces and risers	General	Y*	Y*	Y*
	Supported by cable trays	Y*	Y*	Y*
	In distributing frames and cross-connect arrays	Y*	Y*	Y*
	In any raceways recognized by Chapter 3	Y*	Y*	Y*
	In plenum communications raceway	Y*	Y*	Y*
	In plenum cable routing assemblies	Y*	Y*	Y*
	In riser communications raceways	Y*	Y*	Y*
	In riser cable routing assemblies	Y*	Y*	Y*
	In general-purpose communications raceways	Y*	Y*	Y*
	In general-purpose cable routing assemblies	Y*	Y*	Y*

Note: "N" indicates that the cable type shall not be permitted to be installed in the application. "Y*" indicates that the cable type shall be permitted to be installed in the application subject to the limitations described in 770.110 and 770.113.

Informational Note No. 1: Part V of Article 770 covers installation methods within buildings. This table covers the applications of listed optical fiber cables in buildings. The definition of *Point of Entrance* is in 770.2.

Informational Note No. 2: For information on the restrictions to the installation of optical fiber cables in ducts specifically fabricated for environmental air, see 770.113(B).

Table 3XX.154(b) Cable Substitutions	
Cable Type	Permitted Substitutions
OFNP	None

OFCP	OFNP
OFNR	OFNP
OFCR	OFNP, OFCP, OFNR
OFNG, OFN	OFNP, OFNR
OFCG, OFC	OFNP, OFCP, OFNR, OFCR, OFNG, OGN

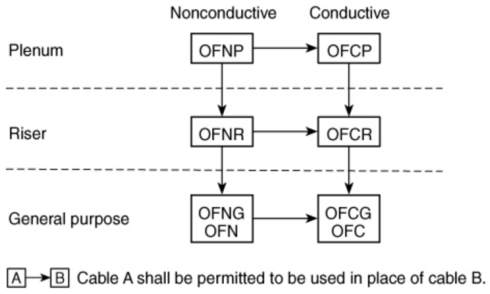


Figure 3XX.154 Cable Substitution Hierarchy

Part VI. Listing Requirements

3XX.179 Optical Fiber Cables.

Optical fiber cables shall be listed and identified in accordance with 3XX.179(A) through (G) and shall be marked in accordance with Table 3XX.179. Optical fiber cables shall have a temperature rating of not less than 60°C (140°F). The temperature rating shall be marked on the jacket of optical fiber cables that have a temperature rating exceeding 60°C (140°F).

Informational Note: See UL 1651-2015, *Standard for Optical Fiber Cable, for information on optical fiber cables.*

Table 3XX.179 Cable Markings	
Cable Marking	Type
OFNP	Nonconductive optical fiber cable
OFCP	Conductive optical fiber cable
OFNR	Nonconductive optical fiber riser cable
OFCR	Conductive optical fiber riser cable
OFNG	Nonconductive optical fiber for general-purpose
OFCG	Conductive optical fiber general-purpose cable
OFN	Nonconductive optical fiber general-purpose cable
OFC	Conductive optical fiber general-purpose cable

(1)

(a)

i.

i.

i. **Types OFNP and OFCP.**

Types OFNP and OFCP nonconductive and conductive optical fiber plenum cables shall be suitable for use in ducts, plenums, and other space used for environmental air and shall also have adequate fire-resistant and low-smoke-producing characteristics.

Informational Note: See NFPA 262-2019, *Standard Methods of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces, for one* method of defining that a cable has adequate fire-resistant and low-smoke-producing characteristics where the cable exhibits a maximum peak optical density of 0.50 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.52 m (5 ft) or less.

(1)

(a)

i.

i.

i. **Types OFNR and OFCR.**

Types OFNR and OFCR nonconductive and conductive optical fiber riser cables shall be suitable for use in a vertical run in a shaft or from floor to floor and shall also have the fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

Informational Note: See ANSI/UL 1666-2017, *Standard Test for Flame Propagation Height of Electrical and Optical-Fiber Cable Installed Vertically in Shafts, for one method of defining fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.*

(1)

(a)

i.

i.

i. **Types OFNG and OFCG.**

Types OFNG and OFCG nonconductive and conductive general-purpose optical fiber cables shall be suitable for general-purpose use, with the exception of risers and plenums, and shall also be resistant to the spread of fire.

Informational Note No. 1: See CSA Vertical Flame Test – Cables in Cable Trays, as described in CSA C22.2 No. 0.3-2009 (R2019), *Test Methods for Electrical Wires and Cables*, for one method of defining *resistant to the spread of fire* for the damage (char length) not to exceed 1.5 m (4 ft 11 in.) when performing the test.

Informational Note No. 2: See ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray-Fire-Prorogation and Smoke-Release Test for Electrical and Optical-Fiber Cables*, for another method of defining *resistant to the spread of fire* where the cables do not spread fire to the top of the tray in the UL flame exposure, vertical tray flame test. The smoke measurements in the test method are not applicable.

(1)

(a)

i.

i.

i. **Types OFN and OFC.**

Types OFN and OFC nonconductive and conductive optical fiber cables shall be suitable for general-purpose use, with the exception of risers, plenums, and other spaces used for environmental air, and shall also be resistant to the spread of fire.

Informational Note No. 1: See ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray-Fire-Prorogation and Smoke-Release Test for Electrical and Optical-Fiber Cables*, for another method of defining *resistant to the spread of fire* where the cables do not spread fire to the top of the tray in the UL flame exposure, vertical tray flame test. The smoke measurements in the test method are not applicable.

Informational Note No. 1: See CSA Vertical Flame Test – Cables in Cable Trays, as described in CSA C22.2 No. 0.3-2009 (R2019), *Test Methods for Electrical Wires and Cables*, for one method of defining *resistant to the spread of fire* for the damage (char length) not to exceed 1.5 m (4 ft 11 in.) when performing the test.

Informational Note No. 3: Cable types are listed in descending order of fire resistance rating. Within each fire resistance rating, nonconductive cable is listed first because it is often substituted for conductive cable.

(1)

(a)

i.

i.

i.

i. Circuit Integrity (CI), Fire-Resistive Cable System, or Electrical Circuit Protective System.

Cables that are used for survivability of critical circuits under fire conditions shall meet either 3XX.179(E)(1), (E)(2), or (E)(3).

(1) Circuit Integrity (CI) Cables.

Cables specified in 3XX.179(A) through (D), and used for survivability of critical circuits, shall be marked with the additional classification using the suffix "CI." In order to maintain its listed fire rating, CI cable shall only be installed in free air in accordance with 3XX.24. CI cables shall only be permitted to be installed in a raceways where specifically listed and marked as part of a fire-resistant cable system as covered in 3XX.179(E)(2).

Informational Note: See UL 2196, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power Instrumentation, Control and Data Cables*, for one method of defining CI cable for establishing a minimum 2-hour fire resistance rating for the cable as specified in UL 1651, *Optical Fiber Cable.* UL *Guide Information for Optical Cable Fiber (QAYK)* contains information to maintain the fire-resistive rating.

(1) Fire-Resistive Cables.

Cables specified in 3XX.179(A) through (D) and 3XX.179(E)(1) that are part of an electrical circuit protective system shall be fire-resistive cable and identified with the protective system number on the product or on the smallest unit container in which the product is packaged and installed in accordance with the listing of the protective system.

Informational Note: See UL, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for one method of defining an electrical circuit protective system for establishing a rating for the system. UL *Guide Information for Electrical*

Circuit Integrity Systems (FHIT) **contains information to identify the system and its installation limitations to maintain a minimum fire-resistive rating.**

(1)

(a)

i.

i.

i.

i. Field-Assembled Optical Fiber Cables.

Field-assembled optical fiber cable shall comply with the following:

(1) The specific combination of jacket and optical fibers intended to be installed as a field-assembled optical fiber cable shall be one of the types in 3XX.179(A), (B), or (D) and shall be marked in accordance with Table 3XX.179.

(1) The jacket of a field-assembled optical fiber cable shall have a surface marking indicating the specific optical fibers with which it is identified for use.

(1) The optical fibers shall have a permanent marking, such as a marker tape, indicating the jacket with which they are identified for use.

(1) The jacket without fibers shall meet the listing requirements for communications raceways in 800.182(A), (B), or (C) in accordance with the cable marking.

(1)

(a)

i.

i.

i.

i. Optional Markings.

Cables shall be permitted to be surface marked to indicate special characteristics of the cable materials.

Informational Note: These markings can include, but are not limited to, markings for limited-smoke halogen-free, low-smoke halogen-free, and sunlight resistance.

3XX.180 Grounding Devices.

Where bonding or grounding is required, devices used to connect a shield, a sheath, or non–current-carrying metallic members of a cable to a bonding conductor or grounding electrode conductor shall be listed or be part of listed equipment.

Statement of Problem and Substantiation for Public Input

Chapter 7 is for Special Conditions, Article 770 currently pertains to Fiber Optic Cable this is a wiring method, as such a more appropriate location is somewhere in chapter 3.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1704-NFPA 70-2023 [Article 770]	

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: The installation of optical fiber cable is not a wiring method and does not belong in Chapter 3.

Public Input No. 1704-NFPA 70-2023 [Article 770]

~~**Article 770** Optical Fiber Cables~~

~~**Part I.** General~~

~~**770.1** Scope.~~

~~This article covers the installation of optical fiber cables. This article does not cover the construction of optical fiber cables.~~

~~**770.3** Other Articles.~~

~~Installations of optical fiber cables shall comply with 770.3(A) through (D). Only those sections of Chapter 2 and Article 300 referenced in this article shall apply to optical fiber cables.~~

~~**(A)** Hazardous (Classified) Locations.~~

~~Listed optical fiber cables shall be permitted to be installed in hazardous (classified) locations. The cables shall be sealed in accordance with 501.15 , 502.15 , 505.16 , or 506.16 , as applicable.~~

~~**(B)** Cables in Ducts for Dust, Loose Stock, or Vapor Removal.~~

~~The requirements of 300.22(A) for wiring systems shall apply to conductive optical fiber cables.~~

~~**(C)** Hybrid Cables.~~

~~Hybrid optical fiber cables shall be classified as electrical cables in accordance with the type of electrical conductors. They shall be constructed, listed, and marked in accordance with the appropriate article for each type of electrical cable.~~

~~**(D)** Vertical Support for Fire-Resistive Cables.~~

~~Vertical installations of circuit integrity (CI) cables installed in a raceway or cables of fire-resistive cable systems shall be installed in accordance with their listing.~~

~~**770.21** Access to Electrical Equipment Behind Panels Designed to Allow Access.~~

~~Access to electrical equipment shall not be denied by an accumulation of optical fiber cables that prevents removal of panels, including suspended ceiling panels.~~

~~**770.24** Mechanical Execution of Work.~~

(A) General.

Optical fiber cables shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11 . Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170 .

Informational Note No. 1: See ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables* , ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises* , and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard* , for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for discrete combustible components installed in accordance with 300.22(C) .

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

(B) Circuit Integrity (CI) Cable.

Circuit integrity (CI) cable shall be supported at a distance not exceeding 610 mm (24 in.).Cable shall be secured to the noncombustible surface of the building structure. Cable supports and fasteners shall be steel.

770.25 Abandoned Cables.

The accessible portion of abandoned optical fiber cables shall be removed. Where cables are identified for future use with a tag, the tag shall be of sufficient durability to withstand the environment involved.

770.26 Spread of Fire or Products of Combustion.

Installations of optical fiber cables and communications raceways in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around penetrations of optical fiber cables and communications raceways through fire-resistant–rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating.

Informational Note: Directories of electrical construction materials published by qualified testing laboratories contain many listing installation restrictions necessary to maintain the fire-resistive rating of assemblies where penetrations or openings are made. Building codes also contain restrictions on membrane penetrations on opposite sides of a fire resistance–rated wall assembly. An example is the 600-mm (24-in.) minimum horizontal separation that usually applies between boxes installed on opposite sides of the wall. Assistance in complying with 770.26 can be found in building codes, fire resistance directories, and product listings.

770.27 Temperature Limitation of Optical Fiber Cables.

Optical fiber cable shall not be used in such a manner that its operating temperature exceeds that of its rating.

Part II. Cables Outside and Entering Buildings

770.44 Overhead (Aerial) Optical Fiber Cables.

Overhead optical fiber cables containing a non–current-carrying metallic member entering buildings shall comply with 800.44(A) and (B).

(A) On Poles and In-Span.

Where outside plant optical fiber cables and electric light or power conductors are supported by the same pole or are run parallel to each other in-span, the conditions described in 770.44(A)(1) through (A)(4) shall be met.

(1) Relative Location.

Where practicable, the outside plant optical fiber cables shall be located below the electric light or power conductors.

(2) Attachment to Cross-Arms.

Attachment of outside plant optical fiber cables to a cross-arm that carries electric light or power conductors shall not be permitted.

(3) Climbing Space.

The climbing space through outside plant optical fiber cables shall comply with the requirements of 225.14(B).

(4) Clearance.

Supply service drops and sets of overhead service conductors of 0 to 750 volts running above and parallel to optical fiber cable service drops shall have a minimum separation of 300 mm (12 in.) at any point in the span, including the point of their attachment to the building. Clearance of not less than 1.0 m (40 in.) shall be maintained between the two services at the pole.

(B) Above Roofs.

Outside plant optical fiber cables shall have a vertical clearance of not less than 2.5 m (8 ft) from all points of roofs above which they pass.

Exception No. 1: The requirement of 770.44(B) shall not apply to auxiliary buildings such as garages and the like.

Exception No. 2: A reduction in clearance above only the overhanging portion of the roof to not less than 450 mm (18 in.) shall be permitted if (1) not more than 1.2 m (4 ft) of optical fiber cable service drop cable passes above the roof overhang, and (2) the cable is terminated at a through- or above-the-roof raceway or approved support.

Exception No. 3: Where the roof has a slope of not less than 100 mm in 300 mm (4 in. in 12 in.), a reduction in clearance to not less than 900 mm (3 ft) shall be permitted.

Informational Note: See ANSI/IEEE C2-2017, *National Electric Safety Code, Part 2, Safety Rules for Overhead Lines*, for additional information regarding overhead wires and cables.

770.47 Underground Optical Fiber Cables Entering Buildings.

Underground optical fiber cables entering buildings shall comply with 770.47(A) and (B).

(A) Underground Systems with Electric Light, Power, Class 1, or Non–Power-Limited Fire Alarm Circuit Conductors.

Underground conductive optical fiber cables entering buildings with electric light, power, Class 1, or non–power-limited fire alarm circuit conductors in a raceway, handhole enclosure, or manhole shall be located in a section separated from such conductors by means of brick, concrete, or tile partitions or by means of a suitable barrier.

(B) Direct-Buried Cables and Raceways.

Direct-buried conductive optical fiber cables shall be separated by at least 300 mm (12 in.) from conductors of any electric light, power, non-power-limited fire alarm circuit conductors, or Class 1 circuit.

Exception No. 1: Separation shall not be required where the electric service conductors are installed in raceways or have metal cable armor.

Exception No. 2: Separation shall not be required where electric light or power branch-circuit or feeder conductors, non-power-limited fire alarm circuit conductors, or Class 1 circuit conductors are installed in a raceway or in metal-sheathed, metal-clad, or Type UF or Type USE cables.

770.48 Unlisted Cables Entering Buildings.

(A) Conductive and Nonconductive Cables.

Unlisted conductive and nonconductive outside plant optical fiber cables shall be permitted to be installed in building spaces, other than risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air, where the length of the cable within the building, measured from its point of entrance, does not exceed 15 m (50 ft) and the cable enters the building from the outside and is terminated in an enclosure.

The point of entrance shall be permitted to be extended from the penetration of the external wall, roof, or floor slab by continuously enclosing the entrance optical fiber cables in rigid metal conduit (RMC) or intermediate metal conduit (IMC) to the point of emergence.

Informational Note: Splice cases or terminal boxes, both metallic and plastic types, typically are used as enclosures for splicing or terminating optical fiber cables.

(B) Nonconductive Cables in Raceway.

Unlisted nonconductive outside plant optical fiber cables shall be permitted to enter the building from the outside and shall be permitted to be installed in any of the following raceways:

(1) Intermediate metal conduit (IMC)

(2) Rigid metal conduit (RMC)

(3) Rigid polyvinyl chloride conduit (PVC)

(4) Electrical metallic tubing (EMT)

Unlisted nonconductive outside plant cables installed in rigid polyvinyl chloride conduit (PVC) or electrical metallic tubing (EMT) shall not be installed in risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air.

770.49 Metal Entrance Conduit Grounding.

Metal conduit containing optical fiber entrance cable shall be connected by a bonding conductor or grounding electrode conductor to a grounding electrode or, where present, the building grounding electrode system in accordance with 770.100(B) .

Part III. Protection

770.93 Grounding, Bonding, or Interruption of Non–Current-Carrying Metallic Members of Optical Fiber Cables.

Optical fiber cables entering the building or terminating on the outside of the building shall comply with 770.93(A) or (B).

(A) Entering Buildings.

In installations where an optical fiber cable is exposed to contact with electric light or power conductors and the cable enters the building, the non–current-carrying metallic members shall be either grounded or bonded as specified in 770.100 or interrupted by an insulating joint or equivalent device. The grounding or interruption shall be as close as practicable to the point of entrance.

(B) Terminating on the Outside of Buildings.

In installations where an optical fiber cable is exposed to contact with electric light or power conductors and the cable is terminated on the outside of the building, the non–current-carrying metallic members shall be either grounded or bonded as specified in 770.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of termination of the cable.

Part IV. Grounding Methods

770.100 Entrance Cable Bonding and Grounding.

If required, the non-current-carrying metallic members of optical fiber cables entering buildings shall be bonded or grounded as specified in 770.100(A) through (D).

(A) Bonding Conductor or Grounding Electrode Conductor.

(1) Insulation.

The bonding conductor or grounding electrode conductor shall be listed and shall be permitted to be insulated, covered, or bare.

(2) Material.

The bonding conductor or grounding electrode conductor shall be copper or other corrosion-resistant conductive material, stranded or solid.

(3) Size.

The bonding conductor or grounding electrode conductor shall not be smaller than 14 AWG. It shall have a current-carrying capacity not less than that of the grounded metallic member(s). The bonding conductor or grounding electrode conductor shall not be required to exceed 6 AWG.

(4) Length.

The bonding conductor or grounding electrode conductor shall be as short as practicable. In one- and two-family dwellings, the bonding conductor or grounding electrode conductor shall be as short as practicable not to exceed 6.0 m (20 ft) in length.

Informational Note: Similar bonding conductor or grounding electrode conductor length limitations applied at apartment buildings and commercial buildings help to reduce voltages that may develop between the building's power and communications systems during lightning events.

Exception: In one- and two-family dwellings if it is not practicable to achieve an overall maximum bonding conductor or grounding electrode conductor length of 6.0 m (20 ft), a separate ground rod meeting the minimum dimensional criteria of 770.100(B)(3)(2) shall be driven, the grounding electrode conductor shall be connected to the separate ground rod in accordance with 770.100(C) , and the separate ground rod shall be bonded to the power grounding electrode system in accordance with 770.100(D) .

(5) Run in Straight Line.

The bonding conductor or grounding electrode conductor shall be run in as straight a line as practicable.

(6) Physical Protection.

Bonding conductors and grounding electrode conductors shall be protected where exposed to physical damage. Where the bonding conductor or grounding electrode conductor is installed in a metal raceway, both ends of the raceway shall be bonded to the contained conductor or to the same terminal or electrode to which the bonding conductor or grounding electrode conductor is connected.

(B) Electrode.

The bonding conductor and grounding electrode conductor shall be connected in accordance with 770.100(B)(1) , (B)(2), or (B)(3).

(1) In Buildings or Structures with an Intersystem Bonding Termination.

If the building or structure served has an intersystem bonding termination as required by 250.94 , the bonding conductor shall be connected to the intersystem bonding termination.

Informational Note: See Informational Note Figure 800.100(B)(1) for an illustration of the application of the bonding conductor in buildings or structures equipped with an intersystem bonding termination.

(2) In Buildings or Structures with Grounding Means.

If an intersystem bonding termination is established, 250.94(A) shall apply.

If the building or structure served has no intersystem bonding termination, the bonding conductor or grounding electrode conductor shall be connected to the nearest accessible location on one of the following:

(1) The building or structure grounding electrode system as covered in 250.50

(2) The power service accessible means external to enclosures using the options identified in 250.94(A) , Exception

(3) The nonflexible metal power service raceway

(4) The service equipment enclosure

(5) The grounding electrode conductor or the grounding electrode conductor metal enclosure of the power service

(6) The grounding electrode conductor or the grounding electrode of a building or structure disconnecting means that is connected to a grounding electrode as covered in 250.32

(7) The grounded interior metal water piping system, within 1.5 m (5 ft) from its point of entrance to the building, as covered in 250.52

Informational Note: See Informational Note Figure 800.100(B)(2) for an illustration of the application of the bonding conductor in buildings or structures not equipped with an intersystem bonding termination or terminal block providing access to the building grounding electrode system.

(3) In Buildings or Structures Without Intersystem Bonding Termination or Grounding Means.

If the building or structure served has no intersystem bonding termination or grounding means, as described in 770.100(B)(2) , the grounding electrode conductor shall be connected to either of the following:

(1) To any one of the individual grounding electrodes described in 250.52(A)(1) , (A)(2), (A)(3), or (A)(4).

(2) If the building or structure served has no grounding means, as described in 770.100(B)(2) or (B)(3)(1), to any one of the individual grounding electrodes described in 250.52(A)(7) and (A)(8) or to a ground rod or pipe not less than 1.5 m (5 ft) in length and 12.7 mm (**1** ⁄ **2** in.) in diameter, driven, where practicable, into permanently damp earth and separated from lightning protection system conductors as covered in 800.53 and at least 1.8 m (6 ft) from electrodes of other systems. Steam, hot water pipes, or lightning protection system conductors shall not be employed as electrodes for non–current-carrying metallic members.

(C) Electrode Connection.

Connections to grounding electrodes shall comply with 250.70 .

(D) Bonding of Electrodes.

A bonding jumper not smaller than 6 AWG copper or equivalent shall be connected between the grounding electrode and power grounding electrode system at the building or structure served where separate electrodes are used.

Exception: At mobile homes as covered in 770.106 .

Informational Note No. 1: See 250.60 for connection to a lightning protection system.

Informational Note No. 2: Bonding together of all separate electrodes limits potential differences between them and between their associated wiring systems.

770.106 Grounding and Bonding of Entrance Cables at Mobile Homes.

(A) Grounding.

Grounding shall comply with 770.106(A)(1) and (A)(2).

(1) Installations Without Mobile Home Service Equipment.

If there is no mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, the non-current-carrying metallic members of optical fiber cables entering the mobile home shall be grounded in accordance with 770.100(B)(3).

(2) Installations Without Mobile Home Disconnecting Means.

If there is no mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, the non-current-carrying metallic members of optical fiber cables entering the mobile home shall be grounded in accordance with 770.100(B)(3).

(B) Bonding.

The grounding electrode shall be bonded to the metal frame or available grounding terminal of the mobile home with a copper conductor or other equivalent corrosion-resistant material not smaller than 12 AWG under either of the following conditions:

(1) If there is no mobile home service equipment or disconnecting means as in 770.106(A)

(2) If the mobile home is supplied by cord and plug

Part V. Installation Methods Within Buildings

770.110 Raceways, Cable Routing Assemblies, and Cable Trays for Optical Fiber Cables.

(A) Types of Raceways.

Optical fiber cables shall be permitted to be installed in any raceway that complies with either 770.110(A)(1) or (A)(2).

(1) Raceways Recognized in Chapter 3.

Optical fiber cables shall be permitted to be installed in any raceway included in Chapter 3. The raceways shall be installed in accordance with Chapter 3.

(2) Communications Raceways.

Optical fiber cables shall be permitted to be installed in listed communications raceways selected in accordance with Table 800.154(b).

(B) Raceway Fill for Optical Fiber Cables.

Raceway fill for optical fiber cables shall comply with either 770.110(B)(1) or (B)(2).

(1) Without Electric Light or Power Conductors.

Where optical fiber cables are installed in raceway without electric light or power conductors, the raceway fill requirements of Chapters 3 and 9 shall not apply.

(2) Nonconductive Optical Fiber Cables with Electric Light or Power Conductors.

Where nonconductive optical fiber cables are installed with electric light or power conductors in a raceway, the raceway fill requirements of Chapters 3 and 9 shall apply.

(C) Cable Routing Assemblies.

Optical fiber cables shall be permitted to be installed in listed cable routing assemblies selected in accordance with Table 800.154(c).

(D) Cable Trays.

Optical fiber cables shall be permitted to be installed in metal or listed nonmetallic cable tray systems.

770.111 Innerduct for Optical Fiber Cables.

Listed plenum communications raceways, listed riser communications raceways, and listed general-purpose communications raceways selected in accordance with Table 800.154(b) shall be permitted to be installed as innerduct in any type of listed raceway permitted in Chapter 3.

770.113 Installation of Optical Fiber Cables.

Installation of optical fiber cables shall comply with 770.113(A) through (J). Installation of raceways and cable routing assemblies shall comply with 770.110 .

(A) Listing.

Optical fiber cables installed in buildings shall be listed in accordance with 770.179 and installed in accordance with the limitations of the listing.

Exception: *Optical fiber cables that are installed in compliance with 770.48 shall not be required to be listed.*

(B) Ducts Specifically Fabricated for Environmental Air.

Installations of optical fiber cables in ducts specifically fabricated for environmental air shall be in accordance with 770.113(B)(1) and (B)(2).

(1) Uses Permitted.

The following cables shall be permitted in ducts specifically fabricated for environmental air as described in 300.22(B) if they are directly associated with the air distribution system:

(1) Up to 1.22 m (4 ft) of Types OFNP and OFCP

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in raceways that are installed in compliance with 300.22(B)

Informational Note: For information on fire protection of wiring installed in fabricated ducts, see NFPA 90A-2018, *Standard for the Installation of Air-Conditioning and Ventilating Systems* .

(2) Uses Not Permitted.

Types OFNR, OFCR, OFNG, OFCG, OFN, and OFC shall not be permitted to be installed in ducts specifically fabricated for environmental air as described in 300.22(B) .

Informational Note: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for information on fire protection of wiring installed in fabricated ducts.

(C) Other Spaces Used for Environmental Air (Plenums).

Installations of optical fiber cables in other spaces used for environmental air shall be in accordance with 770.113(C)(1) and (C)(2).

(1) Uses Permitted.

The following cables shall be permitted in other spaces used for environmental air as described in 300.22(C) :

(1) Types OFNP and OFCP

(2) Types OFNP and OFCP installed in plenum communications raceways

(3) Types OFNP and OFCP installed in plenum cable routing assemblies

(4) Types OFNP and OFCP supported by open metal cable tray systems

(5) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in raceways that are installed in compliance with 300.22(C)

(6) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC supported by solid bottom metal cable trays with solid metal covers in other spaces used for environmental air (plenums), as described in 300.22(C)

(7) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in plenum riser and general-purpose communications raceways supported by solid bottom metal cable trays with solid metal covers in other spaces used for environmental air (plenums), as described in 300.22(C)

(2) Uses Not Permitted.

Types OFNR, OFCR, OFNG, OFCG, OFN, and OFC shall not be permitted to be installed in other spaces used for environmental air (plenums).

Informational Note: See NFPA 90A-2018, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for information on fire protection of wiring installed in other spaces used for environmental air.

(D) Risers — Cables in Vertical Runs.

Installations of optical fiber cables in vertical runs shall be in accordance with 770.113(D)(1) and (D)(2).

(1) Uses Permitted.

The following cables shall be permitted in vertical runs penetrating one or more floors and in vertical runs in a shaft:

(1) Types OFNP, OFCP, OFNR, and OFCR

(2) Types OFNP, OFCP, OFNR, and OFCR installed in the following:

(3) Plenum communications raceways

(4) Plenum cable routing assemblies

(5) Riser communications raceways

(6) Riser cable routing assemblies

(2) Uses Not Permitted.

Types OFNG, OFCG, OFN, and OFC shall not be permitted to be installed in vertical runs.

Informational Note: See 770.26 for firestop requirements for floor penetrations.

(E) Risers — Cables Permitted in Metal Raceways.

The following cables and innerducts shall be permitted in metal raceways in a riser having firestops at each floor:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(3) Plenum communications raceways (innerduct)

(4) Riser communications raceways (innerduct)

(5) General-purpose communications raceways (innerduct)

Informational Note: See 770.26 for firestop requirements for floor penetrations.

(F) Risers — Cables Permitted in Fireproof Shafts.

The following cables shall be permitted to be installed in fireproof riser shafts having firestops at each floor:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(3) Plenum communications raceways

(4) Plenum cable routing assemblies

(5) Riser communications raceways

(6) Riser cable routing assemblies

(7) General-purpose communications raceways

(8) General-purpose cable routing assemblies

Informational Note: See 770.26 for firestop requirements for floor penetrations.

(G) Risers — Cables Permitted in One- and Two-Family Dwellings.

The following cables shall be permitted in one- and two-family dwellings:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(3) Plenum communications raceways

(4) Plenum cable routing assemblies

(5) Riser communications raceways

(6) Riser cable routing assemblies

(7) General-purpose communications raceways

(8) General-purpose cable routing assemblies

(H) Cable Trays — Cables Permitted.

The following cables shall be permitted to be supported by cable trays:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(3) Plenum communications raceways

(4) Riser communications raceways

(5) General-purpose communications raceways

(I) Distributing Frames and Cross-Connect Arrays — Cables Permitted.

The following cables shall be permitted to be installed in distributing frames and cross-connect arrays:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(3) Plenum communications raceways

(4) Plenum cable routing assemblies

(5) Riser communications raceways

(6) Riser cable routing assemblies

(7) General-purpose communications raceways

(8) General-purpose cable routing assemblies

(J) Other Building Locations — Cables Permitted.

The following cables shall be permitted to be installed in building locations other than the locations covered in 770.113(B) through (I):

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in:

(3) Plenum communications raceways

(4) Plenum cable routing assemblies

(5) Riser communications raceways

(6) Riser cable routing assemblies

(7) General-purpose communications raceways

(8) General-purpose cable routing assemblies

(9) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in a raceway of a type recognized in Chapter 3

770.114 Grounding.

Non-current-carrying conductive members of optical fiber cables shall be bonded to a grounded equipment rack or enclosure, or grounded in accordance with the grounding methods specified by 770.100(B) using a conductor specified in 770.100(A).

770.133 Installation of Optical Fibers and Electrical Conductors.

(A) In Cable Trays and Raceways.

Conductive optical fiber cables contained in an armored or metal-clad-type sheath and nonconductive optical fiber cables shall be permitted to occupy the same cable tray or raceway with conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits operating at 1000 volts or less. Conductive optical fiber cables without an armored or metal-clad-type sheath shall not be permitted to occupy the same cable tray or raceway with conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits, unless all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are separated from all of the optical fiber cables by a permanent barrier or listed divider.

(B) In Cabinets, Outlet Boxes, and Similar Enclosures.

Nonconductive optical fiber cables shall not be permitted to occupy the same cabinet, outlet box, panel, or similar enclosure housing the electrical terminations of an electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit unless one or more of the following conditions exist:

(1) The nonconductive optical fiber cables are functionally associated with the electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit.

(2) The conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits operate at 1000 volts or less.

(3) The nonconductive optical fiber cables and the electrical terminations of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit are installed in factory- or field-assembled control centers.

(4) The nonconductive optical fiber cables are installed in an industrial establishment where conditions of maintenance and supervision ensure that only qualified persons service the installation.

When optical fibers are within the same hybrid cable for electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits operating at 1000 volts or less, they shall be permitted to be installed only where the functions of the optical fibers and the electrical conductors are associated.

Optical fibers in hybrid optical fiber cables containing only current-carrying conductors for electric light, power, or Class 1 circuits rated 1000 volts or less shall be permitted to occupy the same cabinet, cable tray, outlet box, panel, raceway, or other termination enclosure with conductors for electric light, power, or Class 1 circuits operating at 1000 volts or less.

Optical fibers in hybrid optical fiber cables containing current-carrying conductors for electric light, power, or Class 1 circuits rated over 1000 volts shall be permitted to occupy the same cabinet, cable tray, outlet box, panel, raceway, or other termination enclosure with conductors for electric light, power, or Class 1 circuits in industrial establishments, where conditions of maintenance and supervision ensure that only qualified persons service the installation.

(C) With Other Circuits.

Conductive and nonconductive optical fiber cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly, with conductors of any of the following:

(1) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with 645.5(E)(2) or Parts I and II of Article 725

(2) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(3) Communications circuits in compliance with Parts I and V of Article 805

(4) Community antenna television and radio distribution systems in compliance with Parts I and V of Article 820

(5) Low-power network-powered broadband communications circuits in compliance with Parts I and V of Article 830

(D) Support of Optical Fiber Cables.

Raceways shall be used for their intended purpose. Optical fiber cables shall not be strapped, taped, or attached by any means to the exterior of any conduit or raceway as a means of support.

Exception: *Overhead (aerial) spans of optical fiber cables shall be permitted to be attached to the exterior of a raceway-type mast intended for the attachment and support of such cables.*

770.154 Applications of Listed Optical Fiber Cables.

Permitted and nonpermitted applications of listed optical fiber cables shall be as indicated in Table 770.154(a) . The permitted applications shall be subject to the installation requirements of 770.110 and 770.113 . The substitutions for optical fiber cables in Table 770.154(b) and illustrated in Figure 770.154 shall be permitted.

Table 770.154(a) Applications of Listed Optical Fiber Cables in Buildings

Listed Optical Fiber - Cable Type Applications OFNP, OFCP OFNR, OFCR OFNG, OFCG, OFN, OFC In ducts specifically fabricated for environmental air as described in 300.22(B) In fabricated ducts Y* N N In metal raceway that complies with 300.22(B) Y* Y* Y* In other spaces used for environmental air (plenums) as described in 300.22(C) In other spaces used for environmental air Y* N N In metal raceway that complies with 300.22(C) Y* Y* Y* - In plenum communications raceways Y* N N - In plenum cable routing assemblies Y* N N - Supported by open metal cable trays Y* N N - Supported by solid bottom metal cable trays with solid metal covers Y* Y* Y* In risers In vertical runs Y* Y* N - In metal raceways Y* Y* Y* - In fireproof shafts Y* Y* Y* - In plenum communications raceways Y* Y* N - In plenum cable routing assemblies Y* Y* N - In riser communications raceways Y* Y* N - In riser cable routing assemblies Y* Y* N - In one- and two-family dwellings Y* Y* Y* Within buildings in other than air-handling spaces and risers General Y* Y* Y* Supported by cable trays Y* Y* Y* - In distributing frames and cross-connect arrays Y* Y* Y* - In any raceway recognized in Chapter 3 Y* Y* Y* - In plenum communications raceway Y* Y* Y* - In plenum cable routing assemblies Y* Y* Y* - In riser communications raceways Y* Y* Y* - In riser cable routing assemblies Y* Y* Y* - In general-purpose communications raceways Y* Y* Y* - In general-purpose cable routing assemblies Y* Y* Y*

Note: “N” indicates that the cable type shall not be permitted to be installed in the application. “Y*” indicates that the cable type shall be permitted to be installed in the application subject to the limitations described in 770.110 and 770.113.

Informational Note No. 1: Part V of Article 770 covers installation methods within buildings. This table covers the applications of listed optical fiber cables in buildings. The definition of *Point of Entrance* is in 770.2.

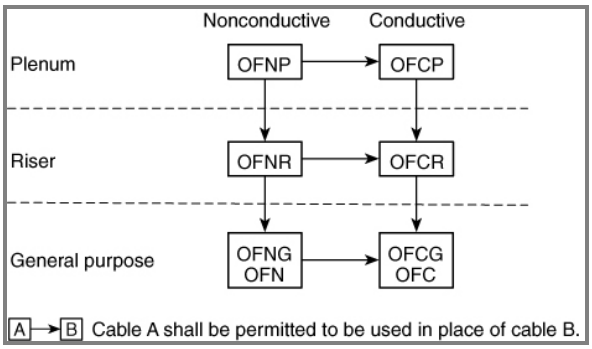
Informational Note No. 2: For information on the restrictions to the installation of optical fiber cables in ducts specifically fabricated for environmental air, see 770.113(B).

Table 770.154(b) Cable Substitutions

Cable Type Permitted Substitutions OFNP None OFCP OFNP OFNR OFNP OFCR OFNP, OFCP,

OFNR OFNG, OFN OFNP, OFNR OFCG, OFC OFNP, OFCP, OFNR, OFCR, OFNG, OFN

Figure 770.154 Cable Substitution Hierarchy.



Part VI. Listing Requirements

770.179 Optical Fiber Cables.

Optical fiber cables shall be listed and identified in accordance with 770.179(A) through (G) and shall be marked in accordance with Table 770.179 . Optical fiber cables shall have a temperature rating of not less than 60°C (140°F). The temperature rating shall be marked on the jacket of optical fiber cables that have a temperature rating exceeding 60°C (140°F).

Informational Note: See UL 1651-2015, *Standard for Optical Fiber Cable, for information on optical fiber cables.*

Table 770.179 Cable Markings

Cable Marking Type OFNP Nonconductive optical fiber plenum cable OFCP Conductive optical fiber plenum cable OFNR Nonconductive optical fiber riser cable OFCR Conductive optical fiber riser cable OFNG Nonconductive optical fiber general-purpose cable OFCG Conductive optical fiber general-purpose cable OFN Nonconductive optical fiber general-purpose cable OFC Conductive optical fiber general-purpose cable

(A) Types OFNP and OFCP.

Types OFNP and OFCP nonconductive and conductive optical fiber plenum cables shall be suitable for use in ducts, plenums, and other space used for environmental air and shall also have adequate fire-resistant and low-smoke-producing characteristics.

Informational Note: See NFPA 262-2019, *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces* , for one method of defining that a cable has adequate fire-resistant and low-smoke-producing characteristics where the cable exhibits a maximum peak optical density of 0.50 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.52 m (5 ft) or less.

(B) Types OFNR and OFCR.

Types OFNR and OFCR nonconductive and conductive optical fiber riser cables shall be suitable for use in a vertical run in a shaft or from floor to floor and shall also have the fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

Informational Note: See ANSI/UL 1666-2017, *Standard Test for Flame Propagation Height of Electrical and Optical-Fiber Cable Installed Vertically in Shafts* , for one method of defining fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

(C) Types OFNG and OFCG.

Types OFNG and OFCG nonconductive and conductive general-purpose optical fiber cables shall be suitable for general-purpose use, with the exception of risers and plenums, and shall also be resistant to the spread of fire

Informational Note No. 1: See CSA Vertical Flame Test — Cables in Cable Trays, as described in CSA C22.2 No. 0.3-2009 (R2019), *Test Methods for Electrical Wires and Cables* , for one method of defining *resistant to the spread of fire* for the damage (char length) not to exceed 1.5 m (4 ft 11 in.) when performing the test.

Informational Note No. 2: See ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables* , for another method of defining *resistant to the spread of fire* where the cables do not spread fire to the top of the tray in the UL flame exposure, vertical tray flame test. The smoke measurements in the test method are not applicable.

(D) Types OFN and OFC.

Types OFN and OFC nonconductive and conductive optical fiber cables shall be suitable for general-purpose use, with the exception of risers, plenums, and other spaces used for environmental air, and shall also be resistant to the spread of fire.

Informational Note No. 1: See ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables* , for one method of defining *resistant to the spread of fire* where the cables do not spread fire to the top of the tray in the UL flame exposure, vertical tray flame test. The smoke measurements in the test method are not applicable.

Informational Note No. 2: See CSA Vertical Flame Test — Cables in Cables Trays, as described in CSA C22.2 No. 0.3-2009 (R2019), *Test Methods for Electrical Wires and Cables* , for another method of defining *resistant to the spread of fire* where the damage (char length) does not exceed 1.5 m (4 ft 11 in.).

Informational Note No. 3: Cable types are listed in descending order of fire resistance rating. Within each fire resistance rating, nonconductive cable is listed first because it is often substituted for conductive cable.

(E) Circuit Integrity (CI), Fire-Resistive Cable System, or Electrical Circuit Protective System.

Cables that are used for survivability of critical circuits under fire conditions shall meet either 770.179(E)(1) , (E)(2), or (E)(3).

(1) Circuit Integrity (CI) Cables.

Cables specified in 770.179(A) through (D), and used for survivability of critical circuits, shall be marked with the additional classification using the suffix “CI.” In order to maintain its listed fire rating, CI cable shall only be installed in free air in accordance with 770.24. CI cables shall only be permitted to be installed in a raceway where specifically listed and marked as part of a fire-resistive cable system as covered in 770.179(E)(2) .

Informational Note: See UL 2196, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables* , for one method of defining CI cable for establishing a minimum 2-hour fire resistance rating for the cable as specified in UL 1651, *Optical Fiber Cable* . UL *Guide Information for Optical Cable Fiber (QAYK)* contains information to identify the cable and its installation limitations to maintain the fire-resistive rating.

~~**(2)** Fire-Resistive Cables.~~

~~Cables specified in 770.179(A) through (D) and 770.179(E)(1) that are part of an electrical circuit protective system shall be fire-resistive cable and identified with the protective system number on the product or on the smallest unit container in which the product is packaged and installed in accordance with the listing of the protective system.~~

~~Informational Note: See UL 2196, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for one method of defining an electrical circuit protective system for establishing a rating for the system. UL *Guide Information for Electrical Circuit Integrity Systems (FHIT)* contains information to identify the system and its installation limitations to maintain a minimum fire-resistive rating.~~

~~**(F)** Field-Assembled Optical Fiber Cables.~~

~~Field-assembled optical fiber cable shall comply with the following:~~

(1) ~~The specific combination of jacket and optical fibers intended to be installed as a field-assembled optical fiber cable shall be one of the types in 770.179(A), (B), or (D) and shall be marked in accordance with Table 770.179.~~

(2) ~~The jacket of a field-assembled optical fiber cable shall have a surface marking indicating the specific optical fibers with which it is identified for use.~~

(3) ~~The optical fibers shall have a permanent marking, such as a marker tape, indicating the jacket with which they are identified for use.~~

(4) ~~The jacket without fibers shall meet the listing requirements for communications raceways in 800.182(A), (B), or (C) in accordance with the cable marking.~~

~~**(G)** Optional Markings.~~

~~Cables shall be permitted to be surface marked to indicate special characteristics of the cable materials.~~

~~Informational Note: These markings can include, but are not limited to, markings for limited-smoke halogen-free, low-smoke halogen-free, and sunlight resistance.~~

~~**770.180** Grounding Devices.~~

~~Where bonding or grounding is required, devices used to connect a shield, a sheath, or non-current-carrying metallic members of a cable to a bonding conductor or grounding electrode conductor shall be listed or be part of listed equipment.~~

Statement of Problem and Substantiation for Public Input

Article 770 is for Fiber Optic Cables which is a wiring method, as such it would be more appropriately located in Chapter 3. Chapter 7 is designated per 90.3 as special conditions.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 4499-NFPA 70-2023 [New Section after 398.104]	

Submitter Information Verification

Submitter Full Name: Kyle Krueger
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Submittal Date: Fri Jul 28 20:27:36 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The installation of optical fiber cables belongs in Article 770. Chapter 3 deals with electrical wiring methods. Also see section 300.2 Limitations.

Public Input No. 3690-NFPA 70-2023 [Article 770]

Article 770 Optical Fiber Cables

Part I. General

770.1 Scope.

This article covers the installation of optical fiber cables. This article does not cover the construction of optical fiber cables.

770.3 Other Articles.

Installations of optical fiber cables shall comply with 770.3(A) through (D). Only those sections of Chapter 2 and Article 300 referenced in this article shall apply to optical fiber cables.

~~**(A)** Hazardous (Classified) Locations.~~

~~Listed optical fiber cables shall be permitted to be installed in hazardous (classified) locations. The cables shall be sealed in accordance with 501.15 , 502.15 , 505.16 , or 506.16 , as applicable.~~

~~**(B)** Cables in Ducts for Dust, Loose Stock, or Vapor Removal.~~

~~The requirements of 300.22(A) for wiring systems shall apply to conductive optical fiber cables.~~

~~**(C)** Hybrid Cables.~~

~~Hybrid optical fiber cables shall be classified as electrical cables in accordance with the type of electrical conductors. They shall be constructed, listed, and marked in accordance with the appropriate article for each type of electrical cable.~~

~~**(D)** Vertical Support for Fire-Resistive Cables.~~

~~Vertical installations of circuit integrity (CI) cables installed in a raceway or cables of fire-resistive cable systems shall be installed in accordance with their listing.~~

~~**770.21** Access to Electrical Equipment Behind Panels Designed to Allow Access.~~

~~Access to electrical equipment shall not be denied by an accumulation of optical fiber cables that prevents removal of panels, including suspended ceiling panels.~~

~~**770.24** Mechanical Execution of Work.~~

(A) General.

Optical fiber cables shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11 . Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170 .

Informational Note No. 1: See ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables* , ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises* , and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard* , for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for discrete combustible components installed in accordance with 300.22(C) .

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

(B) Circuit Integrity (CI) Cable.

Circuit integrity (CI) cable shall be supported at a distance not exceeding 610 mm (24 in.).Cable shall be secured to the noncombustible surface of the building structure. Cable supports and fasteners shall be steel.

770.25 Abandoned Cables.

The accessible portion of abandoned optical fiber cables shall be removed. Where cables are identified for future use with a tag, the tag shall be of sufficient durability to withstand the environment involved.

770.26 Spread of Fire or Products of Combustion.

Installations of optical fiber cables and communications raceways in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around penetrations of optical fiber cables and communications raceways through fire-resistant–rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating.

Informational Note: Directories of electrical construction materials published by qualified testing laboratories contain many listing installation restrictions necessary to maintain the fire-resistive rating of assemblies where penetrations or openings are made. Building codes also contain restrictions on membrane penetrations on opposite sides of a fire resistance–rated wall assembly. An example is the 600-mm (24-in.) minimum horizontal separation that usually applies between boxes installed on opposite sides of the wall. Assistance in complying with 770.26 can be found in building codes, fire resistance directories, and product listings.

770.27 Temperature Limitation of Optical Fiber Cables.

Optical fiber cable shall not be used in such a manner that its operating temperature exceeds that of its rating.

Part II. Cables Outside and Entering Buildings

770.44 Overhead (Aerial) Optical Fiber Cables.

Overhead optical fiber cables containing a non–current-carrying metallic member entering buildings shall comply with 800.44(A) and (B).

(A) On Poles and In-Span.

Where outside plant optical fiber cables and electric light or power conductors are supported by the same pole or are run parallel to each other in-span, the conditions described in 770.44(A)(1) through (A)(4) shall be met.

(1) Relative Location.

Where practicable, the outside plant optical fiber cables shall be located below the electric light or power conductors.

(2) Attachment to Cross-Arms.

Attachment of outside plant optical fiber cables to a cross-arm that carries electric light or power conductors shall not be permitted.

(3) Climbing Space.

The climbing space through outside plant optical fiber cables shall comply with the requirements of 225.14(B) .

(4) Clearance.

Supply service drops and sets of overhead service conductors of 0 to 750 volts running above and parallel to optical fiber cable service drops shall have a minimum separation of 300 mm (12 in.) at any point in the span, including the point of their attachment to the building. Clearance of not less than 1.0 m (40 in.) shall be maintained between the two services at the pole.

(B) Above Roofs.

Outside plant optical fiber cables shall have a vertical clearance of not less than 2.5 m (8 ft) from all points of roofs above which they pass.

Exception No. 1: The requirement of 770.44(B) shall not apply to auxiliary buildings such as garages and the like.

Exception No. 2: A reduction in clearance above only the overhanging portion of the roof to not less than 450 mm (18 in.) shall be permitted if (1) not more than 1.2 m (4 ft) of optical fiber cable service drop cable passes above the roof overhang, and (2) the cable is terminated at a through- or above-the-roof raceway or approved support.

Exception No. 3: Where the roof has a slope of not less than 100 mm in 300 mm (4 in. in 12 in.), a reduction in clearance to not less than 900 mm (3 ft) shall be permitted.

Informational Note: See ANSI/IEEE C2-2017, *National Electric Safety Code, Part 2, Safety Rules for Overhead Lines* , for additional information regarding overhead wires and cables.

770.47 Underground Optical Fiber Cables Entering Buildings.

Underground optical fiber cables entering buildings shall comply with 770.47(A) and (B).

(A) Underground Systems with Electric Light, Power, Class 1, or Non–Power-Limited Fire Alarm Circuit Conductors.

Underground conductive optical fiber cables entering buildings with electric light, power, Class 1, or non–power-limited fire alarm circuit conductors in a raceway, handhole enclosure, or manhole shall be located in a section separated from such conductors by means of brick, concrete, or tile partitions or by means of a suitable barrier.

(B) Direct-Buried Cables and Raceways.

Direct-buried conductive optical fiber cables shall be separated by at least 300 mm (12 in.) from conductors of any electric light, power, non-power-limited fire alarm circuit conductors, or Class 1 circuit.

Exception No. 1: *Separation shall not be required where the electric service conductors are installed in raceways or have metal cable armor.*

Exception No. 2: *Separation shall not be required where electric light or power branch-circuit or feeder conductors, non-power-limited fire alarm circuit conductors, or Class 1 circuit conductors are installed in a raceway or in metal-sheathed, metal-clad, or Type UF or Type USE cables.*

770.48 Unlisted Cables Entering Buildings.

(A) Conductive and Nonconductive Cables.

Unlisted conductive and nonconductive outside plant optical fiber cables shall be permitted to be installed in building spaces, other than risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air, where the length of the cable within the building, measured from its point of entrance, does not exceed 15 m (50 ft) and the cable enters the building from the outside and is terminated in an enclosure.

The point of entrance shall be permitted to be extended from the penetration of the external wall, roof, or floor slab by continuously enclosing the entrance optical fiber cables in rigid metal conduit (RMC) or intermediate metal conduit (IMC) to the point of emergence.

Informational Note: Splice cases or terminal boxes, both metallic and plastic types, typically are used as enclosures for splicing or terminating optical fiber cables.

(B) Nonconductive Cables in Raceway.

Unlisted nonconductive outside plant optical fiber cables shall be permitted to enter the building from the outside and shall be permitted to be installed in any of the following raceways:

(1) Intermediate metal conduit (IMC)

(2) Rigid metal conduit (RMC)

(3) Rigid polyvinyl chloride conduit (PVC)

(4) Electrical metallic tubing (EMT)

Unlisted nonconductive outside plant cables installed in rigid polyvinyl chloride conduit (PVC) or electrical metallic tubing (EMT) shall not be installed in risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air.

770.49 Metal Entrance Conduit Grounding.

Metal conduit containing optical fiber entrance cable shall be connected by a bonding conductor or grounding electrode conductor to a grounding electrode or, where present, the building grounding electrode system in accordance with 770.100(B) .

Part III. Protection

770.93 Grounding, Bonding, or Interruption of Non–Current-Carrying Metallic Members of Optical Fiber Cables.

Optical fiber cables entering the building or terminating on the outside of the building shall comply with 770.93(A) or (B).

(A) Entering Buildings.

In installations where an optical fiber cable is exposed to contact with electric light or power conductors and the cable enters the building, the non–current-carrying metallic members shall be either grounded or bonded as specified in 770.100 or interrupted by an insulating joint or equivalent device. The grounding or interruption shall be as close as practicable to the point of entrance.

(B) Terminating on the Outside of Buildings.

In installations where an optical fiber cable is exposed to contact with electric light or power conductors and the cable is terminated on the outside of the building, the non–current-carrying metallic members shall be either grounded or bonded as specified in 770.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of termination of the cable.

Part IV. Grounding Methods

770.100 Entrance Cable Bonding and Grounding.

If required, the non-current-carrying metallic members of optical fiber cables entering buildings shall be bonded or grounded as specified in 770.100(A) through (D).

(A) Bonding Conductor or Grounding Electrode Conductor.

(1) Insulation.

The bonding conductor or grounding electrode conductor shall be listed and shall be permitted to be insulated, covered, or bare.

(2) Material.

The bonding conductor or grounding electrode conductor shall be copper or other corrosion-resistant conductive material, stranded or solid.

(3) Size.

The bonding conductor or grounding electrode conductor shall not be smaller than 14 AWG. It shall have a current-carrying capacity not less than that of the grounded metallic member(s). The bonding conductor or grounding electrode conductor shall not be required to exceed 6 AWG.

(4) Length.

The bonding conductor or grounding electrode conductor shall be as short as practicable. In one- and two-family dwellings, the bonding conductor or grounding electrode conductor shall be as short as practicable not to exceed 6.0 m (20 ft) in length.

Informational Note: Similar bonding conductor or grounding electrode conductor length limitations applied at apartment buildings and commercial buildings help to reduce voltages that may develop between the building's power and communications systems during lightning events.

Exception: In one- and two-family dwellings if it is not practicable to achieve an overall maximum bonding conductor or grounding electrode conductor length of 6.0 m (20 ft), a separate ground rod meeting the minimum dimensional criteria of 770.100(B)(3)(2) shall be driven, the grounding electrode conductor shall be connected to the separate ground rod in accordance with 770.100(C) , and the separate ground rod shall be bonded to the power grounding electrode system in accordance with 770.100(D) .

(5) Run in Straight Line.

The bonding conductor or grounding electrode conductor shall be run in as straight a line as practicable.

(6) Physical Protection.

Bonding conductors and grounding electrode conductors shall be protected where exposed to physical damage. Where the bonding conductor or grounding electrode conductor is installed in a metal raceway, both ends of the raceway shall be bonded to the contained conductor or to the same terminal or electrode to which the bonding conductor or grounding electrode conductor is connected.

(B) Electrode.

The bonding conductor and grounding electrode conductor shall be connected in accordance with 770.100(B)(1) , (B)(2), or (B)(3).

(1) In Buildings or Structures with an Intersystem Bonding Termination.

If the building or structure served has an intersystem bonding termination as required by 250.94 , the bonding conductor shall be connected to the intersystem bonding termination.

Informational Note: See Informational Note Figure 800.100(B)(1) for an illustration of the application of the bonding conductor in buildings or structures equipped with an intersystem bonding termination.

(2) In Buildings or Structures with Grounding Means.

If an intersystem bonding termination is established, 250.94(A) shall apply.

If the building or structure served has no intersystem bonding termination, the bonding conductor or grounding electrode conductor shall be connected to the nearest accessible location on one of the following:

(1) The building or structure grounding electrode system as covered in 250.50

(2) The power service accessible means external to enclosures using the options identified in 250.94(A) , Exception

(3) The nonflexible metal power service raceway

(4) The service equipment enclosure

(5) The grounding electrode conductor or the grounding electrode conductor metal enclosure of the power service

(6) The grounding electrode conductor or the grounding electrode of a building or structure disconnecting means that is connected to a grounding electrode as covered in 250.32

(7) The grounded interior metal water piping system, within 1.5 m (5 ft) from its point of entrance to the building, as covered in 250.52

Informational Note: See Informational Note Figure 800.100(B)(2) for an illustration of the application of the bonding conductor in buildings or structures not equipped with an intersystem bonding termination or terminal block providing access to the building grounding electrode system.

(3) In Buildings or Structures Without Intersystem Bonding Termination or Grounding Means.

If the building or structure served has no intersystem bonding termination or grounding means, as described in 770.100(B)(2) , the grounding electrode conductor shall be connected to either of the following:

(1) To any one of the individual grounding electrodes described in 250.52(A)(1) , (A)(2), (A)(3), or (A)(4).

(2) If the building or structure served has no grounding means, as described in 770.100(B)(2) or (B)(3)(1), to any one of the individual grounding electrodes described in 250.52(A)(7) and (A)(8) or to a ground rod or pipe not less than 1.5 m (5 ft) in length and 12.7 mm (**1**⁄**2** in.) in diameter, driven, where practicable, into permanently damp earth and separated from lightning protection system conductors as covered in 800.53 and at least 1.8 m (6 ft) from electrodes of other systems. Steam, hot water pipes, or lightning protection system conductors shall not be employed as electrodes for non–current-carrying metallic members.

(C) Electrode Connection.

Connections to grounding electrodes shall comply with 250.70 .

(D) Bonding of Electrodes.

A bonding jumper not smaller than 6 AWG copper or equivalent shall be connected between the grounding electrode and power grounding electrode system at the building or structure served where separate electrodes are used.

Exception: At mobile homes as covered in 770.106.

Informational Note No. 1: See 250.60 for connection to a lightning protection system.

Informational Note No. 2: Bonding together of all separate electrodes limits potential differences between them and between their associated wiring systems.

770.106 Grounding and Bonding of Entrance Cables at Mobile Homes.

(A) Grounding.

Grounding shall comply with 770.106(A)(1) and (A)(2).

(1) Installations Without Mobile Home Service Equipment.

If there is no mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, the non-current-carrying metallic members of optical fiber cables entering the mobile home shall be grounded in accordance with 770.100(B)(3).

(2) Installations Without Mobile Home Disconnecting Means.

If there is no mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, the non-current-carrying metallic members of optical fiber cables entering the mobile home shall be grounded in accordance with 770.100(B)(3).

(B) Bonding.

The grounding electrode shall be bonded to the metal frame or available grounding terminal of the mobile home with a copper conductor or other equivalent corrosion-resistant material not smaller than 12 AWG under either of the following conditions:

(1) If there is no mobile home service equipment or disconnecting means as in 770.106(A)

(2) If the mobile home is supplied by cord and plug

~~**Part V.** Installation Methods Within Buildings~~

770.

~~110 Raceways, Cable Routing Assemblies, and Cable Trays for Optical Fiber Cables.~~

~~**(A)** Types of Raceways.~~

~~Optical fiber cables shall be permitted to be installed in any raceway that complies with either 770.110(A)(1) or (A)(2).~~

~~**(1)** Raceways Recognized in Chapter 3 .~~

~~Optical fiber cables shall be permitted to be installed in any raceway included in Chapter 3 . The raceways shall be installed in accordance with Chapter 3 .~~

~~**(2)** Communications Raceways.~~

~~Optical fiber cables shall be permitted to be installed in listed communications raceways selected in accordance with Table 800.154(b) .~~

~~**(B)** Raceway Fill for Optical Fiber Cables.~~

~~Raceway fill for optical fiber cables shall comply with either 770.110(B)(1) or (B)(2).~~

~~**(1)** Without Electric Light or Power Conductors.~~

~~Where optical fiber cables are installed in raceway without electric light or power conductors, the raceway fill requirements of Chapters 3 and 9 shall not apply.~~

~~**(2)** Nonconductive Optical Fiber Cables with Electric Light or Power Conductors.~~

~~Where nonconductive optical fiber cables are installed with electric light or power conductors in a raceway, the raceway fill requirements of Chapters 3 and 9 shall apply.~~

~~**(C)** Cable Routing Assemblies.~~

~~Optical fiber cables shall be permitted to be installed in listed cable routing assemblies selected in accordance with Table 800.154(c) .~~

~~**(D)** Cable Trays.~~

~~Optical fiber cables shall be permitted to be installed in metal or listed nonmetallic cable tray systems.~~

~~**770.111** Innerduct for Optical Fiber Cables.~~

~~Listed plenum communications raceways, listed riser communications raceways, and listed general-purpose communications raceways selected in accordance with Table 800.154(b) shall be permitted to be installed as innerduct in any type of listed raceway permitted in Chapter 3 .~~

~~**770.113** Installation of Optical Fiber Cables.~~

~~Installation of optical fiber cables shall comply with 770.113(A) through (J). Installation of raceways and cable routing assemblies shall comply with 770.110 .~~

~~**(A)** Listing.~~

~~Optical fiber cables installed in buildings shall be listed in accordance with 770.179 and installed in accordance with the limitations of the listing.~~

~~*Exception:* *Optical fiber cables that are installed in compliance with 770.48 shall not be required to be listed.*~~

~~**(B)** Ducts Specifically Fabricated for Environmental Air.~~

~~Installations of optical fiber cables in ducts specifically fabricated for environmental air shall be in accordance with 770.113(B)(1) and (B)(2).~~

(1) Uses Permitted.

The following cables shall be permitted in ducts specifically fabricated for environmental air as described in 300.22(B) if they are directly associated with the air distribution system:

(1) Up to 1.22 m (4 ft) of Types OFNP and OFCP

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in raceways that are installed in compliance with 300.22(B)

Informational Note: For information on fire protection of wiring installed in fabricated ducts, see NFPA 90A-2018, *Standard for the Installation of Air-Conditioning and Ventilating Systems* .

(2) Uses Not Permitted.

Types OFNR, OFCR, OFNG, OFCG, OFN, and OFC shall not be permitted to be installed in ducts specifically fabricated for environmental air as described in 300.22(B) .

Informational Note: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for information on fire protection of wiring installed in fabricated ducts.

(C) Other Spaces Used for Environmental Air (Plenums).

Installations of optical fiber cables in other spaces used for environmental air shall be in accordance with 770.113(C)(1) and (C)(2).

(1) Uses Permitted.

The following cables shall be permitted in other spaces used for environmental air as described in 300.22(C) :

(1) Types OFNP and OFCP

(2) Types OFNP and OFCP installed in plenum communications raceways

(3) Types OFNP and OFCP installed in plenum cable routing assemblies

(4) Types OFNP and OFCP supported by open metal cable tray systems

(5) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in raceways that are installed in compliance with 300.22(C)

(6) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC supported by solid bottom metal cable trays with solid metal covers in other spaces used for environmental air (plenums), as described in 300.22(C)

(7) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in plenum riser and general-purpose communications raceways supported by solid bottom metal cable trays with solid metal covers in other spaces used for environmental air (plenums), as described in 300.22(C)

(2) Uses Not Permitted.

Types OFNR, OFCR, OFNG, OFCG, OFN, and OFC shall not be permitted to be installed in other spaces used for environmental air (plenums).

Informational Note: See NFPA 90A-2018, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for information on fire protection of wiring installed in other spaces used for environmental air.

(D) Risers — Cables in Vertical Runs.

Installations of optical fiber cables in vertical runs shall be in accordance with 770.113(D)(1) and (D)(2).

(1) Uses Permitted.

The following cables shall be permitted in vertical runs penetrating one or more floors and in vertical runs in a shaft:

(1) Types OFNP, OFCP, OFNR, and OFCR

(2) Types OFNP, OFCP, OFNR, and OFCR installed in the following:

(3) Plenum communications raceways

(4) Plenum cable routing assemblies

(5) Riser communications raceways

(6) Riser cable routing assemblies

(2) Uses Not Permitted.

Types OFNG, OFCG, OFN, and OFC shall not be permitted to be installed in vertical runs.

Informational Note: See 770.26 for firestop requirements for floor penetrations.

(E) Risers — Cables Permitted in Metal Raceways.

The following cables and innerducts shall be permitted in metal raceways in a riser having firestops at each floor:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(3) Plenum communications raceways (innerduct)

(4) Riser communications raceways (innerduct)

(5) General-purpose communications raceways (innerduct)

Informational Note: See 770.26 for firestop requirements for floor penetrations.

(F) Risers — Cables Permitted in Fireproof Shafts.

The following cables shall be permitted to be installed in fireproof riser shafts having firestops at each floor:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(3) Plenum communications raceways

(4) Plenum cable routing assemblies

(5) Riser communications raceways

(6) Riser cable routing assemblies

(7) General-purpose communications raceways

(8) General-purpose cable routing assemblies

Informational Note: See 770.26 for firestop requirements for floor penetrations.

(G) Risers — Cables Permitted in One- and Two-Family Dwellings.

The following cables shall be permitted in one- and two-family dwellings:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(3) Plenum communications raceways

(4) Plenum cable routing assemblies

(5) Riser communications raceways

(6) Riser cable routing assemblies

(7) General-purpose communications raceways

(8) General-purpose cable routing assemblies

(H) Cable Trays — Cables Permitted.

The following cables shall be permitted to be supported by cable trays:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(3) Plenum communications raceways

(4) Riser communications raceways

(5) General-purpose communications raceways

(I) Distributing Frames and Cross-Connect Arrays — Cables Permitted.

The following cables shall be permitted to be installed in distributing frames and cross-connect arrays:

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in the following:

(3) Plenum communications raceways

(4) Plenum cable routing assemblies

(5) Riser communications raceways

(6) Riser cable routing assemblies

(7) General-purpose communications raceways

(8) General-purpose cable routing assemblies

(J) Other Building Locations — Cables Permitted.

The following cables shall be permitted to be installed in building locations other than the locations covered in 770.113(B) through (I):

(1) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC

(2) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in:

(3) Plenum communications raceways

(4) Plenum cable routing assemblies

(5) Riser communications raceways

(6) Riser cable routing assemblies

(7) General-purpose communications raceways

(8) General-purpose cable routing assemblies

(9) Types OFNP, OFCP, OFNR, OFCR, OFNG, OFCG, OFN, and OFC installed in a raceway of a type recognized in Chapter 3

~~770.~~

114 Grounding.

Non-current-carrying conductive members of optical fiber cables shall be bonded to a grounded equipment rack or enclosure, or grounded in accordance with the grounding methods specified by 770.100(B) using a conductor specified in 770.100(A) .

770.133 Installation of Optical Fibers and Electrical Conductors.

(A) In Cable Trays and Raceways.

Conductive optical fiber cables contained in an armored or metal-clad-type sheath and nonconductive optical fiber cables shall be permitted to occupy the same cable tray or raceway with conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits operating at 1000 volts or less. Conductive optical fiber cables without an armored or metal-clad-type sheath shall not be permitted to occupy the same cable tray or raceway with conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits, unless all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are separated from all of the optical fiber cables by a permanent barrier or listed divider.

(B) In Cabinets, Outlet Boxes, and Similar Enclosures.

Nonconductive optical fiber cables shall not be permitted to occupy the same cabinet, outlet box, panel, or similar enclosure housing the electrical terminations of an electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit unless one or more of the following conditions exist:

(1) The nonconductive optical fiber cables are functionally associated with the electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit.

(2) The conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits operate at 1000 volts or less.

(3) The nonconductive optical fiber cables and the electrical terminations of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit are installed in factory- or field-assembled control centers.

(4) The nonconductive optical fiber cables are installed in an industrial establishment where conditions of maintenance and supervision ensure that only qualified persons service the installation.

When optical fibers are within the same hybrid cable for electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits operating at 1000 volts or less, they shall be permitted to be installed only where the functions of the optical fibers and the electrical conductors are associated.

Optical fibers in hybrid optical fiber cables containing only current-carrying conductors for electric light, power, or Class 1 circuits rated 1000 volts or less shall be permitted to occupy the same cabinet, cable tray, outlet box, panel, raceway, or other termination enclosure with conductors for electric light, power, or Class 1 circuits operating at 1000 volts or less.

Optical fibers in hybrid optical fiber cables containing current-carrying conductors for electric light, power, or Class 1 circuits rated over 1000 volts shall be permitted to occupy the same cabinet, cable tray, outlet box, panel, raceway, or other termination enclosure with conductors for electric light, power, or Class 1 circuits in industrial establishments, where conditions of maintenance and supervision ensure that only qualified persons service the installation.

(C) With Other Circuits.

Conductive and nonconductive optical fiber cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly, with conductors of any of the following:

(1) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with 645.5(E)(2) or Parts I and II of Article 725

(2) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(3) Communications circuits in compliance with Parts I and V of Article 805

(4) Community antenna television and radio distribution systems in compliance with Parts I and V of Article 820

(5) Low-power network-powered broadband communications circuits in compliance with Parts I and V of Article 830

(D) Support of Optical Fiber Cables.

Raceways shall be used for their intended purpose. Optical fiber cables shall not be strapped, taped, or attached by any means to the exterior of any conduit or raceway as a means of support.

Exception: Overhead (aerial) spans of optical fiber cables shall be permitted to be attached to the exterior of a raceway-type mast intended for the attachment and support of such cables.

770.

~~154 Applications of Listed Optical Fiber Cables.~~

~~Permitted and nonpermitted applications of listed optical fiber cables shall be as indicated in Table 770.154(a) . The permitted applications shall be subject to the installation requirements of 770.110 and 770.113 . The substitutions for optical fiber cables in Table 770.154(b) and illustrated in Figure 770.154 shall be permitted.~~

~~Table 770.154(a) Applications of Listed Optical Fiber Cables in Buildings~~

~~Listed Optical Fiber Cable Type Applications OFNP, OFCP OFNR, OFCR OFNG, OFCG, OFN, OFC In ducts specifically fabricated for environmental air as described in 300.22(B) In fabricated ducts Y* N N In metal raceway that complies with 300.22(B) Y* Y* Y* In other spaces used for environmental air (plenums) as described in 300.22(C) In other spaces used for environmental air Y* N N In metal raceway that complies with 300.22(C) Y* Y* Y* In plenum communications raceways Y* N N In plenum cable routing assemblies Y* N N Supported by open metal cable trays Y* N N Supported by solid bottom metal cable trays with solid metal covers Y* Y* Y* In risers In vertical runs Y* Y* N In metal raceways Y* Y* Y* In fireproof shafts Y* Y* Y* In plenum communications raceways Y* Y* N In plenum cable routing assemblies Y* Y* N In riser communications raceways Y* Y* N In riser cable routing assemblies Y* Y* N In one- and two-family dwellings Y* Y* Y* Within buildings in other than air-handling spaces and risers General Y* Y* Y* Supported by cable trays Y* Y* Y* In distributing frames and cross-connect arrays Y* Y* Y* In any raceway recognized in Chapter 3 Y* Y* Y* In plenum communications raceway Y* Y* Y* In plenum cable routing assemblies Y* Y* Y* In riser communications raceways Y* Y* Y* In riser cable routing assemblies Y* Y* Y* In general-purpose communications raceways Y* Y* Y* In general-purpose cable routing assemblies Y* Y* Y*~~

~~Note: "N" indicates that the cable type shall not be permitted to be installed in the application. "Y*" indicates that the cable type shall be permitted to be installed in the application subject to the limitations described in 770.110 and 770.113.~~

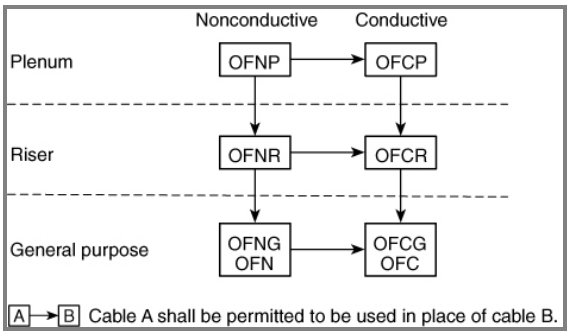
~~Informational Note No. 1: Part V of Article 770 covers installation methods within buildings. This table covers the applications of listed optical fiber cables in buildings. The definition of *Point of Entrance* is in 770.2.~~

~~Informational Note No. 2: For information on the restrictions to the installation of optical fiber cables in ducts specifically fabricated for environmental air, see 770.113(B).~~

~~Table 770.154(b) Cable Substitutions~~

Cable Type Permitted Substitutions OFNP None OFCP OFNP OFNR OFNP OFCR OFNP, OFCP, OFNR OFNG, OFN OFNP, OFNR OFCG, OFC OFNP, OFCP, OFNR, OFCR, OFNG, OFN

Figure 770.154 Cable Substitution Hierarchy.



Part VI. Listing Requirements

770.179 Optical Fiber Cables.

Optical fiber cables shall be listed and identified in accordance with 770.179(A) through (G) and shall be marked in accordance with Table 770.179 . Optical fiber cables shall have a temperature rating of not less than 60°C (140°F). The temperature rating shall be marked on the jacket of optical fiber cables that have a temperature rating exceeding 60°C (140°F).

Informational Note: See UL 1651-2015, *Standard for Optical Fiber Cable, for information on optical fiber cables.*

Table 770.179 Cable Markings

Cable Marking Type OFNP Nonconductive optical fiber plenum cable OFCP Conductive optical fiber plenum cable OFNR Nonconductive optical fiber riser cable OFCR Conductive optical fiber riser cable OFNG Nonconductive optical fiber general-purpose cable OFCG Conductive optical fiber general-purpose cable OFN Nonconductive optical fiber general-purpose cable OFC Conductive optical fiber general-purpose cable

(A) Types OFNP and OFCP.

Types OFNP and OFCP nonconductive and conductive optical fiber plenum cables shall be suitable for use in ducts, plenums, and other space used for environmental air and shall also have adequate fire-resistant and low-smoke-producing characteristics.

Informational Note: See NFPA 262-2019, *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces* , for one method of defining that a cable has adequate fire-resistant and low-smoke-producing characteristics where the cable exhibits a maximum peak optical density of 0.50 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.52 m (5 ft) or less.

(B) Types OFNR and OFCR.

Types OFNR and OFCR nonconductive and conductive optical fiber riser cables shall be suitable for use in a vertical run in a shaft or from floor to floor and shall also have the fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

Informational Note: See ANSI/UL 1666-2017, *Standard Test for Flame Propagation Height of Electrical and Optical-Fiber Cable Installed Vertically in Shafts* , for one method of defining fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

(C) Types OFNG and OFCG.

Types OFNG and OFCG nonconductive and conductive general-purpose optical fiber cables shall be suitable for general-purpose use, with the exception of risers and plenums, and shall also be resistant to the spread of fire

Informational Note No. 1: See CSA Vertical Flame Test — Cables in Cable Trays, as described in CSA C22.2 No. 0.3-2009 (R2019), *Test Methods for Electrical Wires and Cables*, for one method of defining *resistant to the spread of fire* for the damage (char length) not to exceed 1.5 m (4 ft 11 in.) when performing the test.

Informational Note No. 2: See ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*, for another method of defining *resistant to the spread of fire* where the cables do not spread fire to the top of the tray in the UL flame exposure, vertical tray flame test. The smoke measurements in the test method are not applicable.

(D) Types OFN and OFC.

Types OFN and OFC nonconductive and conductive optical fiber cables shall be suitable for general-purpose use, with the exception of risers, plenums, and other spaces used for environmental air, and shall also be resistant to the spread of fire.

Informational Note No. 1: See ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*, for one method of defining *resistant to the spread of fire* where the cables do not spread fire to the top of the tray in the UL flame exposure, vertical tray flame test. The smoke measurements in the test method are not applicable.

Informational Note No. 2: See CSA Vertical Flame Test — Cables in Cables Trays, as described in CSA C22.2 No. 0.3-2009 (R2019), *Test Methods for Electrical Wires and Cables*, for another method of defining *resistant to the spread of fire* where the damage (char length) does not exceed 1.5 m (4 ft 11 in.).

Informational Note No. 3: Cable types are listed in descending order of fire resistance rating. Within each fire resistance rating, nonconductive cable is listed first because it is often substituted for conductive cable.

(E) Circuit Integrity (CI), Fire-Resistive Cable System, or Electrical Circuit Protective System.

Cables that are used for survivability of critical circuits under fire conditions shall meet either 770.179(E)(1), (E)(2), or (E)(3).

(1) Circuit Integrity (CI) Cables.

Cables specified in 770.179(A) through (D), and used for survivability of critical circuits, shall be marked with the additional classification using the suffix "CI." In order to maintain its listed fire rating, CI cable shall only be installed in free air in accordance with 770.24. CI cables shall only be permitted to be installed in a raceway where specifically listed and marked as part of a fire-resistive cable system as covered in 770.179(E)(2).

Informational Note: See UL 2196, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for one method of defining CI cable for establishing a minimum 2-hour fire resistance rating for the cable as specified in UL 1651, *Optical Fiber Cable*. UL *Guide Information for Optical Cable Fiber (QAYK)* contains information to identify the cable and its installation limitations to maintain the fire-resistive rating.

~~**(2)** Fire-Resistive Cables.~~

~~Cables specified in 770.179(A) through (D) and 770.179(E)(1) that are part of an electrical circuit protective system shall be fire-resistive cable and identified with the protective system number on the product or on the smallest unit container in which the product is packaged and installed in accordance with the listing of the protective system.~~

~~Informational Note: See UL 2196, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for one method of defining an electrical circuit protective system for establishing a rating for the system. UL *Guide Information for Electrical Circuit Integrity Systems (FHIT)* contains information to identify the system and its installation limitations to maintain a minimum fire-resistive rating.~~

~~**(F)** Field-Assembled Optical Fiber Cables.~~

~~Field-assembled optical fiber cable shall comply with the following:~~

(1) ~~The specific combination of jacket and optical fibers intended to be installed as a field-assembled optical fiber cable shall be one of the types in 770.179(A), (B), or (D) and shall be marked in accordance with Table 770.179.~~

(2) ~~The jacket of a field-assembled optical fiber cable shall have a surface marking indicating the specific optical fibers with which it is identified for use.~~

(3) ~~The optical fibers shall have a permanent marking, such as a marker tape, indicating the jacket with which they are identified for use.~~

(4) ~~The jacket without fibers shall meet the listing requirements for communications raceways in 800.182(A), (B), or (C) in accordance with the cable marking.~~

~~**(G)** Optional Markings.~~

~~Cables shall be permitted to be surface marked to indicate special characteristics of the cable materials.~~

~~Informational Note: These markings can include, but are not limited to, markings for limited-smoke halogen-free, low-smoke halogen-free, and sunlight resistance.~~

~~770.~~

180 Grounding Devices.

Where bonding or grounding is required, devices used to connect a shield, a sheath, or non–current-carrying metallic members of a cable to a bonding conductor or grounding electrode conductor shall be listed or be part of listed equipment.

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Substantiation	

Statement of Problem and Substantiation for Public Input

This PI is submitted as part of the work of the 722 Limited Energy Task group. It deletes text that was relocated by the TG. See the attachment for the substantiation from the overall TG.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3673-NFPA 70-2023 [Article 722]	same TG effort
Public Input No. 3674-NFPA 70-2023 [Article 724]	same TG effort
Public Input No. 3684-NFPA 70-2023 [Article 725]	same TG effort
Public Input No. 3686-NFPA 70-2023 [Article 726]	same TG effort

Public Input No. 3687-NFPA 70-2023 [Article 760]	same TG effort
Public Input No. 3694-NFPA 70-2023 [Chapter 8]	

Submitter Information Verification

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Submittal Date: Tue Sep 05 14:06:40 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The movement of article 770 to chapter three would not aid the user or the usability of the code. It is also unclear where in Chapter 3 these requirements would be moved, so 770 has not been deleted here.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

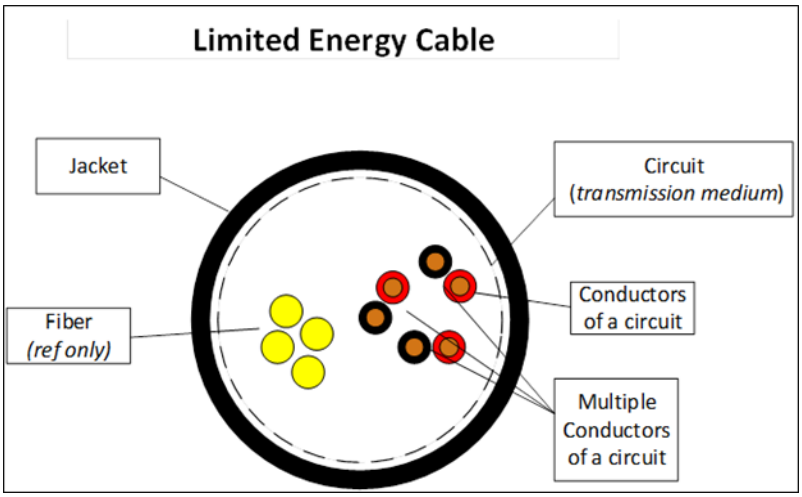
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

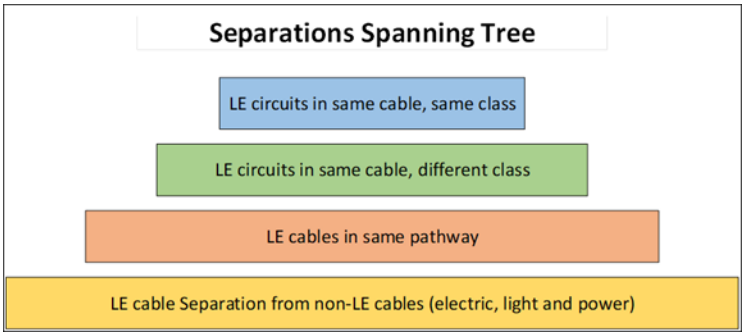
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 1706-NFPA 70-2023 [New Section after 770.3]

770.9 Qualified Persons.

The installation and testing of fiber optic cables shall be done by Qualified Persons.

Informational Note: See definition of *Qualified Person* in Article 100.

Statement of Problem and Substantiation for Public Input

Technology in the limited energy and communications system segments of the electrical industry is rapidly evolving and expanding and is becoming more complicated. These systems require far more training and experience. These systems are often part of essential electrical systems and critical operations power systems requiring a greater degree of training and experience, in design, planning, installation, and programing in many instances. These systems and others require trained qualified personnel and contractors. ANSI standards address these systems and include requirements that qualified persons perform installations of these systems and equipment, so these new NEC requirements are proposed to correlate and align with those ANSI-accredited industry standards and codes. Licensing and regulatory agencies are developing new examinations and will be updating existing exams for state and other licensing to increase qualification credentials related to growth and advancement in this segment of the electrical industry. Certification organizations have indicated they anticipate following the same course of action. Qualified contractors and installers are a crucial element of safety related to these installations and systems.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1708-NFPA 70-2023 [New Section after 800.3]	
Public Input No. 1701-NFPA 70-2023 [New Section after 760.3]	
Public Input No. 1698-NFPA 70-2023 [New Section after 726.3]	
Public Input No. 1695-NFPA 70-2023 [New Section after 725.3]	
Public Input No. 1694-NFPA 70-2023 [New Section after 724.3]	
Public Input No. 1690-NFPA 70-2023 [New Section after 722.3]	
Public Input No. 1686-NFPA 70-2023 [New Section after 708.8]	
Public Input No. 1684-NFPA 70-2023 [New Section after 701.7]	
Public Input No. 1672-NFPA 70-2023 [New Section after 700.8]	
Public Input No. 4394-NFPA 70-2023 [New Section after 625.6]	
Public Input No. 1629-NFPA 70-2023 [New Section after 393.6]	
Public Input No. 1557-NFPA 70-2023 [Section No. 90.2(A)]	
Public Input No. 1557-NFPA 70-2023 [Section No. 90.2(A)]	
Public Input No. 1629-NFPA 70-2023 [New Section after 393.6]	
Public Input No. 1672-NFPA 70-2023 [New Section after 700.8]	
Public Input No. 1684-NFPA 70-2023 [New Section after 701.7]	
Public Input No. 1686-NFPA 70-2023 [New Section after 708.8]	
Public Input No. 1690-NFPA 70-2023 [New Section after 722.3]	
Public Input No. 1694-NFPA 70-2023 [New Section after 724.3]	
Public Input No. 1695-NFPA 70-2023 [New Section after 725.3]	
Public Input No. 1698-NFPA 70-2023 [New Section after 726.3]	

Public Input No. 1701-NFPA 70-2023 [New Section after 760.3]
Public Input No. 1708-NFPA 70-2023 [New Section after 800.3]
Public Input No. 4394-NFPA 70-2023 [New Section after 625.6]

Submitter Information Verification

Submitter Full Name: Kyle Krueger
Organization: NECA
Affiliation: NECA
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jul 28 20:46:22 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The definition of a Qualified Person in Article 100 references “electrical equipment and installations”; which is for installers of electric light and power circuits, not optical fiber cables.

Public Input No. 3201-NFPA 70-2023 [Section No. 770.3]

770.3 Other Articles.

Installations of optical fiber cables shall comply with 770.3(A) through (D). Only those sections of Chapter 2 and Article 300 referenced in this article shall apply to optical fiber cables.

(A) Spread of Fire or Products of Combustion.

Intsallation of optical fiber cables shall comply 300.21.

(B) Hazardous (Classified) Locations.

Listed optical fiber cables shall be permitted to be installed in hazardous (classified) locations. The cables shall be sealed in accordance with 501.15, 502.15, 505.16, or 506.16, as applicable.

(~~B~~ C) Cables in Ducts for Dust, Loose Stock, or Vapor Removal.

The requirements of 300.22(A) for wiring systems shall apply to conductive optical fiber cables.

(~~C~~ D) Hybrid Cables.

Hybrid optical fiber cables shall be classified as electrical cables in accordance with the type of electrical conductors. They shall be constructed, listed, and marked in accordance with the appropriate article for each type of electrical cable.

(~~D~~ E) Vertical Support for Fire-Resistive Cables.

Vertical installations of circuit integrity (CI) cables installed in a raceway or cables of fire-resistive cable systems shall be installed in accordance with their listing.

Statement of Problem and Substantiation for Public Input

Added new requirement for spread of fire of communication circuits to be consistent with 722.3, 724.3, 725.3, and 760.3. Submitting another public input to remove 770.26 and simply add a reference to 300.21. This will improve usability and add clarity for Code users.

Submitter Information Verification

Submitter Full Name: Mike Holt
Organization: Mike Holt Enterprises Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 30 10:51:20 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The proposed revisions have not been adopted since Section 300.21 applies to “Electrical installations” and not the installation of optical fiber cables.

Public Input No. 3377-NFPA 70-2023 [Section No. 770.3(A)]

(A) Hazardous (Classified) Locations.

Listed optical fiber cables shall be permitted to be installed in hazardous (classified) locations as stated elsewhere in this Code . The cables shall be sealed in accordance with 501.15, 502.15, 505.16, or 506.16, as applicable.

Statement of Problem and Substantiation for Public Input

Chapter 7 articles don't state the hazardous (classified) area requirements as they are under the purview of CMP14 and located in Chapter 5. As such, it is recommended to revise the text to state the fiber optic cables are allowed as stated elsewhere in the code to avoid the purview problem created by this language in this section. 501, 502, 505, and 506 clearly state the allowances accordingly.

Submitter Information Verification

Submitter Full Name: Richard Holub
Organization: The DuPont Company, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Fri Sep 01 15:48:20 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7611-NFPA 70-2024

Statement: This editorial change has been made to avoid implying that hazardous location requirements are the purview of Article 770.With the multitude of conditions and environments that are involved in identifying the proper hazardous (classified) locations, the individual sections of Chapter 5 cannot be referenced and instead the user is directed to all of Chapter 5.

Public Input No. 3443-NFPA 70-2023 [Sections 770.3(A), 770.3(B)]

~~**Sections 770.3(A), 770.3(B)**~~

~~**(A)** Hazardous (Classified) Locations.~~

~~Listed optical fiber cables shall be permitted to be installed in hazardous (classified) locations. The cables shall be sealed in accordance with 501.15 , 502.15 , 505.16 , or 506.16 , as applicable.~~

~~**(B)** Cables in Ducts for Dust, Loose Stock, or Vapor Removal.~~

~~The requirements of 300.22(A) for wiring systems shall apply to conductive optical fiber cables.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_First_Draft_Substantiation.docx	First Draft Substantiation	

Statement of Problem and Substantiation for Public Input

This text is being deleted as part of the reorganization of the limited energy articles. The deleted text is relocated as a general requirement to new Article X00.

Submitter Information Verification

Submitter Full Name: Mark Hilbert
Organization: MR Hilbert Insp. & Training
Street Address:
City:
State:
Zip:
Submittal Date: Sun Sep 03 06:06:31 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The text from Article 770 is not relocated but deleted from the new Article X00 under PI 3234. There is no technical justification supplied for the deletion of the requirement. The reference in current 770.3 to sealing requirements in 501.15 , 502.15 , 505.16 , or 506.16 were deleted as well as any reference to 300.22A for optical fiber cables use in Ducts for dust, loose stock, or vapor removal.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

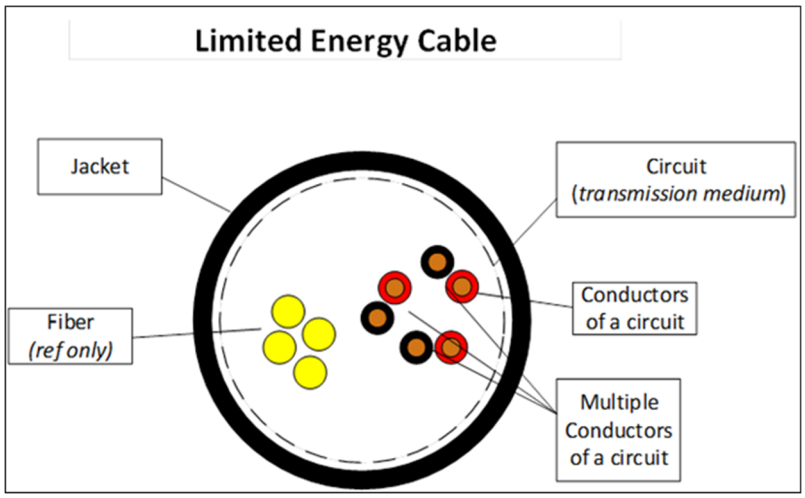
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

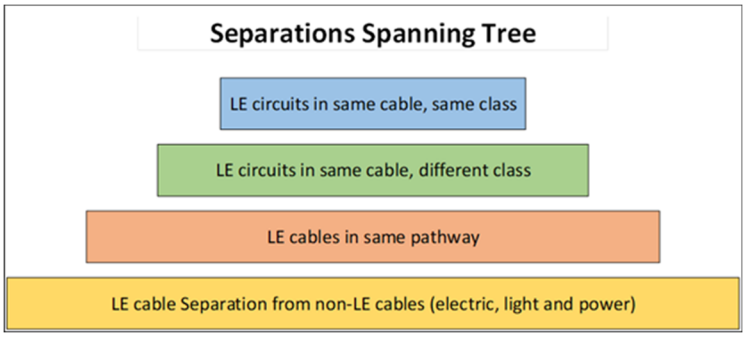
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 3444-NFPA 70-2023 [Sections 770.21, 770.24, 770.25, 770.26]

Sections 770.21, 770.24, 770.25, 770.26

770.21 Access to Electrical Equipment Behind Panels Designed to Allow Access.

Access to electrical equipment shall not be denied by an accumulation of optical fiber cables that prevents removal of panels, including suspended ceiling panels.

770.24 Mechanical Execution of Work.

(A) General.

Optical fiber cables shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11 . Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170 .

Informational Note No. 1: See ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables* , ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises* , and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard* , for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for discrete combustible components installed in accordance with 300.22(C) .

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

(B) Circuit Integrity (CI) Cable.

Circuit integrity (CI) cable shall be supported at a distance not exceeding 610 mm (24 in.).Cable shall be secured to the noncombustible surface of the building structure. Cable supports and fasteners shall be steel.

770.25 Abandoned Cables.

The accessible portion of abandoned optical fiber cables shall be removed. Where cables are identified for future use with a tag, the tag shall be of sufficient durability to withstand the environment involved.

~~**770.26** Spread of Fire or Products of Combustion.~~

~~Installations of optical fiber cables and communications raceways in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around penetrations of optical fiber cables and communications raceways through fire-resistant–rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating.~~

~~Informational Note: Directories of electrical construction materials published by qualified testing laboratories contain many listing installation restrictions necessary to maintain the fire-resistive rating of assemblies where penetrations or openings are made. Building codes also contain restrictions on membrane penetrations on opposite sides of a fire resistance–rated wall assembly. An example is the 600-mm (24-in.) minimum horizontal separation that usually applies between boxes installed on opposite sides of the wall. Assistance in complying with 770.26 can be found in building codes, fire resistance directories, and product listings.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_First_Draft_Substantiation.docx	First Draft Substantiation	

Statement of Problem and Substantiation for Public Input

This text is being deleted as part of the reorganization of the limited energy articles. The deleted text is relocated as a general requirement to new Article X00.

Submitter Information Verification

Submitter Full Name: Mark Hilbert
Organization: MR Hilbert Insp. & Training
Street Address:
City:
State:
Zip:
Submittal Date: Sun Sep 03 06:08:03 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: A considerable part of the text from Article 770 Sections 24, and Section 26 in its entirety, is not relocated but deleted from the referenced new Article X00 under PI 3234. There is no technical justification supplied for the deletion of these requirements. For clarity, and ease-of-use it is more appropriate to have as many requirements as practical for optical fiber systems explicitly in one article (namely 770).

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

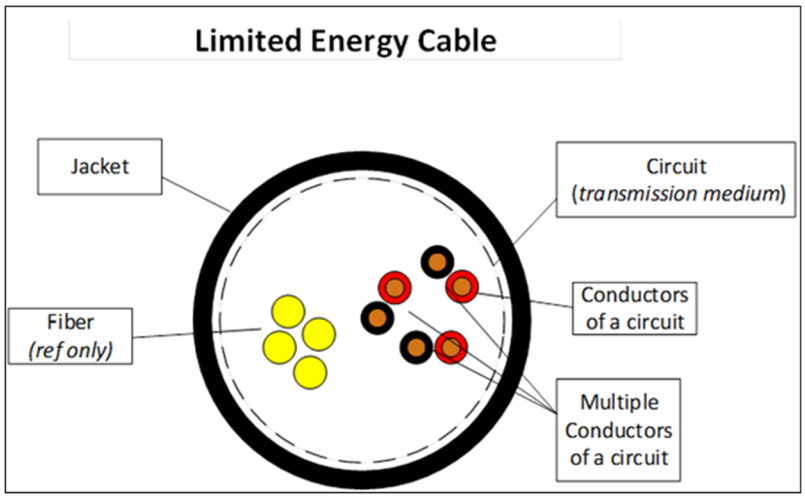
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

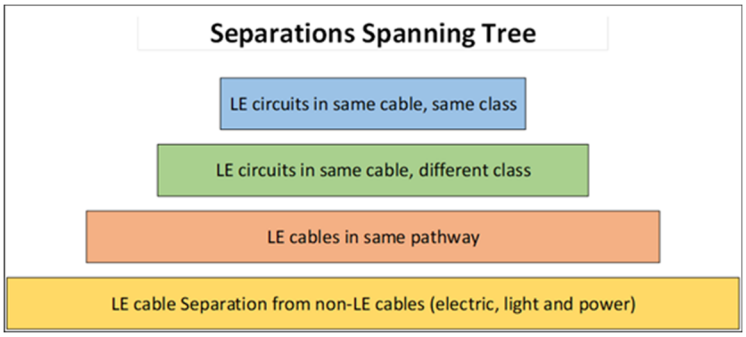
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 1707-NFPA 70-2023 [Section No. 770.24]

770.~~24~~ ~~Mechanical Execution of Work~~ 24 Installation .

(A) General.

~~Optical fiber cables shall be installed in a neat and workmanlike manner.~~ Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables*, ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises*, and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard*, for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

(B) Workmanship.

Optical fiber cables shall be mechanically executed and installed in a manner consistant with industry practices and standards.

Informational Note No. 1: See definition of *Workmanship* in Article 100.

Informational Note No. 2: See Section 110.12 for more information on Workmanship.

(C) Circuit Integrity (CI) Cable.

Circuit integrity (CI) cable shall be supported at a distance not exceeding 610 mm (24 in.).Cable shall be secured to the noncombustible surface of the building structure. Cable supports and fasteners shall be steel.

Statement of Problem and Substantiation for Public Input

Workmanship is an egalitarian term, that focuses on evaluating the craftsmanship of any individual or group, the overall standard of work, precision, and dedication put forth in achieving a desirable outcome regardless of gender.

These revisions provide clarity that the focus of Section 770.24 is on the General Installation rules and by adding a separate subsection on “Workmanship” it emphasizes the need for Workmanship in these installations, as well as creating consistency with other parts of this Code where Workmanship is either XXX.24 or XXX.24(X).

See Companion PIs pertaining to Sections:
- Article 100 Definition of “Workmanship”
- 110.12

- 393.24
- 600.24
- 600.33(B)
- 724.22
- 724.24
- 725.24
- 726.24
- 760.24
- 800.24

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1571-NFPA 70-2023 [New Definition after Definition: Work Surface.]	
Public Input No. 1596-NFPA 70-2023 [Section No. 110.12]	
Public Input No. 1630-NFPA 70-2023 [Section No. 393.14]	
Public Input No. 1632-NFPA 70-2023 [New Section after 393.21]	
Public Input No. 1669-NFPA 70-2023 [New Section after 600.24]	
Public Input No. 1668-NFPA 70-2023 [Section No. 600.24]	
Public Input No. 1670-NFPA 70-2023 [Section No. 600.33(B)]	
Public Input No. 1687-NFPA 70-2023 [Section No. 722.24]	
Public Input No. 1692-NFPA 70-2023 [New Section after 724.21]	
Public Input No. 1691-NFPA 70-2023 [Section No. 724.24]	
Public Input No. 1696-NFPA 70-2023 [New Section after 725.21]	
Public Input No. 1697-NFPA 70-2023 [Section No. 725.24]	
Public Input No. 1699-NFPA 70-2023 [New Section after 726.12]	
Public Input No. 1700-NFPA 70-2023 [Section No. 726.24]	
Public Input No. 1702-NFPA 70-2023 [Section No. 760.24]	
Public Input No. 1709-NFPA 70-2023 [Section No. 800.24]	
Public Input No. 1571-NFPA 70-2023 [New Definition after Definition: Work Surface.]	
Public Input No. 1596-NFPA 70-2023 [Section No. 110.12]	
Public Input No. 1630-NFPA 70-2023 [Section No. 393.14]	
Public Input No. 1632-NFPA 70-2023 [New Section after 393.21]	
Public Input No. 1668-NFPA 70-2023 [Section No. 600.24]	
Public Input No. 1669-NFPA 70-2023 [New Section after 600.24]	
Public Input No. 1670-NFPA 70-2023 [Section No. 600.33(B)]	
Public Input No. 1687-NFPA 70-2023 [Section No. 722.24]	
Public Input No. 1692-NFPA 70-2023 [New Section after 724.21]	
Public Input No. 1696-NFPA 70-2023 [New Section after 725.21]	
Public Input No. 1697-NFPA 70-2023 [Section No. 725.24]	
Public Input No. 1699-NFPA 70-2023 [New Section after 726.12]	
Public Input No. 1700-NFPA 70-2023 [Section No. 726.24]	
Public Input No. 1702-NFPA 70-2023 [Section No. 760.24]	
Public Input No. 1709-NFPA 70-2023 [Section No. 800.24]	

Submitter Information Verification

Submitter Full Name: Kyle Krueger

Organization: NECA
Affiliation: NECA
Street Address:
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Zip:
Submittal Date: Fri Jul 28 20:51:46 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The proposed requirements and term “workmanship” is ambiguous and unenforceable since “workmanship” is not a defined term in Article 100.

Public Input No. 1385-NFPA 70-2023 [Section No. 770.24(A)]

(A) General.

Optical fiber cables shall be installed in a ~~neat~~ professional and ~~workmanlike~~ skillful manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables*, ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises*, and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard*, for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

Statement of Problem and Substantiation for Public Input

To more closely correlate with wording in 110.12

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 203-NFPA 70-2023 [Global Input]	

Submitter Information Verification

Submitter Full Name: Kelly Wofford
Organization: EIG
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jul 12 11:25:10 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7615-NFPA 70-2024
Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to

improve usability.

The first sentence in 770.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Section 770.24(A) has also been subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]

(A) General.

Optical fiber cables shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables*, ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises*, and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard*, for accepted industry practices.

Informational Note No. 2: See NFPA 90A ~~-2021~~ , *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 8.5.5.6 for listing infomation of discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

Statement of Problem and Substantiation for Public Input

The edition date for NFPA 90A has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

The requirements for discrete products in 4.3.11.2.6.5 in NFPA 90A-2021 will be moved to 8.5.5.6 in the next (2024) edition of NFPA 90A.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	Revise NFPA 90A reference
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	Revise NFPA 90A reference
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	Revise NFPA 90A reference
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	Revise NFPA 90A reference
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]	Revise NFPA 90A reference
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]	Revise NFPA 90A reference
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]	Revise NFPA 90A reference
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	

Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
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Affiliation: Plastics Industry Association (PLASTICS)
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jan 04 10:58:12 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7615-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

The first sentence in 770.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Section 770.24(A) has also been subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 2014-NFPA 70-2023 [Section No. 770.24(A)]

(A) General.

Optical fiber cables shall be installed in a ~~neat~~ professional and ~~workmanlike manner~~ skillful manner . Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables*, ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises*, and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard*, for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

Statement of Problem and Substantiation for Public Input

This revision is needed to correlate with the wording in 110.12

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2009-NFPA 70-2023 [Section No. 722.24(A)]	“professional and skillful” instead of “neat and workmanlike”
Public Input No. 2010-NFPA 70-2023 [Section No. 724.24]	“professional and skillful” instead of “neat and workmanlike”
Public Input No. 2011-NFPA 70-2023 [Section No. 725.24]	“professional and skillful” instead of “neat and workmanlike”
Public Input No. 2012-NFPA 70-2023 [Section No. 726.24]	“professional and skillful” instead of “neat and workmanlike”
Public Input No. 2013-NFPA 70-2023 [Section No. 800.24(A)]	“professional and skillful” instead of “neat and workmanlike”
Public Input No. 2015-NFPA 70-2023 [Section No. 600.33(B)]	
Public Input No. 2016-NFPA 70-2023 [Section No. 393.14(A)]	
Public Input No. 2017-NFPA 70-2023 [Section No. 760.24(A)]	

Submitter Information Verification

Submitter Full Name: Russ Leblanc
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Submittal Date: Fri Aug 11 06:46:11 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7615-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

The first sentence in 770.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Section 770.24(A) has also been subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 2494-NFPA 70-2023 [Section No. 770.24(A)]

(A) General.

Optical fiber cables shall be installed in a ~~neat~~ professional and ~~workmanlike~~ skillful manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables*, ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises*, and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard*, for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

Statement of Problem and Substantiation for Public Input

Changing the wording matches what is in 110.12. Keeping the wording the same promotes consistency throughout the code. Additional inputs will be done for other code articles. 722.24, 724.24, 725.24 726.24 , 760.24(A), 800.24(A).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2486-NFPA 70-2023 [Section No. 722.24(A)]	
Public Input No. 2488-NFPA 70-2023 [Section No. 724.24]	
Public Input No. 2491-NFPA 70-2023 [Section No. 725.24]	
Public Input No. 2492-NFPA 70-2023 [Section No. 726.24]	
Public Input No. 2493-NFPA 70-2023 [Section No. 760.24(A)]	
Public Input No. 2495-NFPA 70-2023 [Section No. 800.24(A)]	
Public Input No. 2486-NFPA 70-2023 [Section No. 722.24(A)]	
Public Input No. 2488-NFPA 70-2023 [Section No. 724.24]	
Public Input No. 2491-NFPA 70-2023 [Section No. 725.24]	
Public Input No. 2492-NFPA 70-2023 [Section No. 726.24]	
Public Input No. 2493-NFPA 70-2023 [Section No. 760.24(A)]	
Public Input No. 2495-NFPA 70-2023 [Section No. 800.24(A)]	

Submitter Information Verification

Submitter Full Name: Lowell Reith

Organization: Interstates Construction Servi
Affiliation: IEC
Street Address:
City:
State:
Zip:
Submittal Date: Fri Aug 18 12:31:30 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7615-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

The first sentence in 770.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Section 770.24(A) has also been subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 287-NFPA 70-2023 [Section No. 770.24(A)]

(A) General.

Optical fiber cables shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4~~ and~~ , 300.11 and 334 . 30 . Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables*, ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises*, and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard*, for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

Statement of Problem and Substantiation for Public Input

Since the makeup of small conductor cables is about the same as NMB then supports should not exceed that as required for NMB. This would also make for a more "workmanlike manner"

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 283-NFPA 70-2023 [Section No. 722.24(A)]	
Public Input No. 284-NFPA 70-2023 [Section No. 724.24]	
Public Input No. 285-NFPA 70-2023 [Section No. 725.24]	
Public Input No. 286-NFPA 70-2023 [Section No. 760.24(A)]	

Submitter Information Verification

Submitter Full Name: Robert Nakamichi
Organization: City of Seattle
Street Address:
City:
State:
Zip:
Submittal Date: Sat Feb 04 09:47:09 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: The installation requirements for NMB do not apply to optical fiber cable.

Public Input No. 4441-NFPA 70-2023 [Section No. 770.24(A)]

(A) General.

Optical fiber cables shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See the following standards for more information on accepted industry practices related to optical fiber installations:

(1) ANSI/NECA/FOA 301-~~2016~~ , *Standard for Installing and Testing Fiber Optic Cables*~~,~~

(2) ANSI/TIA-568.0-D-~~2015~~ ,*Generic Telecommunications Cabling for Customer Premises*~~, and~~

(3) ANSI/TIA 568.3-D-~~2016~~ ,*Optical Fiber Cabling and Components Standard*~~, for accepted industry practices.~~

Informational Note No. 2: See NFPA 90A-~~2021~~ , *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

Statement of Problem and Substantiation for Public Input

Revised informational Note removing the date to maintain shelf life of the reference. The reference will be maintained referring to the most recently published edition of the standard.

Submitter Information Verification

Submitter Full Name: Kyle Krueger
Organization: NECA
Affiliation: NECA
Street Address:
City:
State:
Zip:
Submittal Date: Thu Sep 07 15:26:49 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The recommendations of this PI have not been adopted. The revisions dates in the informational notes have been revised with a separate action on 770.24(A) to align with

the manual of style.

Public Input No. 57-NFPA 70-2023 [Section No. 770.24(A)]

(A) General.

~~Optical fiber cables shall be installed in a neat and workmanlike manner.~~ Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples; cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables*, ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises*, and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard*, for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of optical fiber cable properties.

Statement of Problem and Substantiation for Public Input

Article 770 is not exempt from 90.3 or Article 110. Therefore, the requirements of Article 110 apply to Chapter 7 of the NEC. Accordingly, there is no need to restate the requirements of 110.12 in 770.24(A) that "optical fiber cables shall be installed in a professional and skillful manner." Further, in addition to there being no need to repeat general requirements from Article 110 here in this section, the requirements in this section do not comply with the NEC Style Manual since it was determined that "neat" and "workmanlike" were vague and unenforceable and were therefore changed to "professional" and "skillful" in 110.12. In sum, this sentence should be removed because it is unnecessary as it is redundant per 90.3, there is lack of correlation with 110.12, and it is in violation of the NEC Style Manual.

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jan 06 17:43:27 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7615-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

The first sentence in 770.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Section 770.24(A) has also been subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 3203-NFPA 70-2023 [Section No. 770.26]

~~**770.26** Spread of Fire or Products of Combustion.~~

~~Installations of optical fiber cables and communications raceways in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around penetrations of optical fiber cables and communications raceways through fire-resistant-rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating.~~

~~Informational Note: Directories of electrical construction materials published by qualified testing laboratories contain many listing installation restrictions necessary to maintain the fire-resistive rating of assemblies where penetrations or openings are made. Building codes also contain restrictions on membrane penetrations on opposite sides of a fire resistance-rated wall assembly. An example is the 600-mm (24-in.) minimum horizontal separation that usually applies between boxes installed on opposite sides of the wall. Assistance in complying with 770.26 can be found in building codes, fire resistance directories, and product listings.~~

Statement of Problem and Substantiation for Public Input

Submitted another public input to add spread of fire to 770.3. Removing this requirement will improve usability and add clarity for Code users.

Submitter Information Verification

Submitter Full Name: Mike Holt
Organization: Mike Holt Enterprises Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 30 10:57:58 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The recommended revisions of 770.3 were not adopted. Therefore this public input has not been adopted.

Public Input No. 2567-NFPA 70-2023 [New Section after 770.27]

NEW CONTENT in Part II.

770.43 Listed Optical Fiber Cables in Outdoor Cable Trays.

Optical fiber cables installed in outdoor cable trays shall be listed indoor/outdoor optical fiber cables, Type OFN-sunlight resistant, Type OFC-sunlight resistant, Type OFNG-sunlight resistant, Type OFCG-sunlight resistant, Type OFNR-sunlight resistant, Type OFCR-sunlight resistant, Type OFNP-sunlight resistant or Type OFCP-sunlight resistant.

Informational Note: The listing requirements for indoor/outdoor optical fiber cables (770.179G) permit “sunlight resistant” to be abbreviated “sun res”.

Statement of Problem and Substantiation for Public Input

Table 722.135(B) requires Type PLTC for cables run in outdoor cable trays. Article 770 has no provisions for a cable that’s used in outdoor cable trays. The PI fixes that omission.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2568-NFPA 70-2023 [Section No. 770.179]	Listing requirements for indoor/outdoor optical fiber cables
Public Input No. 2568-NFPA 70-2023 [Section No. 770.179]	

Submitter Information Verification

Submitter Full Name: David Kiddoo
Organization: CCCA
Affiliation: Communications Cable & Connectivity Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 22 10:44:21 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7639-NFPA 70-2024
Statement: There are installations of optical fiber cables used in outdoor cable trays, therefore this revision has been made to require that the cables are listed with a sunlight resistant rating

Public Input No. 419-NFPA 70-2023 [Section No. 770.44(A)(4)]

(4) Clearance.

Supply ~~service drops~~ utility drops and sets of overhead service conductors of 0 to 750 volts running above and parallel to optical fiber cable ~~service drops~~ utility drops shall have a minimum separation of 300 mm (12 in.) at any point in the span, including the point of their attachment to the building. Clearance of not less than 1.0 m (40 in.) shall be maintained between the two services at the pole.

Statement of Problem and Substantiation for Public Input

This PI is associated with several other PIs to recommend a global change from “service drop” to “utility drop” and from “service lateral” to “utility lateral.” “Service drop” appears 23 times in the Code and “service lateral” appears 15 times. There are 11 definitions that begin with the word ‘service.’ Of these, 9 are customer owned and only “service drop” and “service lateral” are utility owned and, therefore, outside the scope of the Code. “service drops” and “service laterals” are not service conductors as they do not fit the definition. Confining the word “service” to only those items that are customer owned would clear up much confusion on this topic. Appendix A shows UL 523 as having the title “telephone service drop wire” and the UL standard does, in fact, have that title. However, the text of UL 523 defines this wire as customer owned and Article 805 refers to this wire as a “drop wire.”

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 411-NFPA 70-2023 [Section No. 90.2(D)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 412-NFPA 70-2023 [Definition: Service Drop.]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 413-NFPA 70-2023 [Definition: Service-Entrance Conductors.]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 414-NFPA 70-2023 [Definition: Distribution Point (Center Yard Pole) (Meter Po...]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 415-NFPA 70-2023 [Definition: Service Lateral.]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 416-NFPA 70-2023 [Section No. 800.44(A)(4)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 417-NFPA 70-2023 [Section No. 700.12(F)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 418-NFPA 70-2023 [Section No. 701.12(F)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 420-NFPA 70-2023 [Section No. 770.44(B)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 421-NFPA 70-2023 [Section No. 230.24(A)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 422-NFPA 70-2023 [Section No. 230.40]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 423-NFPA 70-2023 [Section No. 250.24(A)(1)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'

Public Input No. 424-NFPA 70-2023 [Section No. 250.24(F)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 425-NFPA 70-2023 [Section No. 250.64(D)(1)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 426-NFPA 70-2023 [Section No. 250.66 [Excluding any Sub-Sections]]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 411-NFPA 70-2023 [Section No. 90.2(D)]	
Public Input No. 412-NFPA 70-2023 [Definition: Service Drop.]	
Public Input No. 413-NFPA 70-2023 [Definition: Service-Entrance Conductors.]	
Public Input No. 414-NFPA 70-2023 [Definition: Distribution Point (Center Yard Pole) (Meter Po...]	
Public Input No. 415-NFPA 70-2023 [Definition: Service Lateral.]	
Public Input No. 416-NFPA 70-2023 [Section No. 800.44(A)(4)]	
Public Input No. 417-NFPA 70-2023 [Section No. 700.12(F)]	
Public Input No. 418-NFPA 70-2023 [Section No. 701.12(F)]	
Public Input No. 420-NFPA 70-2023 [Section No. 770.44(B)]	
Public Input No. 421-NFPA 70-2023 [Section No. 230.24(A)]	
Public Input No. 422-NFPA 70-2023 [Section No. 230.40]	
Public Input No. 423-NFPA 70-2023 [Section No. 250.24(A)(1)]	
Public Input No. 424-NFPA 70-2023 [Section No. 250.24(F)]	
Public Input No. 425-NFPA 70-2023 [Section No. 250.64(D)(1)]	
Public Input No. 426-NFPA 70-2023 [Section No. 250.66 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Eric Stromberg
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Affiliation: Self
Street Address:
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State:
Zip:
Submittal Date: Sat Mar 04 16:44:35 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7687-NFPA 70-2024

Statement: To provide consistent terminology throughout the section, the term “supply service drops” was changed to “electric light or power conductors”.

Public Input No. 420-NFPA 70-2023 [Section No. 770.44(B)]

(B) Above Roofs.

Outside plant optical fiber cables shall have a vertical clearance of not less than 2.5 m (8 ft) from all points of roofs above which they pass.

Exception No. 1: The requirement of 770.44(B) shall not apply to auxiliary buildings such as garages and the like.

Exception No. 2: A reduction in clearance above only the overhanging portion of the roof to not less than 450 mm (18 in.) shall be permitted if (1) not more than 1.2 m (4 ft) of optical fiber cable ~~service drop~~ utility drop cable passes above the roof overhang, and (2) the cable is terminated at a through- or above-the-roof raceway or approved support.

Exception No. 3: Where the roof has a slope of not less than 100 mm in 300 mm (4 in. in 12 in.), a reduction in clearance to not less than 900 mm (3 ft) shall be permitted.

Informational Note: See ANSI/IEEE C2-2017, *National Electric Safety Code, Part 2, Safety Rules for Overhead Lines*, for additional information regarding overhead wires and cables.

Statement of Problem and Substantiation for Public Input

This PI is associated with several other PIs to recommend a global change from “service drop” to “utility drop” and from “service lateral” to “utility lateral.” “Service drop” appears 23 times in the Code and “service lateral” appears 15 times. There are 11 definitions that begin with the word ‘service.’ Of these, 9 are customer owned and only “service drop” and “service lateral” are utility owned and, therefore, outside the scope of the Code. “service drops” and “service laterals” are not service conductors as they do not fit the definition. Confining the word “service” to only those items that are customer owned would clear up much confusion on this topic. Appendix A shows UL 523 as having the title “telephone service drop wire” and the UL standard does, in fact, have that title. However, the text of UL 523 defines this wire as customer owned and Article 805 refers to this wire as a “drop wire.”

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 411-NFPA 70-2023 [Section No. 90.2(D)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 412-NFPA 70-2023 [Definition: Service Drop.]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 413-NFPA 70-2023 [Definition: Service-Entrance Conductors.]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 414-NFPA 70-2023 [Definition: Distribution Point (Center Yard Pole) (Meter Po...]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 415-NFPA 70-2023 [Definition: Service Lateral.]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 416-NFPA 70-2023 [Section No. 800.44(A)(4)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 417-NFPA 70-2023 [Section No. 700.12(F)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 418-NFPA 70-2023 [Section No. 701.12(F)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'

Public Input No. 419-NFPA 70-2023 [Section No. 770.44(A)(4)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 421-NFPA 70-2023 [Section No. 230.24(A)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 422-NFPA 70-2023 [Section No. 230.40]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 423-NFPA 70-2023 [Section No. 250.24(A)(1)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 424-NFPA 70-2023 [Section No. 250.24(F)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 425-NFPA 70-2023 [Section No. 250.64(D)(1)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 426-NFPA 70-2023 [Section No. 250.66 [Excluding any Sub-Sections]]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 411-NFPA 70-2023 [Section No. 90.2(D)]	
Public Input No. 412-NFPA 70-2023 [Definition: Service Drop.]	
Public Input No. 413-NFPA 70-2023 [Definition: Service-Entrance Conductors.]	
Public Input No. 414-NFPA 70-2023 [Definition: Distribution Point (Center Yard Pole) (Meter Po...]	
Public Input No. 415-NFPA 70-2023 [Definition: Service Lateral.]	
Public Input No. 416-NFPA 70-2023 [Section No. 800.44(A)(4)]	
Public Input No. 417-NFPA 70-2023 [Section No. 700.12(F)]	
Public Input No. 418-NFPA 70-2023 [Section No. 701.12(F)]	
Public Input No. 419-NFPA 70-2023 [Section No. 770.44(A)(4)]	
Public Input No. 421-NFPA 70-2023 [Section No. 230.24(A)]	
Public Input No. 422-NFPA 70-2023 [Section No. 230.40]	
Public Input No. 423-NFPA 70-2023 [Section No. 250.24(A)(1)]	
Public Input No. 424-NFPA 70-2023 [Section No. 250.24(F)]	
Public Input No. 425-NFPA 70-2023 [Section No. 250.64(D)(1)]	
Public Input No. 426-NFPA 70-2023 [Section No. 250.66 [Excluding any Sub-Sections]]	

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Committee: NEC-P16

Committee Statement

Resolution: FR-7690-NFPA 70-2024
Statement: “Optical fiber cable service drop cable” was simplified to “optical fiber cable” to improve clarity. The reference to the National Electrical Safety code has been updated.

Public Input No. 2561-NFPA 70-2023 [Section No. 770.48]

~~**770.48** Unlisted Cables Entering Buildings.~~

~~**(A)** Conductive and Nonconductive Cables.~~

~~Unlisted conductive and nonconductive outside plant optical fiber cables shall be permitted to be installed in building spaces, other than risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air, where the length of the cable within the building, measured from its point of entrance, does not exceed 15 m (50 ft) and the cable enters the building from the outside and is terminated in an enclosure.~~

~~The point of entrance shall be permitted to be extended from the penetration of the external wall, roof, or floor slab by continuously enclosing the entrance optical fiber cables in rigid metal conduit (RMC) or intermediate metal conduit (IMC) to the point of emergence.~~

~~Informational Note: Splice cases or terminal boxes, both metallic and plastic types, typically are used as enclosures for splicing or terminating optical fiber cables.~~

~~**(B)** Nonconductive Cables in Raceway.~~

~~Unlisted nonconductive outside plant optical fiber cables shall be permitted to enter the building from the outside and shall be permitted to be installed in any of the following raceways:~~

(1) ~~Intermediate metal conduit (IMC)~~

(2) ~~Rigid metal conduit (RMC)~~

(3) ~~Rigid polyvinyl chloride conduit (PVC)~~

(4) ~~Electrical metallic tubing (EMT)~~

~~Unlisted nonconductive outside plant cables installed in rigid polyvinyl chloride conduit (PVC) or electrical metallic tubing (EMT) shall not be installed in risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air.~~

Statement of Problem and Substantiation for Public Input

Article 770, Optical Fiber Cables, despite being in Chapter 7, is written as a communications article. Just like Article 800, it has provisions for unlisted outside plant cables to enter the building for up to 50 feet. It doesn't have any requirements for outside plant wiring because it assumes that outside plant wiring is covered by the National Electrical Safety Codes.

In contrast to the communications Articles, Article 722, provides for the listing and use of Type PLTC, power-limited tray cable, which is outdoor rated Class 3 cable that is suitable to be installed in outdoor cable trays, an installation pathway that is common in refineries.

Since Article 770 is written as a communications Article, it has no provision for a listed cable suitable for use in outdoor cable trays.

This PI and companion PIs introduce listing and installation requirements for optical fiber cables listed for use in outdoor cable trays. These PIs coordinate with a series of PIs that bring optical fiber cables into Article 800 in order to improve usability by having all the cables use for communications, both optical fiber and metallic conductor in Article 800.

This PI deletes 770.48, Unlisted Cables Entering Buildings, because communications applications are the only applications that utilize unlisted optical fiber cables. PI 1131 provides for the requirements of

770.48 to be moved into section 800.48 and consolidated with similar requirements for unlisted communications cables and unlisted CATV-type coaxial cables.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1131-NFPA 70-2023 [Section No. 800.48]	Adds optical fiber cables for completeness
Public Input No. 1131-NFPA 70-2023 [Section No. 800.48]	

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: FR-7691-NFPA 70-2024
Statement: Section 770.48 has been deleted with its requirements incorporated into 800.48. See separate action taken on 800.48.

Public Input No. 4365-NFPA 70-2023 [Section No. 770.48(A)]

(A) Conductive and Nonconductive Cables.

Unlisted conductive and nonconductive outside plant optical fiber cables shall be permitted to be installed in building spaces, other than risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air, where the length of the cable within the building, measured from its point of entrance, does not exceed 15 m (50 ft) and the cable enters the building from the outside and is terminated in an ~~enclosure~~ enclosure ***without the use of pull or junction boxes and in which the cable length does not exceed 150'*** .

The point of entrance shall be permitted to be extended from the penetration of the external wall, roof, or floor slab by continuously enclosing the entrance optical fiber cables in rigid metal conduit (RMC) or intermediate metal conduit (IMC) to the point of emergence.

Informational Note: Splice cases or terminal boxes, both metallic and plastic types, typically are used as enclosures for splicing or terminating optical fiber cables.

Statement of Problem and Substantiation for Public Input

The existing wording has lead to a semantics debate between Engineers, Code Enforcement officials and end users (Owners) as to what constitutes a "continuous" installation to the point of emergence. After speaking directly with the NFPA, the intent is to not allow any pull points with unlisted, conductive cable. I believe the modified wording will help end the discussions as to what is allowed.

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Committee: NEC-P16

Committee Statement

Resolution: The requirements of 770.48 have been incorporated in 800.48. However, the proposed cable extension from 50 ft to 150 ft has not been incorporated since a technical substantiation was not provided that addressed the inherent hazard in extending to such a cable length.

Public Input No. 193-NFPA 70-2023 [New Section after 770.100(D)]

(E) Grounding Devices.

If bonding or grounding is required, devices used to connect a shield, a sheath, or non–current-carrying metallic members of a cable to a bonding conductor or grounding electrode conductor shall be listed or be part of listed equipment.

Statement of Problem and Substantiation for Public Input

Section 770.180 Grounding Devices in Part VI Listing Requirements, requires that the grounding device be a listed device or be part of listed equipment. This requirement is not actually a listing requirement but an installation requirement that belongs in Part IV, Ground Methods.

We have submitted two PIs to improve the usability of the code by moving the text of 770.180 to (new) 770.100(E). Two PIs are needed, one to delete 770.180 and another to create 770.100(E).

“Where bonding or grounding is required” was changed to “If bonding or grounding is required” to comply with NEC Style Manual section 3.5.4 Word Clarity.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 194-NFPA 70-2023 [Section No. 770.180]	deletes 770.180
Public Input No. 194-NFPA 70-2023 [Section No. 770.180]	
Public Input No. 200-NFPA 70-2023 [New Section after 800.100(D)]	
Public Input No. 201-NFPA 70-2023 [Section No. 800.180]	

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Committee: NEC-P16

Committee Statement

Resolution: FR-7696-NFPA 70-2024
Statement: This revision moves the listing requirement for grounding devices to Part IV Grounding Methods from 770.180 because this requirement is not a listing requirement, but an installation requirement.

Public Input No. 4072-NFPA 70-2023 [New Section after 770.106]

770.108 Grounding and Bonding of Cables Within Buildings.

Non-current-carrying conductive members of optical fiber cables installed in buildings shall be bonded to a grounded equipment rack or enclosure, or grounded in accordance with the grounding methods specified by 770.100(B) using a conductor specified in 770.100(A).

Statement of Problem and Substantiation for Public Input

During development of PI 4069 and related PIs, it was noted that Article 770.114 was specifically a grounding method, including reference to Article 770.100 found in Part IV. Grounding Methods of Article 770.
This public input is the first in a pair of public inputs to move Article 770.114 to be within Part IV. Included with the movement is also the addition of “installed in buildings” to differentiate between those cables within a building versus those cable entering or terminating on the exterior of a building as already provided within Article 770.93.
While the NEC Style manual Section 3.3.5 encourages parallel language for clarity, even in the absence of approval of PI 4069, the change moves a grounding method to the grounding methods section which improves both readability and clarity.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 4069-NFPA 70-2023 [New Section after 800.106]	Related
Public Input No. 4073-NFPA 70-2023 [Section No. 770.114]	

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: FR-7942-NFPA 70-2024

Statement: This revision moves Section 770.114, for the grounding and bonding of non-current-carrying conductive members of optical fiber cables, to Part IV of Article 770 which is appropriately entitled Part IV. Grounding Methods. The first sentence of 770.this section has been clarified to identify the location of the cables inside the building and the title has been revised for consistency with the requirements of the section.

Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]

(2) Uses Not Permitted.

Types OFNR, OFCR, OFNG, OFCG, OFN, and OFC shall not be permitted to be installed in ducts specifically fabricated for environmental air as described in 300.22(B).

Informational Note: See NFPA 90A ~~-2021~~ , *Standard for the Installation of Air-Conditioning and Ventilating Systems*, Chapter 10, Electrical and Optical Fiber Wiring and Equipment in Plenums and Ducts for information on fire protection of wiring installed in fabricated ducts.

Statement of Problem and Substantiation for Public Input

The edition date for NFPA 90A has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

The current edition of NFPA 90A, the 2024 edition, has been significantly reorganized. In previous editions, electrical requirements for installation in ducts and plenums were in Chapter 4, HVAC Systems. The 2024 edition has a new Chapter 10, Electrical and Optical Fiber Wiring and Equipment in Plenums and Ducts. Consequently, Informational Notes referencing electrical requirements in NFPA 90A need to be revised.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 11-NFPA 70-2023 [Section No. 645.4]	Revise NFPA 90A reference
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	Revise NFPA 90A reference
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	Revise NFPA 90A reference
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	Revise NFPA 90A reference
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	Revise NFPA 90A reference
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	Revise NFPA 90A reference
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]	Revise NFPA 90A reference
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]	Revise NFPA 90A reference
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]	Revise NFPA 90A reference
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]	
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]	
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	

Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]

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Committee: NEC-P16

Committee Statement

Resolution: FR-7732-NFPA 70-2024
Statement: Revised informational note to align with the NEC style manual and added a reference to NFPA 90A, Chapter 10 for user clarity.

Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]

(2) Uses Not Permitted.

Types OFNR, OFCR, OFNG, OFCG, OFN, and OFC shall not be permitted to be installed in other spaces used for environmental air (plenums).

Informational Note: See NFPA 90A ~~-2018~~ , *Standard for the Installation of Air-Conditioning and Ventilating Systems*, Chapter 10, Electrical and Optical Fiber Wiring and Equipment in Plenums and Ducts. for information on fire protection of wiring installed in other spaces used for environmental air.

Statement of Problem and Substantiation for Public Input

The edition date for NFPA 90A has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

The next edition of NFPA 90A, the 2024 edition, will be significantly reorganized. In the current (2021) and previous editions, electrical requirements for installation in ducts and plenums were in Chapter 4, HVAC Systems. The 2024 edition will have a new Chapter 10, Electrical and Optical Fiber Wiring and Equipment in Plenums and Ducts. Consequently, Informational Notes referencing electrical requirements in NFPA 90A need to be revised.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	Revise NFPA 90A reference
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	Revise NFPA 90A reference
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	Revise NFPA 90A reference
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	Revise NFPA 90A reference
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	Revise NFPA 90A reference
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]	Revise NFPA 90A reference
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]	Revise NFPA 90A reference
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]	Revise NFPA 90A reference
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]	
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]	
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]	

Public Input No. 26-NFPA 70-2023 [Section No. 800.170]
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]

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Committee: NEC-P16

Committee Statement

Resolution: FR-7735-NFPA 70-2024
Statement: Revised informational note to align with the NEC style manual and added a reference to NFPA 90A, Chapter 10 for user clarity.

Public Input No. 4073-NFPA 70-2023 [Section No. 770.114]

~~**770.114** Grounding.~~

~~Non-current-carrying conductive members of optical fiber cables shall be bonded to a grounded equipment rack or enclosure, or grounded in accordance with the grounding methods specified by 770.100(B) using a conductor specified in 770.100(A) .~~

Statement of Problem and Substantiation for Public Input

With the creation of Article 770.108 within PI 4072, Article 770.114 can be deleted as it is duplicative.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 4072-NFPA 70-2023 [New Section after 770.106]	Dependent

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Committee: NEC-P16

Committee Statement

Resolution: FR-7942-NFPA 70-2024

Statement: This revision moves Section 770.114, for the grounding and bonding of non-current-carrying conductive members of optical fiber cables, to Part IV of Article 770 which is appropriately entitled Part IV. Grounding Methods. The first sentence of 770.this section has been clarified to identify the location of the cables inside the building and the title has been revised for consistency with the requirements of the section.

Public Input No. 3445-NFPA 70-2023 [Sections 770.133(A), 770.133(B), 770.133(C)]

~~**Sections 770.133(A), 770.133(B), 770.133(C)**~~

~~**(A)** In Cable Trays and Raceways.~~

~~Conductive optical fiber cables contained in an armored or metal-clad-type sheath and nonconductive optical fiber cables shall be permitted to occupy the same cable tray or raceway with conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits operating at 1000 volts or less. Conductive optical fiber cables without an armored or metal-clad-type sheath shall not be permitted to occupy the same cable tray or raceway with conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits, unless all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are separated from all of the optical fiber cables by a permanent barrier or listed divider.~~

~~**(B)** In Cabinets, Outlet Boxes, and Similar Enclosures.~~

~~Nonconductive optical fiber cables shall not be permitted to occupy the same cabinet, outlet box, panel, or similar enclosure housing the electrical terminations of an electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit unless one or more of the following conditions exist:~~

(1) ~~The nonconductive optical fiber cables are functionally associated with the electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit.~~

(2) ~~The conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits operate at 1000 volts or less.~~

(3) ~~The nonconductive optical fiber cables and the electrical terminations of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuit are installed in factory- or field-assembled control centers.~~

(4) ~~The nonconductive optical fiber cables are installed in an industrial establishment where conditions of maintenance and supervision ensure that only qualified persons service the installation.~~

~~When optical fibers are within the same hybrid cable for electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits operating at 1000 volts or less, they shall be permitted to be installed only where the functions of the optical fibers and the electrical conductors are associated.~~

~~Optical fibers in hybrid optical fiber cables containing only current-carrying conductors for electric light, power, or Class 1 circuits rated 1000 volts or less shall be permitted to occupy the same cabinet, cable tray, outlet box, panel, raceway, or other termination enclosure with conductors for electric light, power, or Class 1 circuits operating at 1000 volts or less.~~

~~Optical fibers in hybrid optical fiber cables containing current-carrying conductors for electric light, power, or Class 1 circuits rated over 1000 volts shall be permitted to occupy the same cabinet, cable tray, outlet box, panel, raceway, or other termination enclosure with conductors for electric light, power, or Class 1 circuits in industrial establishments, where conditions of maintenance and supervision ensure that only qualified persons service the installation.~~

~~**(C)** With Other Circuits.~~

~~Conductive and nonconductive optical fiber cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly, with conductors of any of the following:~~

(1) ~~Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with 645.5(E)(2) or Parts I and II of Article 725~~

(2) ~~Power-limited fire alarm systems in compliance with Parts I and III of Article 760~~

(3) ~~Communications circuits in compliance with Parts I and V of Article 805~~

(4) ~~Community antenna television and radio distribution systems in compliance with Parts I and V of Article 820~~

(5) ~~Low-power network-powered broadband communications circuits in compliance with Parts I and V of Article 830~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_First_Draft_Substantiation.docx	First Draft Substantiation	

Statement of Problem and Substantiation for Public Input

This text is being deleted as part of the reorganization of the limited energy articles. The deleted text is relocated as a general requirement to new Article X00.

Submitter Information Verification

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Submittal Date: Sun Sep 03 06:11:59 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The text from Article 770 is not relocated but greatly shortened and altered in the Section X00.100 of the new proposed Article X00 under PI 3234. There is no technical justification supplied for the technical changes to the text.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

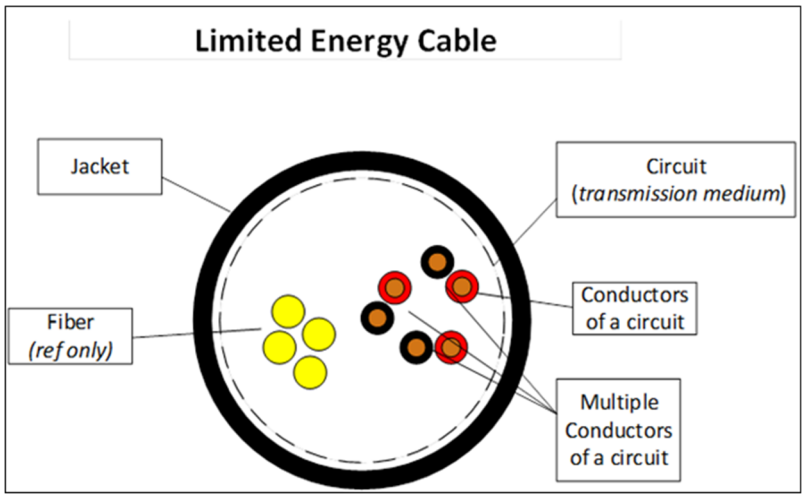
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

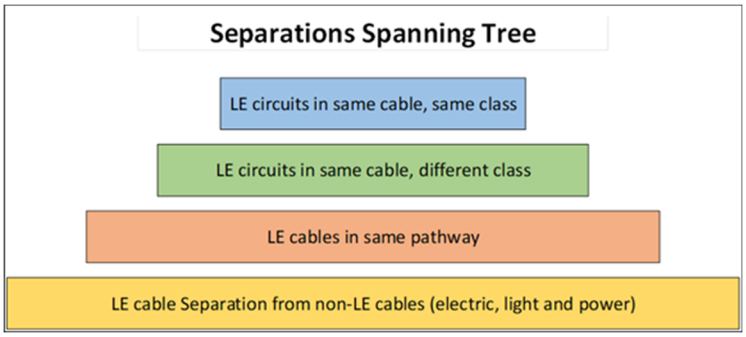
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 2963-NFPA 70-2023 [Section No. 770.133(C)]

(C) With Other Circuits.

Conductive and nonconductive optical fiber cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly, with conductors of any of the following:

(1) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with 645.5(E)(2) or Article 725, Parts I and II ~~of Article 725~~

(2) Power-limited fire alarm systems in compliance with Article 760, Parts I and III ~~of Article 760~~

(3) Communications circuits in compliance with Article 805, Parts I and V ~~of Article 805~~

(4) Community antenna television and radio distribution systems in compliance with Article 820, Parts I and V ~~of Article 820~~

(5) Low-power network-powered broadband communications circuits in compliance with Article 830, Parts I and V ~~of Article 830~~

Statement of Problem and Substantiation for Public Input

This Public Input is being submitted on behalf of the NEC Correlating Committee Usability Task Group in order to provide correlation throughout the document. The text is revised to to comply with the NEC Style Manual Section 4.1.4, regarding the use of Parts.
4.1.4 References to an Entire Article. References shall not be made to an entire article, except for the Article 100 or where referenced to provide the necessary context. References to specific parts within articles shall be permitted. References to all parts of an article shall not be permitted. The article number shall precede the part number.
The Usability Task Group members are: Derrick Atkins, David Hittinger, Richard Holub, Dean Hunter, Chad Kennedy and David Williams.

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Committee: NEC-P16

Committee Statement

Resolution: The actions taken on 770.133(C) removed the relative language being revised with this PI and is therefore not adopted.

Public Input No. 3928-NFPA 70-2023 [Section No. 770.133(C)]

(C) With Other Circuits.

Conductive and nonconductive optical fiber cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly, with conductors of any of the following:

(1) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with 645.5(E)(2) or Parts I and II of Article 725

(2) Class 4 fault managed power circuits in compliance with 645.5(E)(2) and Parts I and II of Article 726

(3) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(4) Communications circuits in compliance with Parts I and V of Article 805

(5) Community antenna television and radio distribution systems in compliance with Parts I and V of Article 820

(6) Low-power network-powered broadband communications circuits in compliance with Parts I and V of Article 830

Statement of Problem and Substantiation for Public Input

One major application of Class 4 is used in a hybrid cable (containing both fiber optic for data and Class 4 copper conductors for power). Not having this item in the list could be construed as disallowing this application. This should have been added when Class 4 was added in the 2023 code, not adding was an oversight.

Submitter Information Verification

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Submittal Date: Wed Sep 06 10:40:19 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7767-NFPA 70-2024
Statement: Revision reflects that cables must be listed and other readability improvements and class 4 cables have been added because they are allowed to be routed within the same raceway as the circuits covered within the 770.133.

Public Input No. 4035-NFPA 70-2023 [Section No. 770.133(C)]

(C) With Other Circuits.

Listed Conductive and nonconductive optical fiber cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly

,
with

~~conductors of~~
any of the following:

(1) Listed Class 2 and Class 3 remote-control, signaling, and power-limited ~~circuits in compliance with~~ 645.5(E)(2) ~~or Parts I and II of Article 725~~

(2) cables

(3) Listed Class 4 cables

(3) Listed Power-limited fire alarm

~~systems in compliance with Parts I and III of Article 760~~

- ~~Communications circuits in compliance with Parts I and V of Article 805~~
  cables

(4) Listed Communications cables

(5) Listed Community antenna television and radio distribution

~~systems in compliance with Parts I and V of Article 820~~
system coaxial cables

(6) Listed Low-power network-powered broadband communications

~~circuits in compliance with Parts I and V of Article 830~~
cables

Statement of Problem and Substantiation for Public Input

- Changes to reflect these are listed cables and other readability improvements (e.g., no need to state in compliance with the installation rules of the Article, as already required for cabling under that Article)

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: FR-7767-NFPA 70-2024

Statement: Revision reflects that cables must be listed and other readability improvements and class 4 cables have been added because they are allowed to be routed within the same raceway as the circuits covered within the 770.133.

Public Input No. 918-NFPA 70-2023 [Section No. 770.133(C)]

(C) With Other ~~Circuits~~ Cables .

~~Conductive~~ Listed conductive and nonconductive optical fiber cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly, with ~~conductors of~~ any of the following:

(1) Listed Class 2 and Class 3 remote-control, signaling, and power-limited ~~circuits~~ cables installed in compliance with 645.5(E)(2); or Article 722, Part I, and Article 725, Parts I and II ~~of Article 725~~

~~Power~~

(2)

(3) Listed Class 4 cables installed in compliance with Article 722, Part I, and Article 726, Parts I and II

(4) Listed power -limited fire alarm systems cables installed in compliance with Article 760, Parts I and III ~~of Article 760~~

~~Communications circuits~~

(5)

(6) Listed communications cables installed in compliance with Article 800, Parts I and ~~V of Article 805~~

~~Community~~

(7) IV

(8) Listed community antenna television and radio distribution systems coaxial cables installed in compliance with Article 800, Parts I and ~~V of~~ III, and Article 820

~~Low~~

(9) , Parts I and V

(10) Listed low -power network-powered broadband communications ~~circuits~~ cables installed in compliance with Article 800, Parts I and ~~V of~~ III, and Article 830, Parts I and V

Statement of Problem and Substantiation for Public Input

The primary purpose of this PI is to correlate with 726.139(C) which permits Class 4 cables to be run in the same pathway as the cables in 770.133(A)(1).

In order to improve usability, word “listed” is inserted before each cable type to clarify that all the cables that are permitted to be run together are listed cables. This clarification is need to avoid any interpretation that unlisted outside-plant communications and optical fiber cables are permitted to be run with listed communications and optical fiber cables, and Class 2, Class 3, Class 4 and fire alarm cables, which are always listed.

Minor editorial changes were made clarify that “the installation” needs to be in compliance with the installation rules, not the “circuit”. “Circuits” was changed to “cables” to clarify that this section is about which cables are permitted to be run together in the same pathway.

The installation rules for communications cables were moved from Article 805 to Article 800 in the 2023 NEC.

The references to other Articles have been revised to comply with the 2023 NEC Style Manual section 4.1.4 which states, “The article number shall precede the part number.”

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 818-NFPA 70-2023 [Section No. 726.139]	Provide for dual listing.
Public Input No. 817-NFPA 70-2023 [Section No. 725.139]	Correlate with 726.139 Class 4 cable requirements
Public Input No. 826-NFPA 70-2023 [Section No. 830.133(A)(1)]	Correlate with 726.139 Class 4 cable requirements
Public Input No. 895-NFPA 70-2023 [Section No. 760.139]	Correlate with 726.139 Class 4 cable requirements
Public Input No. 899-NFPA 70-2023 [Section No. 800.133(A)(1)]	Correlate with 726.139 Class 4 cable requirements
Public Input No. 817-NFPA 70-2023 [Section No. 725.139]	
Public Input No. 818-NFPA 70-2023 [Section No. 726.139]	
Public Input No. 895-NFPA 70-2023 [Section No. 760.139]	

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Submittal Date: Fri Jun 02 08:17:22 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7767-NFPA 70-2024

Statement: Revision reflects that cables must be listed and other readability improvements and class 4 cables have been added because they are allowed to be routed within the same raceway as the circuits covered within the 770.133.

Public Input No. 2568-NFPA 70-2023 [Section No. 770.179]

770.179 Optical Fiber Cables.

Optical fiber cables shall be listed and identified in accordance with 770.179(A) through (~~G~~ H) and shall be marked in accordance with Table 770.179. Optical fiber cables shall have a temperature rating of not less than 60°C (140°F). The temperature rating shall be marked on the jacket of optical fiber cables that have a temperature rating exceeding 60°C (140°F).

Informational Note: See UL 1651-2015, *Standard for Optical Fiber Cable, for information on optical fiber cables.*

Table 770.179 Cable Markings

Cable Marking	Type
OFNP	Nonconductive optical fiber plenum cable
OFCP	Conductive optical fiber plenum cable
OFNR	Nonconductive optical fiber riser cable
OFCR	Conductive optical fiber riser cable
OFNG	Nonconductive optical fiber general-purpose cable
OFCG	Conductive optical fiber general-purpose cable
OFN	Nonconductive optical fiber general-purpose cable
OFC	Conductive optical fiber general-purpose cable

(A) Types OFNP and OFCP.

Types OFNP and OFCP nonconductive and conductive optical fiber plenum cables shall be suitable for use in ducts, plenums, and other space used for environmental air and shall also have adequate fire-resistant and low-smoke-producing characteristics.

Informational Note: See NFPA 262-2019, *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces*, for one method of defining that a cable has adequate fire-resistant and low-smoke-producing characteristics where the cable exhibits a maximum peak optical density of 0.50 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.52 m (5 ft) or less.

(B) Types OFNR and OFCR.

Types OFNR and OFCR nonconductive and conductive optical fiber riser cables shall be suitable for use in a vertical run in a shaft or from floor to floor and shall also have the fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

Informational Note: See ANSI/UL 1666-2017, *Standard Test for Flame Propagation Height of Electrical and Optical-Fiber Cable Installed Vertically in Shafts*, for one method of defining fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

(C) Types OFNG and OFCG.

Types OFNG and OFCG nonconductive and conductive general-purpose optical fiber cables shall be suitable for general-purpose use, with the exception of risers and plenums, and shall also be resistant to the spread of fire

Informational Note No. 1: See CSA Vertical Flame Test — Cables in Cable Trays, as described in CSA C22.2 No. 0.3-2009 (R2019), *Test Methods for Electrical Wires and Cables*, for one method of defining *resistant to the spread of fire* for the damage (char length) not to exceed 1.5 m (4 ft 11 in.) when performing the test.

Informational Note No. 2: See ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*, for another method of defining *resistant to the spread of fire* where the cables do not spread fire to the top of the tray in the UL flame exposure, vertical tray flame test. The smoke measurements in the test method are not applicable.

(D) Types OFN and OFC.

Types OFN and OFC nonconductive and conductive optical fiber cables shall be suitable for general-purpose use, with the exception of risers, plenums, and other spaces used for environmental air, and shall also be resistant to the spread of fire.

Informational Note No. 1: See ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*, for one method of defining *resistant to the spread of fire* where the cables do not spread fire to the top of the tray in the UL flame exposure, vertical tray flame test. The smoke measurements in the test method are not applicable.

Informational Note No. 2: See CSA Vertical Flame Test — Cables in Cables Trays, as described in CSA C22.2 No. 0.3-2009 (R2019), *Test Methods for Electrical Wires and Cables*, for another method of defining *resistant to the spread of fire* where the damage (char length) does not exceed 1.5 m (4 ft 11 in.).

Informational Note No. 3: Cable types are listed in descending order of fire resistance rating. Within each fire resistance rating, nonconductive cable is listed first because it is often substituted for conductive cable.

(E) Circuit Integrity (CI), Fire-Resistive Cable System, or Electrical Circuit Protective System.

Cables that are used for survivability of critical circuits under fire conditions shall meet either 770.179(E)(1), (E)(2), or (E)(3).

(1) Circuit Integrity (CI) Cables.

Cables specified in 770.179(A) through (D), and used for survivability of critical circuits, shall be marked with the additional classification using the suffix “CI.” In order to maintain its listed fire rating, CI cable shall only be installed in free air in accordance with 770.24. CI cables shall only be permitted to be installed in a raceway where specifically listed and marked as part of a fire-resistive cable system as covered in 770.179(E)(2).

Informational Note: See UL 2196, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for one method of defining CI cable for establishing a minimum 2-hour fire resistance rating for the cable as specified in UL 1651, *Optical Fiber Cable*. UL *Guide Information for Optical Cable Fiber (QAYK)* contains information to identify the cable and its installation limitations to maintain the fire-resistive rating.

(2) Fire-Resistive Cables.

Cables specified in 770.179(A) through (D) and 770.179(E)(1) that are part of an electrical circuit protective system shall be fire-resistive cable and identified with the protective system number on the product or on the smallest unit container in which the product is packaged and installed in accordance with the listing of the protective system.

Informational Note: See UL 2196, *Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for one method of defining an electrical circuit protective system for establishing a rating for the system. UL *Guide Information for Electrical Circuit Integrity Systems (FHIT)* contains information to identify the system and its installation limitations to maintain a minimum fire-resistive rating.

(F) Field-Assembled Optical Fiber Cables.

Field-assembled optical fiber cable shall comply with the following:

(1) The specific combination of jacket and optical fibers intended to be installed as a field-assembled optical fiber cable shall be one of the types in 770.179(A), (B), or (D) and shall be marked in accordance with Table 770.179.

(2) The jacket of a field-assembled optical fiber cable shall have a surface marking indicating the specific optical fibers with which it is identified for use.

(3) The optical fibers shall have a permanent marking, such as a marker tape, indicating the jacket with which they are identified for use.

(4) The jacket without fibers shall meet the listing requirements for communications raceways in 800.182(A), (B), or (C) in accordance with the cable marking.

(G) Indoor/Outdoor Optical Fiber Cables

Indoor/outdoor optical fiber cables shall be one of the following types. OFN, OFC, OFNG, OFCG, OFNR, OFCR, OFNP and OFCP that are also listed as sunlight resistant and marked as one of the following types: Type OFN-sunlight resistant, OFC-sunlight resistant, Type OFNG-sunlight resistant, Type OFCG-sunlight resistant, Type OFNR-sunlight resistant, Type OFCR-sunlight resistant, Type OFNP-sunlight resistant or Type OFCP-sunlight resistant. The abbreviation “sun res” shall be permitted as an alternate to “sunlight resistant”.

(H) Optional Markings.

Cables shall be permitted to be surface marked to indicate special characteristics of the cable materials.

Informational Note: These markings can include, but are not limited to, markings for limited-smoke halogen-free, low-smoke halogen-free, and sunlight resistance.

Statement of Problem and Substantiation for Public Input

This is a companion PI to PI 2567 which requires listed indoor/outdoor optical fiber cables in outdoor cable trays. The recommended text of this PI establishes the listing requirements for listed indoor/outdoor optical fiber cables.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2567-NFPA 70-2023 [New Section after 770.27]	Requires installation of indoor/outdoe optical fiber cables
Public Input No. 2567-NFPA 70-2023 [New Section after 770.27]	

Submitter Information Verification

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Submittal Date:	Tue Aug 22 10:57:53 EDT 2023
Committee:	NEC-P16

Committee Statement

Resolution: This has not been adopted since there are no listings in the standard, UL 1651, for outdoor Optical optical

Public Input No. 194-NFPA 70-2023 [Section No. 770.180]

~~**770.180** Grounding Devices.~~

~~Where bonding or grounding is required, devices used to connect a shield, a sheath, or non-current-carrying metallic members of a cable to a bonding conductor or grounding electrode conductor shall be listed or be part of listed equipment.~~

Statement of Problem and Substantiation for Public Input

Section 770.180 Grounding Devices in Part VI Listing Requirements, requires that the grounding device be a listed device or be part of listed equipment. This requirement is not actually a listing requirement but an installation requirement that belongs in Part IV, Ground Methods.

We have submitted two PIs to improve the usability of the code by moving the text of 770.180 to (new) 770.100(E). Two PIs are needed, one to delete 770.180 and another to create 770.100(E).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 193-NFPA 70-2023 [New Section after 770.100(D)]	creates new section 770.100(E)
Public Input No. 193-NFPA 70-2023 [New Section after 770.100(D)]	
Public Input No. 200-NFPA 70-2023 [New Section after 800.100(D)]	
Public Input No. 201-NFPA 70-2023 [Section No. 800.180]	

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Submittal Date: Thu Jan 19 06:26:10 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7696-NFPA 70-2024

Statement: This revision moves the listing requirement for grounding devices to Part IV Grounding Methods from 770.180 because this requirement is not a listing requirement, but an installation requirement.

Public Input No. 3694-NFPA 70-2023 [Chapter 8]

Chapter 8 Communications Systems

Article 800 General Requirements for Communications Systems

Part I. General

800.1 Scope.

This article covers general requirements for communications systems. These general requirements apply to communications circuits, community antenna television and radio distribution systems, network-powered broadband communications systems, and premises-powered broadband communications systems, unless modified by Articles 805, 820, 830, or 840.

Informational Note No. 1: See 90.2(D)(4) for installations of circuits and equipment that are not covered.

Informational Note No. 2: See Part II of Article 725 for information on the installation of Class 2 and Class 3 circuits and 722.135(E) for the substitution of communications cables for Class 2 and Class 3 cables.

Informational Note No. 3: See Part II of Article 760 for information on the installation of power-limited fire alarm circuits, including the substitution of communications cables for power-limited fire alarm cables.

800.2 Reconditioned Equipment.

The requirements of 110.21(A)(2) shall apply.

800.3 Other Articles.

Only those sections of Chapters 1 through 7 referenced in Chapter 8 shall apply to Chapter 8. The definitions from Article 100 apply to Chapter 8. Installations of circuits and equipment shall comply with 800.3(A) through (I).

(A) Output Circuits.

As appropriate for the services provided, the output circuits derived from a network-powered broadband communications system's network interface unit (NIU) or from a premises-powered broadband communications system's network terminal shall comply with the requirements of the following:

(1) Installations of Class 2 and Class 3 circuits — Part II of Article 725 and Parts I and II of Article 722

(2) Installations of power-limited fire alarm circuits — Part III of Article 760

(3) Installations of optical fiber cables — Part V of Article 770

(4) Installations of communications circuits — Part IV of Article 805

Informational Note: The communications circuits covered by Article 805 are commonly referred to as POTS (plain old telephone service) circuits.

(5) Installations of premises (within buildings) community antenna television and radio distribution circuits — Part V of Article 820

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B) Hazardous (Classified) Locations.

Circuits and equipment installed in a location that is classified in accordance with 500.5 and 505.5 shall comply with the applicable requirements of Chapter 5 .

(C) Wiring in Ducts for Dust, Loose Stock, or Vapor Removal.

The requirements of 300.22(A) shall apply.

(D) Equipment in Other Space Used for Environmental Air.

The requirements of 300.22(C)(3) shall apply.

(

E) Installation and Use.

The requirements of 110.3(B) shall apply.

(F) Optical Fiber Cable.

Where optical fiber cable is used to provide a communications circuit within a building, Article 770 shall apply.

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G) Vertical Support for Fire-Resistive Cables and Conductors.

Vertical installations of circuit integrity (CI) cables and conductors installed in a raceway or conductors and cables of fire-resistive cable systems shall be installed in accordance with 300.19 .

(

H) Bonding and Grounding of Cable Shields.

The requirements of 250.4(A)(5) shall apply to the metal shields of cables used for communications.

800.21 Access to Electrical Equipment Behind Panels Designed to Allow Access.

Access to electrical equipment shall not be denied by an accumulation of wires and cables that prevents removal of panels, including suspended ceiling panels.

800.24 Mechanical Execution of Work.

(A) General.

Circuits and equipment shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11 . Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170 .

Informational Note No. 1: See ANSI/BICSI N1-2019, *Installation Practices for Telecommunications and IC Cabling and Related Cabling Infrastructure* ; ANSI/TIA-568.1- E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* and other ANSI-approved installation standards for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for discrete combustible components installed in accordance with 300.22(C) .

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.

(B) Circuit Integrity (CI) Cable.

CI cable shall be supported at a distance not exceeding 610 mm (24 in.). Cable shall be secured to the noncombustible surface of the building structure. Cable supports and fasteners shall be steel.

800.25 Abandoned Cables.

The accessible portion of abandoned cables shall be removed. Where cables are identified for future use with a tag, the tag shall be of sufficient durability to withstand the environment involved.

800.26 Spread of Fire or Products of Combustion.

Installations of cables, communications raceways, cable routing assemblies in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around penetrations of cables, communications raceways, and cable routing assemblies through fire-resistant-rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating.

Informational Note: Directories of electrical construction materials published by qualified testing laboratories contain many listing installation restrictions necessary to maintain the fire-resistive rating of assemblies where penetrations or openings are made. Building codes also contain restrictions on membrane penetrations on opposite sides of a fire resistance–rated wall assembly. An example is the 600 mm (24 in.) minimum horizontal separation that usually applies between boxes installed on opposite sides of the wall. Assistance in complying with 800.26 can be found in building codes, fire resistance directories, and product listings.

800.27 Temperature Limitation of Wires and Cables.

No wire or cable shall be used in such a manner that its operating temperature exceeds that of its rating.

Part II. Wires and Cables Outside and Entering Buildings

800.44 Overhead (Aerial) Wires and Cables.

Overhead (aerial) communications wires and cables and CATV-type coaxial cables entering buildings shall comply with 800.44(A) through (D).

Informational Note: See ANSI C2-2017, *National Electrical Safety Code, Part 2 Safety Rules for Overhead Lines* , for additional information regarding overhead (aerial) wires and cables.

(A) On Poles, In-Span, Above Roofs, on Masts, or Between Buildings.

If communications wires and cables or CATV-type coaxial cables and electric light or power conductors are supported by the same pole or are run parallel to each other in-span, the conditions described in 800.44(A)(1) through (A)(4) shall be met.

(1) Relative Location.

If practicable, the communications wires and cables and CATV- type coaxial cables shall be located below the electric light or power conductors.

(2) Attachment to Cross-Arms.

Communications wires and cables and CATV-type coaxial cables shall not be attached to a cross-arm that carries electric light or power conductors.

(3) Climbing Space.

The climbing space through wires and cables shall comply with the requirements of 225.14(B) .

(4) Clearance.

Supply service drops and sets of overhead service conductors of 0 volts to 750 volts running above and parallel to communications wires and cables and CATV-type coaxial service drops shall have a minimum separation of 300 mm (12 in.) at any point in the span, including the point of their attachment to the building, provided that the ungrounded conductors are insulated and that a clearance of not less than 1.0 m (40 in.) is maintained between the two services at the pole.

(B) Above Roofs.

Communications wires and cables and CATV-type coaxial cables shall have a vertical clearance of not less than 2.5 m (8 ft) from all points of roofs above which they pass.

Exception No. 1: Communications wires and cables and CATV-type coaxial cables shall not be required to have a vertical clearance of not less than 2.5 m (8 ft) above auxiliary buildings, such as garages and the like.

Exception No. 2: A reduction in clearance above only the overhanging portion of the roof to not less than 450 mm (18 in.) shall be permitted if (1) not more than 1.2 m (4 ft) of communications and CATV-type service-drop conductors pass above the roof overhang and (2) they are terminated at a through- or above-the-roof raceway or approved support.

Exception No. 3: Where the roof has a slope of not less than 100 mm in 300 mm (4 in. in 12 in.), a reduction in clearance to not less than 900 mm (3 ft) shall be permitted.

Informational Note: See ANSI/IEEE C2-2017, *National Electrical Safety Code, Part 2, Safety Rules for Overhead Lines*, for additional information regarding overhead (aerial) wire and cables.

(C) On Masts.

Overhead (aerial) communications wires and cables and CATV-type coaxial cables shall be permitted to be attached to an above-the-roof raceway mast that does not enclose or support conductors of electric light or power circuits.

(D) Between Buildings.

Communications and CATV-type coaxial cables extending between buildings or structures, and also the supports or attachment fixtures, shall be identified and shall have sufficient strength to withstand the loads to which they might be subjected.

Exception: If a communications cable or a CATV-type coaxial cable does not have sufficient strength to be self-supporting, it shall be attached to a supporting messenger cable that, together with the attachment fixtures or supports, shall be acceptable for the purpose and shall have sufficient strength to withstand the loads to which they may be subjected.

(E) On Buildings.

Where attached to buildings, communications wires and cables and CATV-type coaxial cables shall be securely fastened in such a manner that they will be separated from other conductors in accordance with 800.44(E)(1) and (E)(2).

(1) Electric Light or Power.

The communications wires and cables and CATV-type coaxial cables shall have a separation of at least 100 mm (4 in.) from electric light, power, Class 1, or non-power-limited fire alarm circuit conductors not in raceway or cable, or shall be permanently separated from conductors of the other system by a continuous and firmly fixed nonconductive barrier in addition to the insulation on the wires.

(2) Other Communications Systems.

Communications wires and cables and CATV-type coaxial cables shall be installed so that there will be no unnecessary interference in the maintenance of the separate systems. In no case shall the wires, cables, messenger strand, or equipment of one system cause abrasion to the wires, cables, messenger strand, or equipment of any other system.

800.47 Underground Systems Entering Buildings.

Underground communications wires and cables, CATV-type coaxial cables, and network-powered broadband communications cables entering buildings shall comply with 800.47(A) and (B). The requirements of 310.10(C) shall not apply to communications wires and cables and CATV-type coaxial cables.

(A) Underground Systems with Electric Light, Power, Class 1, or Non-Power-Limited Fire Alarm Circuit Conductors.

Underground communications wires and cables, CATV-type coaxial cables, and network-powered broadband communications cables in a raceway, pedestal, handhole enclosure, or manhole containing electric light, power, Class 1, or non-power-limited fire alarm circuit conductors shall be in a section separated from such conductors by means of brick, concrete, or tile partitions or by means of a suitable barrier.

(B) Direct-Buried Cables and Raceways.

Direct-buried communications wires and cables, CATV-type coaxial cables, and network-powered broadband communications cables shall be separated at least 300 mm (12 in.) from conductors of any light or power, non-power-limited fire alarm circuit conductors, or Class 1 circuit.

Exception No. 1: Separation shall not be required if electric service conductors or all the direct-buried communications wires and cables, CATV-type coaxial cables, and network-powered broadband communications cables are installed in raceways or have metal cable armor.

Exception No. 2: Separation shall not be required under one of the following conditions:

(1) If the electric light or power branch-circuit or feeder conductors or Class 1 circuit conductors are installed in a raceway or in metal-sheathed, metal-clad, or Type UF or Type USE cables

(2) If all the direct-buried communications wires cables, CATV-type coaxial cables, and network-powered broadband communications cables have metal cable armor or are installed in raceway

800.48 Unlisted Cables Entering Buildings.

Unlisted outside plant communications cables and unlisted outside plant CATV-type coaxial cables shall be permitted to be installed in building spaces other than risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air if all of the following applies:

(1) The length of the cable within the building, measured from its point of entrance, does not exceed 15 m (50 ft).

(2) The cable enters the building from the outside.

(3) The unlisted outside plant communications cable is terminated in an enclosure or on a listed primary protector, or the unlisted outside plant CATV type coaxial cable is terminated at a grounding block.

The point of entrance shall be permitted to be extended from the penetration of the external wall, roof, or floor slab by continuously enclosing the entrance cables in rigid metal conduit (RMC) or intermediate metal conduit (IMC) to the point of emergence.

Informational Note No. 1: Splice cases or terminal boxes, both metallic and plastic types, are typically used as enclosures for splicing or terminating communications cables.

Informational Note No. 2: This section limits the length of unlisted outside plant cable to 15 m (50 ft) from the point of entrance, while 805.90(B) requires that the primary protector be located as close as practicable to the point of entrance of the cable. Therefore, in installations requiring a primary protector, the outside plant cable may not extend 15 m (50 ft) into the building if it is practicable to place the primary protector closer to the point of entrance.

800.49 Metal Entrance Conduit Grounding.

Metal conduit containing entrance wire or cable shall be connected by a bonding conductor or grounding electrode conductor to a grounding electrode or, where present, the building grounding electrode system in accordance with 800.100(B) .

800.53 Separation from Lightning Conductors.

Where practicable on buildings, a separation of at least 1.8 m (6 ft) shall be maintained between lightning protection conductors and all communications wires and cables and CATV-type coaxial cables.

Informational Note No. 1: See ANSI C2-2017 *National Electrical Safety Code, Part 2, Safety Rules for Overhead Lines* , for additional information regarding overhead (aerial) wires and cables.

Informational Note No. 2: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems* , for information on calculation of separation distances using the sideflash equation.

Part III. Grounding Methods

800.100 Cable and Primary Protector Bonding and Grounding.

(A) Bonding Conductor or Grounding Electrode Conductor.

(1) Insulation.

The bonding conductor or grounding electrode conductor shall be listed and shall be permitted to be insulated, covered, or bare.

(2) Material.

The bonding conductor or grounding electrode conductor shall be copper or other corrosion-resistant conductive material, stranded or solid.

(3) Size.

The bonding conductor or grounding electrode conductor shall not be smaller than 14 AWG. The bonding conductor or grounding electrode conductor shall have a current-carrying capacity not less than the aggregate of the grounded metal cable sheath member, the metal strength member(s), and the protected conductor(s) of the communications cable, or the outer sheath of the coaxial cable, as applicable. The bonding conductor or grounding electrode conductor shall not be required to exceed 6 AWG.

(4) Length.

The bonding conductor or grounding electrode conductor shall be as short as practicable. In one- and two-family dwellings, the bonding conductor or grounding electrode conductor shall be as short as practicable, not to exceed 6.0 m (20 ft) in length.

Informational Note: Similar bonding conductor or grounding electrode conductor length limitations applied at apartment buildings and commercial buildings help to reduce voltages that may be developed between the building's power and communications systems during lightning events. See ANSI/TIA-607-D-2019, *Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises*, which includes useful information to reduce such voltages.

Exception: In one- and two-family dwellings if it is not practicable to achieve an overall maximum bonding conductor or grounding electrode conductor length of 6.0 m (20 ft), a separate ground rod meeting the minimum dimensional criteria of 800.100(B)(3) (2) or (B)(3)(3) shall be driven, the bonding conductor or grounding electrode conductor shall be connected to the ground rod in accordance with 800.100(C) , and the ground rod shall be connected to the power grounding electrode system in accordance with 800.100(D) .

(5) Run in Straight Line.

The bonding conductor or grounding electrode conductor shall be run in as straight a line as practicable.

(6) Physical Protection.

Bonding conductors and grounding electrode conductors shall be protected where exposed to physical damage. If the bonding conductor or grounding electrode conductor is installed in a metal raceway, both ends of the raceway shall be bonded to the contained conductor or to the same terminal or electrode to which the bonding conductor or grounding electrode conductor is connected.

(B) Electrode.

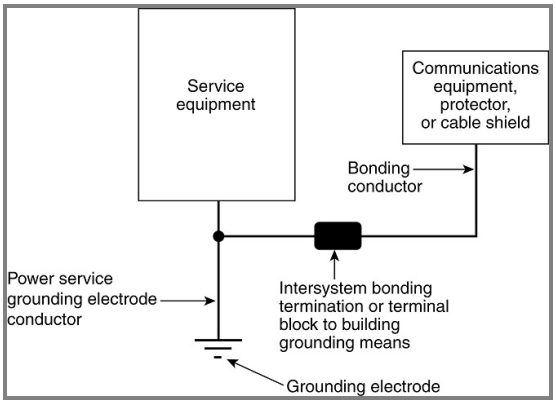
The bonding conductor or grounding electrode conductor shall be connected in accordance with 800.100(B)(1) , (B)(2), or (B)(3).

(1) In Buildings or Structures with an Intersystem Bonding Termination.

If the building or structure served has an intersystem bonding termination as required by 250.94 , the bonding conductor shall be connected to the intersystem bonding termination.

Informational Note: Informational Note Figure 800.100(B)(1) illustrates the connection of the bonding conductor in buildings or structures equipped with an intersystem bonding termination or a terminal block providing access to the building grounding means.

Figure Informational Note Figure 800.100(B)(1) Illustration of a Bonding Conductor in a Communications Installation Equipped With an Intersystem Bonding Termination or Terminal Block Providing Access To the Building Grounding Means.



(2) In Buildings or Structures with Grounding Means.

If an intersystem bonding termination is established, 250.94(A) shall apply. If the building or structure served has no intersystem bonding termination, the bonding conductor or grounding electrode conductor shall be connected to the nearest accessible location on one of the following:

(1) The building or structure grounding electrode system as covered in 250.50

(2) The power service accessible means external to enclosures using the options identified in 250.94(A) , Exception

(3) The nonflexible metal power service raceway

(4) The service equipment enclosure

(5) The grounding electrode conductor or the grounding electrode conductor metal enclosure of the power service

(6) The grounding electrode conductor or the grounding electrode of a building or structure disconnecting means that is connected to a grounding electrode as covered in 250.32

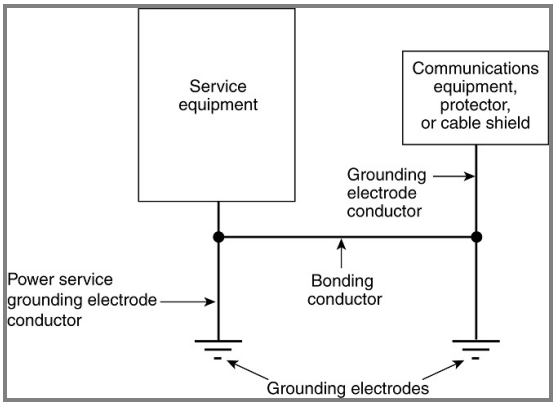
(7) The grounded interior metal water piping system, within 1.5 m (5 ft) from its point of entrance to the building, as covered in 250.52

A bonding device intended to provide a termination point for the bonding conductor (intersystem bonding) shall not interfere with the opening of an equipment enclosure. A bonding device shall be mounted on nonremovable parts. A bonding device shall not be mounted on a door or cover even if the door or cover is nonremovable.

For purposes of this section, the mobile home service equipment or the mobile home disconnecting means located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means connected to an electrode by a grounding electrode conductor in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.

Informational Note: See Informational Note Figure 800.100(B)(2) for an illustration of a grounding electrode conductor and a bonding conductor in a communications installation not equipped with an intersystem bonding termination or terminal block.

Figure Informational Note Figure 800.100(B)(2) Illustration of a Grounding Electrode Conductor and a Bonding Conductor in a Communications Installation Not Equipped with an Intersystem Bonding Termination or Terminal Block Providing Access to the Building Grounding Means.



(3) In Buildings or Structures Without an Intersystem Bonding Termination or Grounding Means.

If the building or structure served has no intersystem bonding termination or grounding means, as described in 800.100(B)(2) , the grounding electrode conductor shall be connected to one of the following:

(1) To any one of the individual grounding electrodes described in 250.52(A)(1) , (A)(2), (A)(3), or (A)(4)

(2) If the building or structure served has no intersystem bonding termination or grounding means, as described in 800.100(B)(2) or (B)(3)(1), to any one of the individual grounding electrodes described in 250.52(A)(5) , (A)(7), and (A)(8)

(3) For communications circuits covered in Article 805 or network-powered broadband communications systems covered in Article 830 , to a ground rod or pipe not less than 1.5 m (5 ft) in length and 12.7 mm (0.5 in.) in diameter, driven, where practicable, into permanently damp earth and separated from lightning protection system conductors, as covered in 800.53 , and at least 1.8 m (6 ft) from electrodes of other systems

Steam pipes, hot water pipes, or lightning protection system conductors shall not be employed as grounding electrodes or as a bonding or grounding electrode conductor for protectors and grounded metal members.

(C) Electrode Connection.

Connections to grounding electrodes shall comply with 250.70 .

(D) Bonding of Electrodes.

A bonding jumper not smaller than 6 AWG copper or equivalent shall be connected between the grounding electrode and power grounding electrode system at the building or structure served if separate electrodes are used.

Exception: Bonding of electrodes at mobile homes shall be in accordance with 800.106 .

Informational Note No. 1: See 250.60 for connection to a lightning protection system.

Informational Note No. 2: Bonding together of all separate electrodes limits potential differences between them and between their associated wiring systems.

800.106 Primary Protector Grounding and Bonding at Mobile Homes.

(A) Grounding.

Grounding shall comply with 800.106(A)(1) and (A)(2).

(1) Mobile Home Service Equipment.

Where there is no mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, grounding shall comply with one of the following:

(1) The following components (if present) shall be connected to a grounding electrode in accordance with 800.100(B)(3) :

(2) Primary protector grounding terminal

(3) Network interface unit

(4) Coaxial cable shield ground

(5) Surge arrester grounding terminal

(6) Network-powered broadband communications cable shield

(7) Network-powered broadband communications cable metal members not used for communications or powering

(8) The non-current-carrying metal members of optical fiber cables shall be connected to a grounding electrode in accordance with 770.106(A)(1) . The network terminal, if required to be grounded, shall be connected to a grounding electrode in accordance with 800.106(A)(1)(1) . The grounding electrode shall be bonded in accordance with 770.106(B) .

(2) Mobile Home Feeder Disconnecting Means.

Where there is no mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, grounding shall comply with one of the following:

(1) The following components (if present) shall be connected to a grounding electrode in accordance with 800.100(B)(3) :

(2) Primary protector grounding terminal

(3) Network interface unit

(4) Network-powered broadband communications shield

(5) Network-powered broadband communications cable metal members not used for communications or powering

(6) The non-current-carrying metal members of optical fiber cables shall be connected to a grounding electrode in accordance with 770.106(A)(2) . The network terminal, if required to be grounded, shall be connected to a grounding electrode in accordance with 800.106(A)(2) . The grounding electrode shall be bonded in accordance with 770.106(B) .

(B) Bonding.

The primary protector grounding terminal or grounding electrode, network-powered broadband communications cable grounding terminal, or network interface unit grounding terminal shall be bonded together and connected to the metal frame or available grounding terminal of the mobile home with a copper conductor not smaller than 12 AWG under either of the following conditions:

(1) If there is no mobile home service equipment or disconnecting means as in 800.106(A)

(2) If the mobile home is supplied by cord and plug

~~**Part IV.** Installation Methods Within Buildings~~

800.110 Raceways, Cable Routing Assemblies, and Cable Trays.

(1) Horizontal Support.

Cable routing assemblies shall be supported where run horizontally at intervals not to exceed 900 mm (3 ft) and at each end or joint, unless listed for other support intervals.

(A)

Types of Raceways.

Wires and cables shall be permitted to be installed in raceways that comply with 800.110(A)(1), 800.110(A)(2), or 800.110(A)(3). Medium-power network-powered broadband communications cables shall not be installed in raceways that comply with 800.110(A)(2).

(1) Raceways Recognized in Chapter 3.

Wires and cables shall be permitted to be installed in any raceway included in Chapter 3. The raceways shall be installed in accordance with Chapter 3.

(2) Communications Raceways.

Wires and cables shall be permitted to be installed in plenum communications raceways, riser communications raceways, and general-purpose communications raceways selected in accordance with Table 800.154(b), listed in accordance with 800.182, and installed in accordance with 800.113 and 362.24 through 362.56, where the requirements applicable to electrical nonmetallic tubing (ENT) apply.

(3) Innerduct for Communications Wires and Cables, Coaxial Cables, or Network-Powered Broadband Communications Cables.

Listed plenum communications raceways, listed riser communications raceways, and listed general-purpose communications raceways selected in accordance with Table 800.154(b) shall be permitted to be installed as innerduct in any type of listed raceway permitted in Chapter 3.

(B) Raceway Fill.

The raceway fill requirements of Chapters 3 and 9 shall apply to medium-power network-powered broadband communications cables.

(C) Cable Routing Assemblies.

Cables shall be permitted to be installed in plenum cable routing assemblies, riser cable routing assemblies, and general-purpose cable routing assemblies selected in accordance with Table 800.154(c), listed in accordance with 800.182, and installed in accordance with 800.110(C)(1) and (C)(2) and 800.113.

800.113 Installation of Cables Used for Communications Circuits, Communications Wires, Cable Routing Assemblies, and Communications

In

no case shall the distance between supports exceed 3 m (10 ft).

(2) Vertical Support.

Vertical runs of cable routing assemblies shall be supported at intervals not exceeding 1.2 m (4 ft), unless listed for other support intervals, and shall not have more than one joint between supports.

(D) Cable Trays.

Wires and cables and communications raceways shall be permitted to be installed in metal or listed nonmetallic cable tray systems. Ladder cable trays shall be permitted to support cable routing assemblies.

Raceways

.Installation of wires

,

cables, cable routing assemblies, and communications raceways shall comply with 800.113(A) through (L). Installation of cable routing assemblies and communications raceways shall comply also with 800.110 . Types of cables used by this section are identified in Table 800.113 .

Table 800.113 Cables Used for Communications Circuits

Listed

Cable

Types Plenum cables CMP, CATVP, BLP, OFNP, OFCP Riser cables CMR, CATVR, BMR, BLR, OFNR, OFCR General-purpose cables CMG, CM, CATV, BM, BL, OFNG, OFN, OFCG, OFC Limited-use cables CMX, CATVX, BLX Undercarpet CMUC Underground BMU, BLU

(A) Listing.

Cables used for communications circuits, communications wires, cable routing assemblies, and communications raceways installed in buildings shall be listed and installed in accordance with the limitations of the listing.

Exception: *Cables installed in compliance with* *800.48* *shall not be required to be listed.*

(B) Ducts Specifically Fabricated for Environmental Air.

Installations of cables used for communications circuits, communications wires, cable routing assemblies, and communications raceways in ducts specifically fabricated for environmental air shall be in accordance with 800.113(B)(1) and (B)(2).

(1) Uses Permitted.

The following cables shall be permitted in ducts specifically fabricated for environmental air as described in 300.22(B) if they are directly associated with the air distribution system:

(1) Plenum cables up to 1.22 m (4 ft) in length

(2) Plenum, rise, general-purpose, and limited-use cables installed in raceways that are installed in compliance with 300.22(B)

(2) Uses Not Permitted.

The following cables, wires, cable routing assemblies, and communications raceways shall not be permitted in ducts specifically fabricated for environmental air as described in 300.22(B) :

(1) Plenum, riser, and general-purpose communications raceways

(2) Plenum, riser, and general-purpose cable routing assemblies

(3) Riser, general-purpose, and limited-use cables

(4) Type CMUC cables and wires

(5) Types BMU and BLU cables

(6) Communications wires

(7) Hybrid power and communications cables

Informational Note: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for information on fire protection of wiring installed in fabricated ducts.

(C) Other Spaces Used for Environmental Air (Plenums).

Installations of cables used for communications circuits, communications wires, cable routing assemblies, and communications raceways in other spaces used for environmental air (plenums) shall be in accordance with 800.113(C)(1) and (C)(2).

(1) Uses Permitted.

The following cables, wires, cable routing assemblies, and communications raceways shall be permitted in other spaces used for environmental air as described in 300.22(C) :

(1) Plenum cables

(2) Plenum communications raceways

(3) Plenum cable routing assemblies

(4) Plenum cables installed in plenum communications raceways

(5) Plenum cables installed in plenum cable routing assemblies

(6) Plenum cables and plenum communications raceways supported by open metal cable tray systems

(7) Plenum, riser, general-purpose, and limited-use cables, and communications wires installed in raceways that are installed in compliance with 300.22(C)

(8) Plenum, rise, general-purpose, limited-use cables and plenum, riser, and general-purpose communications raceways supported by solid bottom metal cable trays with solid metal covers in other spaces used for environmental air (plenums) as described in 300.22(C)

(9) Plenum, riser, general-purpose, and limited-use cables installed in plenum, riser, and general-purpose communications raceways supported by solid bottom metal cable trays with solid metal covers in other spaces used for environmental air (plenums) as described in 300.22(C)

(2) Uses Not Permitted.

The following cables, wires, cable routing assemblies, and communications raceways shall not be permitted in other spaces used for environmental air as described in 300.22(C) :

(1) Riser, general-purpose, and limited-use cables

(2) Riser and general-purpose communications raceways

(3) Riser and general-purpose cable routing assemblies

(4) Type CMUC cables and wires

(5) Types BMR, BM, BMU, and BLU cables

(6) Communications wires

(7) Hybrid power and communications cables

Informational Note: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for information on fire protection of wiring installed in other spaces used for environmental air.

(D) Risers — Cables, Cable Routing Assemblies, and Communications Raceways in Vertical Runs.

Installations of cables used for communications circuits, communications wires, cable routing assemblies, and communications raceways in risers shall be in accordance with 800.113(D)(1) and (D)(2).

(1) Uses Permitted.

The following cables, cable routing assemblies, and communications raceways shall be permitted in vertical runs penetrating one or more floors and in vertical runs in a shaft:

(1) Plenum and riser cables

(2) Plenum and riser communications raceways

(3) Plenum and riser cable routing assemblies

(4) Plenum and riser cables installed in the following:

(5) Plenum communications raceways

(6) Riser communications raceways

(7) Plenum cable routing assemblies

(8) Riser cable routing assemblies

(2) Uses Not Permitted.

The following cables, wires, cable routing assemblies, and communications raceways shall not be permitted in risers:

(1) General-purpose and limited-use cables

(2) General-purpose communications raceways

(3) General-purpose cable routing assemblies

(4) Type CMUC cables and wires

(5) Types BMR, BM, BMU, and BLU cables

(6) Communications wires

(7) Hybrid power and communications cables

Informational Note: See 800.26 for firestop requirements for floor penetrations.

(E) Risers — Cables and Innerducts in Metal Raceways.

Installations of cables used for communications circuits, communications wires, cable routing assemblies, and communications raceways in metal raceways in a riser having firestops at each floor shall be in accordance with 800.113(E)(1) and (E)(2).

(1) Uses Permitted.

The following cables and innerducts shall be permitted in metal raceways in a riser having firestops at each floor:

(1) Plenum, riser, general-purpose, and limited-use cables

(2) Plenum, riser, and general-purpose communications raceways (innerduct)

(3) Plenum, riser, general-purpose, and limited-use cables installed in the following:

(4) Plenum communications raceways (innerduct)

(5) Riser communications raceways (innerduct)

(6) General-purpose communications raceways (innerduct)

(2) Uses Not Permitted.

The following cables, wires, cable routing assemblies, and communications raceways shall not be permitted in metal raceways in a riser having firestops at each floor:

(1) Plenum, riser, and general-purpose cable routing assemblies

(2) Type CMUC cables and wires

(3) Types BMR, BM, BMU, and BLU cables

(4) Communications wires

(5) Hybrid power and communications cables

Informational Note: See 800.26 for firestop requirements for floor penetrations.

(F) Risers — Cables, Cable Routing Assemblies, and Communications Raceways in Fireproof Shafts.

Installations of cables used for communications circuits, communications wires, cable routing assemblies, and communications raceways in fireproof riser shafts having firestops at each floor shall be in accordance with 800.113(F)(1) and (F)(2).

(1) Uses Permitted.

The following cables, cable routing assemblies, and communications raceways shall be permitted to be installed in fireproof riser shafts having firestops at each floor:

(1) Plenum, riser, general-purpose, and limited-use cables

(2) Plenum, riser, and general-purpose communications raceways

(3) Plenum, riser, and general-purpose cable routing assemblies

(4) Plenum, riser, general-purpose, and limited-use cables installed in the following:

(5) Plenum communications raceways

(6) Riser communications raceways

(7) General-purpose communications raceways

(8) Plenum cable routing assemblies

(9) Riser cable routing assemblies

(10) General-purpose cable routing assemblies

(2) Uses Not Permitted.

The following cables, wires, cable routing assemblies, and communications raceways shall not be permitted in metal raceways in fireproof riser shafts having firestops at each floor:

(1) Type CMUC cables and wires

(2) Type BMU and BLU cables

(3) Communications wires

(4) Hybrid power and communications cables

Informational Note: See 800.26 for firestop requirements for floor penetrations.

(G) Risers — One- and Two-Family Dwellings.

~~Installations of cables used for communications circuits, communications wires, cable routing assemblies, and communications raceways in risers in one- and two-family dwellings shafts shall be in accordance with 800.113(G)(1) and (G)(2).~~

~~**(1)** Uses Permitted.~~

~~The following cables, cable routing assemblies, and communications raceways shall be permitted in one- and two-family dwellings:~~

(1) ~~Plenum, riser, and general-purpose cables~~

(2) ~~Limited-use cables less than 6 mm (0.25 in.) in diameter~~

(3) ~~Plenum, riser, and general-purpose communications raceways~~

(4) ~~Plenum, riser, and general-purpose cable routing assemblies~~

(5) ~~Plenum, riser, and general-purpose cables installed in the following:~~

(6) ~~Plenum communications raceways~~

(7) ~~Riser communications raceways~~

(8) ~~General-purpose communications raceways~~

(9) ~~Plenum cable routing assemblies~~

(10) ~~Riser cable routing assemblies~~

(11) ~~General-purpose cable routing assemblies~~

~~**(2)** Uses Not Permitted.~~

~~The following cables and wires shall not be permitted in risers in one- and two-family dwellings:~~

(1) ~~Type CMUC cables and wires~~

(2) ~~Type BMU and BLU cables~~

(3) ~~Communications wires~~

(4) ~~Hybrid power and communications cables~~

~~**(H)** Cable~~

Trays

~~.Installations of cables used for communications circuits~~

~~,~~

~~communications wires, cable routing assemblies, and communications raceways supported by cable trays shall be in accordance with 800.113(H)(1) and (H)(2).~~

(1) Uses Permitted.

The following wires, cables, and communications raceways shall be permitted to be supported by cable trays:

(1) Plenum, riser, and general-purpose cables

(2) Plenum, riser, and general-purpose communications raceways

(3) Communications wires, plenum, riser, and general-purpose cables installed in the following:

(4) Plenum communications raceways

(5) Riser communications raceways

(6) General-purpose communications raceways

(2) Uses Not Permitted.

The following cables and wires shall not be supported by cable trays:

(1) Limited-use cables

(2) Type CMUC cables and wires

(3) Type BMU and BLU cables

(4) Communications wires

(5) Hybrid power and communications cables

(I) Distributing Frames and Cross-Connect Arrays.

Installations of cables used for communications circuits, communications wires, cable routing assemblies, and communications raceways in distributing frames and cross-connect arrays shall be in accordance with 800.113(I)(1) and (I)(2).

(1) Uses Permitted.

The following wires, cables, cable routing assemblies, and communications raceways shall be permitted to be installed in distributing frames and cross-connect arrays:

(1) Plenum, riser, and general-purpose cables and communications wires

(2) Plenum, riser, and general-purpose communications raceways

(3) Plenum, riser, and general-purpose cable routing assemblies

(4) Communications wires, plenum, riser, and general-purpose cables installed in the following:

(5) Plenum communications raceways

(6) Riser communications raceways

(7) General-purpose communications raceways

(8) Plenum cable routing assemblies

(9) Riser cable routing assemblies

(10) General-purpose cable routing assemblies

(2) Uses Not Permitted.

The following cables and wires shall not be installed in distributing frames and cross-connect arrays:

(1) Types BMR, BM, BMU, and BLU cables

(2) Limited-use cables

(3) Type CMUC cables and wires

(4) Hybrid power and communications cables

(J) Other Building Locations.

Installations of cables used for communications circuits, cable communications wires, routing assemblies, and communications raceways in building locations other than those covered in 800.113(B) through (I) shall be in accordance with 800.113(J)(1) and (J)(2).

(1) Uses Permitted.

The following wires, cables, cable routing assemblies, and communications raceways shall be permitted to be installed in building locations other than the locations covered in 800.113(B) through (I):

(1) Plenum, riser, and general-purpose cables

(2) Limited-use cables with a maximum of 3 m (10 ft) of exposed length in nonconcealed spaces

(3) Plenum, riser, and general-purpose communications raceways

(4) Plenum, riser, and general-purpose cable routing assemblies

(5) Communications wires, plenum, riser, and general-purpose cables installed in the following:

(6) Plenum communications raceways

(7) Riser communications raceways

(8) General-purpose communications raceways

(9) Plenum, riser, and general-purpose cables installed in the following:

(10) Plenum cable routing assemblies

(11) Riser cable routing assemblies

(12) General-purpose cable routing assemblies

(13) Communications wires and plenum, riser, general-purpose, and limited-use cables installed in raceways recognized in Chapter 3

(14) Type CMUC undercarpet communications wires and cables installed under carpet, modular flooring, and planks

(2) Uses Not Permitted.

The following cables, wires, cable routing assemblies, and communications raceways shall not be installed in building locations other than the locations covered in 800.113(B) through (I):

(1) Types BMU and BLU cables

(2) Communications wires

(3) Hybrid power and communications cables

(K) Multifamily Dwellings.

Installations of cables used for communications circuits, communications wires, cable routing assemblies, and communications raceways in multifamily dwellings shall be in accordance with 800.113(K)(1) and (K)(2).

(1) Uses Permitted.

The following cables, cable routing assemblies, and communications raceways shall be permitted to be installed in multifamily dwellings in locations other than the locations covered in 800.113(B) through (G):

(1) Plenum, riser, and general-purpose cables

(2) Limited-use cables less than 6 mm (0.25 in.) in diameter in nonconcealed spaces

(3) Plenum, riser, and general-purpose communications raceways

(4) Plenum, riser, and general-purpose cable routing assemblies

(5) Communications wires and plenum, riser, and general-purpose cables installed in the following:

(6) Plenum communications raceways

(7) Riser communications raceways

(8) General-purpose communications raceways

(9) Plenum, riser, and general-purpose cables installed in the following:

(10) Plenum cable routing assemblies

(11) Riser cable routing assemblies

(12) General-purpose cable routing assemblies

(13) Communications wires and plenum, riser, general-purpose, and limited-use cables installed in raceways recognized in Chapter 3

(14) Type CMUC under-carpet communications wires and cables installed under carpet, modular flooring, and planks

(2) Uses Not Permitted.

The following cables, cable routing assemblies, and communications raceways shall not be installed in multifamily dwellings in locations other than the locations covered in 800.113(B) through (G):

(1) Types BMU and BLU cables

(2) Communications wires

(3) Hybrid power and communications cables

(L) One- and Two-Family Dwellings.

Installations of cables used for communications circuits, communications wires, cable routing assemblies, and communications raceways in one- and two-family dwellings in locations other than those covered in 800.113(B) through (F) shall be in accordance with 800.113(L)(1) and (L)(2).

(1) Uses Permitted.

The following wires, cables, cable routing assemblies, and communications raceways shall be permitted to be installed in one- and two-family dwellings in locations other than the locations covered in 800.113(B) through (F):

(1) Plenum, riser, and general-purpose cables

(2) Limited-use cables less than 6 mm (0.25 in.) in diameter

(3) Plenum, riser, and general-purpose communications raceways

(4) Plenum, riser, and general-purpose cable routing assemblies

(5) Communications wires, plenum, riser, and general-purpose cables installed in the following:

(6) Plenum communications raceways

(7) Riser communications raceways

(8) General-purpose communications raceways

(9) Plenum, riser, and general-purpose cables installed in the following:

(10) Plenum cable routing assemblies

(11) Riser cable routing assemblies

(12) General-purpose cable routing assemblies

(13) Communications wires and plenum, riser, general-purpose, and limited-use cables installed in raceways recognized in Chapter 3

(14) Type CMUC under-carpet communications wires and cables installed under carpet, modular flooring, and planks

(15) Hybrid power and communications cable listed in accordance with 800.179

(2) Uses Not Permitted.

The following cables, wires, cable routing assemblies, and communications raceways shall not be installed in one- and two-family dwellings in locations other than those covered in 800.113(B) through (F):

(1) Types BMU and BLU cables

(2) Communications wires

800.133 Installation of Communications Wires and Cables and CATV-Type Coaxial Cables.

Installation of communications wires and cables, from the protector to the equipment, or where no protector is required, communications wires and cables attached to the outside or inside of the building, shall comply with 800.133(A) and 800.133(B). Installation of CATV-type coaxial cables, beyond the point of grounding as defined in 820.93 , shall comply with 800.133(A) through (C).

~~**(A)** In Raceways, Cable Trays,~~

Boxes, Cables, Enclosures, and Cable Routing Assemblies.

(1) Other Circuits.

Communications cables and CATV-type coaxial cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly together and with jacketed cables of any of the following:

(1) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with 645.5(E)(2) or Parts I and II of Article 725

(2) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(3) Nonconductive and conductive optical fiber cables in compliance with Parts I and V of Article 770

(4) Communications circuits in compliance with Parts I and IV of Articles 800 and 805

(5) Community antenna television and radio distribution systems in compliance with Parts I and V of Articles 800 and 820

(6) Low-power network-powered broadband communications circuits in compliance with Parts I and V of Articles 800 and 830

(2) Class 2 and Class 3 Circuits.

Class 1 circuits shall not be run in the same cable with communications circuits. Class 2 and Class 3 circuit conductors shall be permitted in the same listed communications cable with communications circuits.

(3) Electric Light, Power, Class 1, Non-Power-Limited Fire Alarm, and Medium-Power Network-Powered Broadband Communications Circuits in Raceways, Compartments, and Boxes.

Communications wires and cables and CATV-type coaxial cables shall not be placed in any raceway, compartment, outlet box, junction box, or similar fitting with conductors of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits.

Exception No. 1: *Communications wires and cables and CATV-type coaxial cables shall be permitted to be placed in any raceway, compartment, outlet box, junction box, or other enclosures with conductors of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits where all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are separated from all of the communications wires and cables and CATV-type coaxial cables by a permanent barrier or listed divider.*

Exception No. 2: *Communications wires and cables and CATV-type coaxial cables shall be permitted to be placed in outlet boxes, junction boxes, or similar fittings or compartments with power conductors where such conductors are introduced solely for power supply to the communications and coaxial cable system distribution equipment. The power circuit conductors shall be routed within the enclosure to maintain a minimum 6 mm (1/4 in.) separation from the communications wires and cables and the CATV- type coaxial cables.*

Exception No. 3: *Separation of circuits shall not be required in elevator traveling cables constructed in accordance with by 620.36 .*

(B) Other Applications.

Communications wires and cables and CATV-type coaxial cables shall be separated at least 50 mm (2 in.) from conductors of any electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits.

Exception No. 1: *Separation shall not be required where either (1) all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are in a raceway or in metal-sheathed, metal-clad, nonmetallic-sheathed, Type AC or Type UF cables, or (2) all of the communications wires and cables and all of the CATV-type coaxial cables are encased in raceway.*

Exception No. 2: *Separation shall not be required where the communications wires and cables and CATV-type coaxial cables are permanently separated from the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits by a continuous and firmly fixed nonconductor, such as porcelain tubes or flexible tubing, in addition to the insulation on the wire.*

(C) Support of Communications Wires and Cables and CATV-Type Coaxial Cables.

Raceways shall be used for their intended purpose. Communications wires and cables and CATV-type coaxial cables shall not be strapped, taped, or attached by any means to the exterior of any raceway as a means of support.

Exception: *Overhead (aerial) spans of communications drop wires, communications cables, and CATV-type coaxial cables shall be permitted to be attached to the exterior of a raceway-type mast intended for the attachment and support of such wires and cables.*

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~~154~~ ~~Applications of Listed Communications Wires, Cables, and Raceways, and Listed Cable Routing Assemblies.~~

~~Permitted and nonpermitted applications of listed communications wires, cables, coaxial cables, network-powered broadband communications system cables and raceways, and listed cable routing assemblies, shall be in accordance with one of the following:~~

(1) ~~Listed communications wires and cables as indicated in~~ ~~Table 800.154(a)~~

(2) ~~Listed communications raceways as indicated in~~ ~~Table 800.154(b)~~

(3) ~~Listed cable routing assemblies as indicated in~~ ~~Table 800.154(c)~~

~~The permitted applications shall be subject to the installation requirements of~~ ~~800.110~~ ~~and 800.113~~ ~~.~~

~~Table 800.154(a) Applications of Listed Communications Wires, Cables, and Network-Powered Broadband Communications System Cables in Buildings~~

~~Applications Wire and Cable Type Plenum Riser BMR General-Purpose BM Limited-Use Undercarpet BMU, BLU Hybrid Power and Communications Cables Communications Wires In ducts specifically fabricated for environmental air as described in 300.22(B) In fabricated ducts Y N N N N N N N N N In metal raceway that complies with 300.22(B) Y Y Y Y Y Y N N N Y In other spaces used for environmental air (plenums) as described in 300.22(C) In other spaces used for environmental air Y N N N N N N N N N In metal raceway that complies with 300.22(C) Y Y Y Y Y Y N N N Y In plenum communications raceways Y N N N N N N N N N In plenum cable routing assemblies Y N N N N N N N N N Supported by open metal cable trays Y N N N N N N N N N Supported by solid bottom metal cable trays with solid metal covers Y Y Y Y Y Y N N N N In risers In vertical runs Y Y Y N N N N N N N In metal raceways Y Y Y Y Y Y N N N N In fireproof shafts Y Y Y Y Y Y N N N N In plenum communications raceways Y Y N N N N N N N N In plenum cable routing assemblies Y Y N N N N N N N N In riser communications raceways Y Y N N N N N N N N In riser cable routing assemblies Y Y N N N N N N N N In one- and two-family dwellings Y Y Y Y Y Y N N Y N Within buildings in other than air-handling spaces and risers General Y Y Y Y Y Y N N N N In one- and two-family dwellings Y Y Y Y Y Y Y N Y N In multifamily dwellings Y Y Y Y Y Y Y N N N In nonconcealed~~

spaces Y Y Y Y Y Y Y N N N Supported by cable trays Y Y Y Y Y N N N N N Under carpet, modular flooring, and planks N N N N N N Y N N N In distributing frames and cross-connect arrays Y Y N Y N N N N N Y In rigid metal conduit (RMC) and intermediate metal conduit (IMC) Y Y Y Y Y Y Y Y Y Y In any raceway recognized in Chapter 3 Y Y Y Y Y Y N N N Y In plenum communications raceways Y Y N Y N N N N N Y In plenum cable routing assemblies Y Y N Y N N N N N Y In riser communications raceways Y Y N Y N N N N N Y In riser cable routing assemblies Y Y N Y N N N N N Y In general-purpose communications raceways Y Y N Y N N N N N Y In general-purpose cable routing assemblies Y Y N Y N N N N N Y

Note: An "N" in the table indicates that the cable type shall not be installed in the application. A "Y" indicates that the cable type shall be permitted to be installed in the application subject to the limitations described in 800.113. The Riser column includes all riser cables except BMR, and the General-Purpose column includes all general-purpose cables except BM.

Informational Note No. 1: Part IV of Article 800 covers installation methods within buildings. This table covers the applications of listed communications wires, cables, and raceways in buildings.

Informational Note No. 2: For information on the restrictions to the installation of communications cables in fabricated ducts, see 800.113(B).

Table 800.154(b) Applications of Listed Communications Raceways in Buildings

Applications Listed Communications Raceway Type Plenum Riser General-Purpose In ducts specifically fabricated for environmental air as described in 300.22(B) In fabricated ducts N N N In metal raceway that complies with 300.22(B) N N N In other spaces used for environmental air (plenums) as described in 300.22(C) In other spaces used for environmental air Y N N In metal raceway that complies with 300.22(C) Y Y Y In plenum cable routing assemblies N N N Supported by open metal cable trays Y N N Supported by solid bottom metal cable trays with solid metal covers Y Y Y In risers In vertical runs Y Y N In metal raceways Y Y Y In fireproof shafts Y Y Y In plenum cable routing assemblies N N N In riser cable routing assemblies N N N In one- and two-family dwellings Y Y Y Within buildings in other than air-handling spaces and risers General Y Y Y In one- and two-family dwellings Y Y Y In multifamily dwellings Y Y Y In nonconcealed spaces Y Y Y Supported by cable trays Y Y Y Under carpet, modular flooring, and planks N N N In distributing frames and cross-connect arrays Y Y Y In any raceway recognized in Chapter 3 Y Y Y In plenum cable routing assemblies N N N In riser cable routing assemblies N N N In general-purpose cable routing assemblies N N N

Note: An "N" in the table indicates that the communications raceway type shall not be installed in the application. A "Y" indicates that the communications raceway type shall be permitted to be installed in the application, subject to the limitations described in 800.110 and 800.113.

Table 800.154(c) Applications of Listed Cable Routing Assemblies in Buildings

Applications Listed Cable Routing Assembly Type Plenum Riser General-Purpose In ducts specifically fabricated for environmental air as described in 300.22(B) In fabricated ducts N N N In metal raceway that complies with 300.22(B) N N N In other spaces used for environmental air (plenums) as described in 300.22(C) In other spaces used for environmental air Y N N In metal raceway that complies with 300.22(C) N N N In plenum communications raceways N N N Supported by open metal cable trays Y N N Supported by solid bottom metal cable trays with solid metal covers N N N In risers In vertical runs Y Y N In metal raceways N N N In fireproof shafts Y Y Y In plenum communications raceways N N N In riser communications raceways N N N In one- and two-family dwellings Y Y Y Within buildings in other than air-handling spaces and risers General Y Y Y In one- and two-family dwellings Y Y Y In multifamily dwellings Y Y Y In nonconcealed spaces Y Y Y Supported by cable trays Y Y Y Under carpet, modular flooring, and planks N N N In distributing frames and cross-connect arrays Y Y Y In any raceway recognized in Chapter 3 N N N In plenum communications raceways N N N In riser communications raceways N N N In general-purpose communications raceways N N N

Note: An “N” in the table indicates that the cable routing assembly type shall not be installed in the application. A “Y” indicates that the cable routing assembly type shall be permitted to be installed in the application subject to the limitations described in 800.113.

Part V. Listing Requirements

800.170 Plenum Cable Ties.

Cable ties intended for use in other space used for environmental air (plenums) shall be listed as having low smoke and heat release properties.

Informational Note: See NFPA 90A-2018, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , and ANSI/UL 2043-2013, *Standard for Safety Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces* , for information on listing discrete products as having low smoke and heat release properties.

~~800.~~

171 Communications Equipment.

Communications equipment shall be listed as being suitable for electrical connection to a communications network.

Informational Note No. 1: See ANSI/UL 60950-1-2014, *Standard for Safety of Information Technology Equipment* , ANSI/UL 1863-2012, *Standard for Safety Communications Circuit Accessories* , or ANSI/UL 62368-1-2014 or ANSI/UL 62368-1-2018, *Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements* .

Informational Note No. 2: See ANSI/ATIS 0600337-2016, *Requirements for Maximum Voltage, Current, and Power Levels Used in Communications Circuits* , for additional information regarding voltages, currents, and power allowed on communications circuits.

800.179 Wires and Cables.

Communications wires and cables, community antenna television cables, and network-powered broadband communications cables shall be listed in accordance with 800.179(A) through (L) and shall have a temperature rating of not less than 60°C (140°F). The temperature rating shall be marked on the jacket of cables that have a temperature rating exceeding 60°C (140°F). Conductors in communications cables, other than in a coaxial cable, shall be copper. Cables shall be permitted to contain optical fibers. Cables containing optical fibers shall be marked with the suffix "-OF."

Communications wires and cables and network-powered communications cables shall have a voltage rating of not less than 300 volts; the insulation for the individual conductors, other than the outer conductor of a coaxial cable, shall be rated for 300 volts minimum. The cable voltage rating shall not be marked on the cable or on the under-carpet communications wire.

Exception: Voltage markings shall be permitted where the cable has multiple listings and voltage marking is required for one or more of the listings.

Informational Note No. 1: Voltage markings on cables could be misinterpreted to suggest that the cables may be suitable for Class 1, electric light, and power applications.

Informational Note No. 2: See UL 444-2017, *Standard for Communications Cables* , for information on communications cables.

Informational Note No. 3: See UL1655-2009, *Standard for Community-Antenna Television Cables* , for information on community-antenna television cables.

(A) Plenum Cables.

Type CMP communications plenum cables, Type CATVP community antenna television plenum coaxial cables, and Type BLP network-powered broadband communication low-power plenum cables shall be listed as being suitable for use in ducts, plenums, and other spaces used for environmental air and shall also be listed as having adequate fire-resistant and low-smoke-producing characteristics.

Informational Note: See NFPA 262-2019, *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces* , for one method of defining a cable that is low-smoke-producing cable and fire-resistant cable so that the cable exhibits a maximum peak optical density of 0.50 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.52 m (5 ft).

(B) Riser Cables.

Type CMR communications riser cables, Type CATVR community antenna television riser coaxial cables, Type BMR network-powered broadband communications medium-power riser cables, and Type BLR network-powered broadband communications low-power riser cables shall be listed as being suitable for use in a vertical run in a shaft or from floor to floor and shall also be listed as having fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

Informational Note: See ANSI/UL 1666-2017, *Standard Test for Flame Propagation Height of Electrical and Optical-Fiber Cable Installed Vertically in Shafts* , for one method of defining fire-resistant characteristics of the cable capable of preventing the carrying of fire from floor to floor.

(C) General-Purpose Cables.

(1) Type CMG.

Type CMG communications general-purpose cables shall be listed as being suitable for general-purpose use, with the exception of risers and plenums, and shall also be listed as being resistant to the spread of fire.

Informational Note: See CSA Vertical Flame Test — Cables in Cable Trays as described in CSA C22.2 No. 0.3-09 (R2019), *Test Methods for Electrical Wires and Cables* , for one method of defining resistance to the spread of fire where the damage (char length) of the cable does not exceed 1.5 m (4 ft 11 in.) or FT4 Flame Test in ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables* . The smoke measurements in the test methods are not applicable.

(2) Types CM, CATV, BM, and BL.

Type CM communications general-purpose cables, Type CATV community antenna television coaxial general-purpose cables, Type BM network-powered broadband communications medium-power general-purpose cables, and Type BL network-powered broadband communications low-power general-purpose cables shall be listed as being suitable for general-purpose use, with the exception of risers and plenums, and shall also be listed as being resistant to the spread of fire.

Informational Note: See UL Flame Exposure in ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables,* for one method of defining *resistance to the spread of fire* where the damage (char length) of the cable does not to exceed 244 cm (8 ft 0 in.). The smoke measurements in the test method are not applicable.

(D) Limited-Use Cables.

Type CMX limited-use communications cables, Type CATVX limited-use community antenna television coaxial cables, and Type BLX limited-use network-powered broadband low-power cables shall be listed as being suitable for use in dwellings and for use in raceway and shall also be listed as being resistant to flame spread.

Informational Note: See ANSI/UL 2556, *Standard for Wire and Cable Test Method* , for one method of determining that cable is resistant to flame spread is by testing the cable to the FV-2/VW-1 flame test.

(E) Circuit Integrity (CI) Cable, Fire-Resistive Cable System, or Electrical Circuit Protective System.

Cables that are used for survivability of critical circuits under fire conditions shall be listed and meet either 800.179(E)(1), (E)(2), or (E)(3).

(1) CI Cables.

Cables specified in 800.179(A) through (C) and used for survivability of critical circuits shall be marked with the additional classification using the suffix “CI.” In order to maintain its listed fire rating, CI cable shall only be installed in free air in accordance with 800.24 . CI cables shall only be permitted to be installed in a raceway where specifically listed and marked as part of a fire-resistive cable system as covered in 800.179(E)(2).

Informational Note: See UL 2196, *Standard for Fire Test for Circuit Integrity of Fire-Resistant Power, Instrumentation, Control, and Data Cables* , for one method of defining CI cable by establishing a minimum 2-hour fire resistance rating for the cable as specified in UL 444, *Standard for Safety Communications Cables* .

(2) Fire-Resistive Cable Systems.

Cables specified in 800.179(A) through (C) and 800.179(E)(1) that are part of an electrical circuit protective system shall be fire-resistive cable identified with the protective system number on the product, or on the smallest unit container in which the product is packaged, and shall be installed in accordance with the listing of the protective system.

Informational Note No. 1: See UL 2196, *Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables* , for one method of defining an electrical circuit protective system rating for the system. UL *Guide Information for Electrical Circuit Integrity Systems (FHIT)* contains information to identify the system and its installation limitations to maintain a minimum fire-resistive rating.

Informational Note No. 2: The listing organization provides information for electrical circuit protective systems (FHIT), including installation requirements for maintaining the fire rating.

(3) Electrical Circuit Protective System.

Protectants for cables specified in 800.179(A) through (E), which are part of an electrical circuit protective system, shall be identified with the protective system identifier and hourly rating marked on the protectant or the smallest unit container and installed in accordance with the listing of the system.

Informational Note: See UL 1724, *Fire Tests for Electrical Circuit Protective Systems* , for one method of defining an electrical circuit protective system. UL *Guide Information for Electrical Circuit Integrity Systems (FHIT)* contains information to identify the system and its installation limitations to maintain the fire-resistive rating.

(F) Types CMP-LP, CMR-LP, CMG-LP, and CM-LP Limited Power (LP) Cables.

Types CMP-LP, CMR-LP, CMG-LP, and CM-LP communications limited power cables shall be listed as suitable for carrying power and data up to a specified current limit for each conductor without exceeding the temperature rating of the cable where the cable is installed in cable bundles in free air or installed within a raceway, cable tray, or cable routing assembly. The cables shall be marked with the suffix “-LP(XXA),” where XX designates the current limit in amperes per conductor.

Informational Note: An example of the marking on a communications cable with an LP rating is “CMP-LP (0.6A)(75°C) 23 AWG 4 pair,” which indicates that it is a 4-pair plenum cable with 23 AWG conductors, a temperature rating of 75°C, and a current limit of 0.6 amperes.

(G) Type CMUC Undercarpet Wires and Cables.

Type CMUC undercarpet communications wires and cables shall be listed as being suitable for undercarpet use and shall also be listed as being resistant to flame spread.

Informational Note: See ANSI/UL 2556, *Standard for Wire and Cable Test Methods* , for one method of determining that cable is resistant to flame spread in accordance with the FV-2/VW-1 flame test.

(H) Communications Wires.

Communications wires, such as distributing frame wire and jumper wire, shall be listed as being resistant to the spread of fire.

Informational Note No. 1: See UL Flame Exposure, Vertical Flame Tray Test in ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables* , for one method of defining *cable flame resistance to the spread of fire* where the cables do not spread fire to the top of the tray. The smoke measurements in the test method are not applicable.

Informational Note No. 2: See CSA Vertical Flame Test — Cables in Cable Trays, as described in CSA C22.2 No. 0.3-09 (R2019), *Test Methods for Electrical Wires and Cables* , for another method of defining *resistance to the spread of fire* is for the damage (char length) of the cable to not exceed 1.5 m (4 ft 11 in.).

(I) Optional Markings.

Cables shall be permitted to be surface marked to indicate special characteristics of the cable materials.

Informational Note: These markings can include, but are not limited to, markings for limited-smoke, halogen-free, low-smoke halogen-free, and sunlight resistance.

800.180 Grounding Devices.

Where bonding or grounding is required, devices used to connect a shield, a sheath, or non-current-carrying metallic members of a cable to a bonding conductor or grounding electrode conductor shall be listed or be part of listed equipment.

~~**800.182** Cable Routing Assemblies and Communications Raceways.~~

~~Cable routing assemblies and communications raceways shall be listed in accordance with 800.182(A) through (C). Cable routing assemblies shall be marked in accordance with Table 800.182(a) . Communications raceways shall be marked in accordance with Table 800.182(b) .~~

~~Informational Note: See ANSI/UL 2024-5-2015, *Cable Routing Assemblies and Communications Raceways* , for information on listing requirements for both communications raceways and cable routing assemblies.~~

~~Table 800.182(a) Cable Routing Assembly Markings~~

~~Type Marking Plenum Cable Routing Assembly Plenum Cable Routing Assembly Riser Cable Routing Assembly Riser Cable Routing Assembly General-Purpose Cable Routing Assembly General-Purpose Cable Routing Assembly~~

~~Table 800.182(b) Communications Raceway Markings~~

~~Type Marking Plenum Communications Raceway Plenum Communications Raceway Riser Communications Raceway Riser Communications Raceway General-Purpose Communications Raceway General-Purpose Communications Raceway~~

(A) Plenum Cable Routing Assemblies and Plenum Communications Raceways.

Plenum cable routing assemblies and plenum communications raceways shall be listed as having adequate fire-resistant and low-smoke-producing characteristics.

Informational Note No. 1: See ASTM E84-19B, *Standard Test Method for Surface Burning Characteristics of Building Materials* , or ANSI/UL 723-2018, *Standard Test Method for Surface Burning Characteristics of Building Materials* , for one method of defining cable routing assemblies and communications raceways that have adequate fire-resistant and low-smoke-producing characteristics and exhibit a maximum flame spread index of 25 and a maximum smoke developed index of 50.

Informational Note No. 2: See NFPA 262-2019, *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces* , for another method of defining communications raceways that have adequate fire-resistant and low-smoke-producing characteristics and exhibit a maximum peak optical density of 0.50 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.52 m (5 ft) or less.

Informational Note No. 3: See 4.3.11.2.6 or 4.3.11.5.5 of NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for information on materials exposed to the airflow in ceiling cavity and raised floor plenums.

(B) Riser Cable Routing Assemblies and Riser Communications Raceways.

Riser cable routing assemblies and riser communications raceways shall be listed as having adequate fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

Informational Note: See ANSI/UL 1666-2017, *Standard Test for Flame Propagation Height of Electrical and Optical-Fiber Cable Installed Vertically in Shafts* , for one method of defining fire-resistant characteristics capable of preventing the carrying of fire from floor to floor of the cable routing assemblies and communications raceways.

(C) General-Purpose Cable Routing Assemblies and General-Purpose Communications Raceways.

General-purpose cable routing assemblies and general-purpose communications raceways shall be listed as being resistant to the spread of fire.

Informational Note: See ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables* , for one method of defining resistance to the spread of fire where the cable routing assemblies and communications raceways do not spread fire to the top of the tray.

Article 805 Communications Circuits

Part I. General

805.1 Scope.

This article covers communications circuits and equipment.

805.18 Installation of Equipment.

Equipment electrically connected to a communications network shall be listed in accordance with 800.171 .

Exception: This listing requirement shall not apply to test equipment that is intended for temporary connection to a telecommunications network by qualified persons during the course of installation, maintenance, or repair of telecommunications equipment or systems.

Part

~~II. Wires and Cables Outside and Entering Buildings~~

~~**805.47** Underground Communications Wires and Cables Entering Buildings — Underground Block Distribution.~~

~~Where the entire street circuit is run underground and the circuit within the block is placed so as to be free from the likelihood of accidental contact with electric light or power circuits of over 300 volts to ground, the insulation requirements of 805.50(A) and 805.50(C) shall not apply, insulating supports shall not be required for the conductors, and bushings shall not be required where the conductors enter the building.~~

~~**805.50** Circuits Requiring Primary Protectors.~~

~~Circuits that require primary protectors as provided in 805.90 shall comply with 805.50(A) , 805.50(B) , and 805.50(C) .~~

~~**(A)** Insulation, Wires, and Cables.~~

~~Communications wires and cables without a metal shield, running from the last outdoor support to the primary protector, shall be listed in accordance with 805.173 .~~

~~**(B)** On Buildings.~~

~~Communications wires and cables in accordance with 805.50(A) shall be separated at least 100 mm (4 in.) from electric light or power conductors not in a raceway or cable or be permanently separated from conductors of the other systems by a continuous and firmly fixed nonconductor in addition to the insulation on the wires, such as porcelain tubes or flexible tubing. Communications wires and cables in accordance with 805.50(A) exposed to accidental contact with electric light and power conductors operating at over 300 volts to ground and attached to buildings shall be separated from woodwork by being supported on glass, porcelain, or other insulating material.~~

~~*Exception: Separation from woodwork shall not be required where fuses are omitted as provided for in 805.90(A)(1) , or where conductors are used to extend circuits to a building from a cable having a grounded metal sheath.*~~

~~**(C)** Entering Buildings.~~

(1) Installed Inside Buildings.

If a primary protector is installed inside the building, the communications wires and cables shall enter the building either through a noncombustible, nonabsorbent insulating bushing or through a metal raceway.

Exception: *The insulating bushing shall not be required if the entering communications wires and cables meet one or more of the following conditions:*

(1) *Is a metal-sheathed cable*

(2) *Pass through masonry*

(3) *Meet the requirements of 805.50(A) and fuses are omitted in accordance with 805.90(A)(1)*

(4) *Meet the requirements of 805.50(A) and are used to extend circuits to a building from a cable having a grounded metal sheath*

(2) Orientation of Raceways or Bushings.

Raceways or bushings shall slope upward from the outside, or, where this cannot be done, drip loops shall be formed in the communications wires and cables immediately before they enter the building.

(3) Service Head.

Raceways shall be equipped with an approved service head. More than one communications wire and cable shall be permitted to enter through a single raceway or bushing. Conduits or other metal raceways located ahead of the primary protector shall be grounded.

~~Part~~

~~The substitutions for communications cables listed in Table 805.154 and illustrated in Figure 805.154 shall be permitted.~~

~~Table 805.154 Cable Substitutions~~

~~Cable Type~~	~~Permitted Substitutions~~
~~CMR~~	~~CMP~~
~~CMG, CM~~	~~CMP, CMR~~
~~CMX~~	~~CMP, CMR, CMG, CM~~

~~Figure 805.154 Cable Substitution Hierarchy.~~

III. Protection

805.90 Protective Devices.

(A) Application.

A listed primary protector shall be provided on each circuit run partly or entirely in aerial wire or aerial cable not confined within a block. Also, a listed primary protector shall be provided on each circuit, aerial or underground, located within the block containing the building served so as to be exposed to accidental contact with electric light or power conductors operating at over 300 volts to ground. In addition, where there exists a lightning exposure, each interbuilding circuit on a premises shall be protected by a listed primary protector at each end of the interbuilding circuit. Installation of primary protectors shall also comply with 110.3(B) .

Informational Note No. 1: On a circuit not exposed to accidental contact with power conductors, providing a listed primary protector in accordance with this article helps protect against other hazards, such as lightning and above-normal voltages induced by fault currents on power circuits in proximity to the communications circuit.

Informational Note No. 2: Interbuilding circuits are considered to have a lightning exposure unless one or more of the following conditions exist:

(1) Circuits in large metropolitan areas where buildings are close together and sufficiently high to intercept lightning.

(2) Interbuilding cable runs of 42 m (140 ft) or less, directly buried or in underground conduit, where a continuous metallic cable shield or a continuous metal conduit containing the cable is connected to each building grounding electrode system.

(3) Areas having an average of five or fewer thunderstorm days per year and earth resistivity of less than 100 ohm-meters. Such areas are found along the Pacific coast.

Informational Note No. 3: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems*, for information on lightning protection systems.

(1) Fuseless Primary Protectors.

Fuseless-type primary protectors shall be permitted under any of the following conditions:

(1) Where conductors enter a building through a cable with grounded metallic sheath member(s) and where the conductors in the cable safely fuse on all currents greater than the current-carrying capacity of the primary protector and of the primary protector bonding conductor or grounding electrode conductor

(2) Where insulated conductors in accordance with 805.50(A) are used to extend circuits to a building from a cable with an effectively grounded metallic sheath member(s) and where the conductors in the cable or cable stub, or the connections between the insulated conductors and the plant exposed to accidental contact with electric light or power conductors operating at greater than 300 volts to ground, safely fuse on all currents greater than the current-carrying capacity of the primary protector, or the associated insulated conductors and of the primary protector bonding conductor or grounding electrode conductor

(3) Where insulated conductors in accordance with 805.50(A) or (B) are used to extend circuits to a building from other than a cable with metallic sheath member(s), where (a) the primary protector is listed as being suitable for this purpose for application with circuits extending from other than a cable with metallic sheath members and (b) the connections of the insulated conductors to the plant exposed to accidental contact with electric light or power conductors operating at greater than 300 volts to ground or the conductors of the plant exposed to accidental contact with electric light or power conductors operating at greater than 300 volts to ground safely fuse on all currents greater than the current-carrying capacity of the primary protector, or associated insulated conductors and of the primary protector bonding conductor or grounding electrode conductor

(4) Where insulated conductors in accordance with 805.50(A) are used to extend circuits aerially to a building from a buried or underground circuit that is unexposed to accidental contact with electric light or power conductors operating at greater than 300 volts to ground

(5) Where insulated conductors in accordance with 805.50(A) are used to extend circuits to a building from cable with an effectively grounded metallic sheath member(s), and where (a) the combination of the primary protector and insulated conductors is listed as being suitable for this purpose for application with circuits extending from a cable with an effectively grounded metallic sheath member(s) and (b) the insulated conductors safely fuse on all currents greater than the current-carrying capacity of the primary protector and of the primary protector bonding conductor or grounding electrode conductor

Informational Note: See ANSI/IEEE C2-2017, *National Electrical Safety Code*, Section 9, for examples of methods of protective grounding that can achieve effective grounding of communications cable sheaths for cables from which communications circuits are extended.

(2) Fused Primary Protectors.

Where the requirements listed under 805.90(A)(1) (a) through (A)(1)(e) are not met, fused-type primary protectors shall be used. Fused-type primary protectors shall consist of an arrester connected between each line conductor and ground, a fuse in series with each line conductor, and an appropriate mounting arrangement. Primary protector terminals shall be marked to indicate line, instrument, and ground, as applicable.

(B) Location.

The primary protector shall be located in, on, or immediately adjacent to the structure or building served and as close as practicable to the point of entrance.

For purposes of this section, primary protectors located at mobile home service equipment within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means connected to an electrode by a grounding electrode conductor in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.

Informational Note: Selecting a primary protector location to achieve the shortest practicable primary protector bonding conductor or grounding electrode conductor helps limit potential differences between communications circuits and other metallic systems.

(C) Hazardous (Classified) Locations.

The primary protector shall not be located in any hazardous (classified) locations, as defined in 500.5 and 505.5 , or in the vicinity of easily ignitible material.

Exception: As permitted in 501.150 , 502.150 , and 503.150 .

(D) Secondary Protectors.

Where a secondary protector is installed in series with the indoor communications wire and cable between the primary protector and the equipment, it shall be listed for the purpose in accordance with 805.170(B) .

Informational Note: Secondary protectors on circuits exposed to accidental contact with electric light or power conductors operating at greater than 300 volts to ground are not intended for use without primary protectors.

805.93 Grounding, Bonding, or Interruption of Non–Current-Carrying Metallic Sheath Members of Communications Cables.

Communications cables entering the building or terminating on the outside of the building shall comply with 805.93(A) or (B).

(A) Entering Buildings.

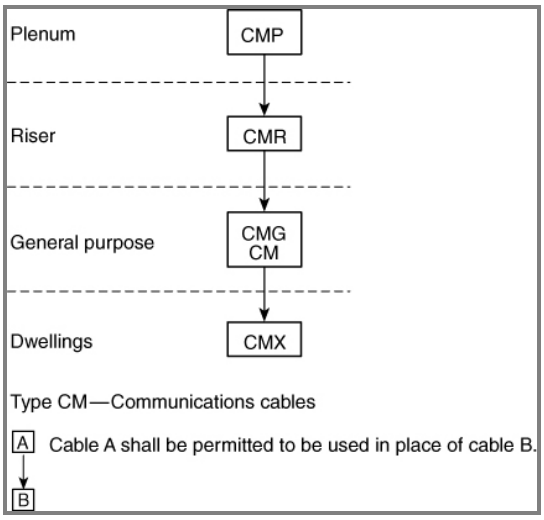
In installations where the communications cable enters a building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of entrance.

(B) Terminating on the Outside of Buildings.

In installations where the communications cable is terminated on the outside of the building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of termination of the cable.

Part IV. Installation Methods Within Buildings

~~**805.154** Substitutions for Listed Communications Cables.~~



805.156 Dwelling Unit Communications Outlet.

For new construction, a minimum of one communications outlet shall be installed within the dwelling in a readily accessible area and cabled to the service provider demarcation point.

Part V. Listing Requirements

805.170 Protectors.

Protectors shall be listed in accordance with 805.170(A) or 805.170(B).

(A) Primary Protectors.

The primary protector shall be listed and consist of an arrester connected between each line conductor and ground in an appropriate mounting. Primary protector terminals shall be marked to indicate line and ground as applicable.

Informational Note: See ANSI/UL 497-2017, *Standard for Protectors for Paired Conductor Communications Circuits*, to determine applicable requirements for a listed primary protector.

(B) Secondary Protectors.

The secondary protector shall be listed as suitable to provide means to safely limit currents to less than the current-carrying capacity of listed indoor communications wire and cable, listed telephone set line cords, and listed communications terminal equipment having ports for external wire line communications circuits. Any overvoltage protection, arresters, or grounding connection shall be connected on the equipment terminals side of the secondary protector current-limiting means.

Informational Note: See ANSI/UL 497A-2019, *Standard for Secondary Protectors for Communications Circuits*, to determine applicable requirements for a listed secondary protector.

~~**805.173** Drop Wire and Cable.~~

~~Communications wires and cables without a metallic shield, running from the last outdoor support to the primary protector, shall be listed as being suitable for the purpose and shall have current-carrying capacity as specified in 805.90(A)(1) (b) or (A)(1)(c).~~

~~**820.154** Substitutions of Listed CATV Cables.~~

~~The substitutions for coaxial cables in Table 820.154 and illustrated in Figure 820.154 shall be permitted.~~

~~Informational Note: The substitute cables in Table 820.154 and Figure 820.154 are only coaxial-type cables.~~

~~Table 820.154 Coaxial Cable Uses and Permitted Substitutions~~

~~Cable Type Permitted Substitutions CATVP CMP, BLP CATVR CATVP, CMP, CMR, BMR, BLP, BLR CATV CATVP, CMP, CATVR, CMR, CMG, CM, BMR, BM, BLP, BLR, BL CATVX CATVP, CMP, CATVR, CMR, CATV, CMG, CM, BMR, BM, BLP, BLR, BL, BLX~~

~~Figure 820.154 Coaxial Cable Substitution Hierarchy.~~

Article 810 Antenna Systems.

Part I. General

810.1 Scope.

This article covers antenna systems for radio and television receiving equipment, amateur and citizen band radio transmitting and receiving equipment, and certain features of transmitter safety. This article covers antennas such as wire-strung type, multi-element, vertical rod, flat, or parabolic and also covers the wiring and cabling that connect them to equipment. This article does not cover equipment and antennas used for coupling carrier current to power line conductors.

810.3 Other Articles.

Wiring from the source of power to and between devices connected to the interior wiring system shall comply with the following:

(1) Chapters 1 through 4 other than as modified by Parts I and II of Article 640 .

(2) Coaxial cables that connect antennas to equipment shall comply with the appropriate article of Chapter 8.

(3) Wiring and equipment installed in hazardous (classified) locations shall comply with the appropriate requirements in Chapter 5.

810.4 Community Television Antenna.

The installation of the antenna shall comply with this article. The installation of the distribution system shall comply with the appropriate article of Chapter 8 .

810.5 Radio Noise Suppression.

Radio interference eliminators, interference capacitors, or noise suppressors connected to power-supply leads shall be of a listed type. They shall not be exposed to physical damage.

810.6 Antenna Lead-In Protectors.

If an antenna lead-in surge protector is installed, it shall be listed as being suitable for limiting surges on the cable that connects the antenna to the receiver/transmitter electronics and shall be connected between the conductors and the grounded shield or other ground connection. The antenna lead-in protector shall be grounded using a bonding conductor or grounding electrode conductor installed in accordance with 810.21(F) .

Informational Note: See UL 497E, *Outline of Investigation for Protectors for Antenna Lead-In Conductors* , for information concerning protectors for antenna lead-in conductors.

810.7 Grounding Devices.

If bonding or grounding is required, devices used to connect a shield, a sheath, non-current-carrying metal members of a cable, or metal parts of equipment or antennas to a bonding conductor or grounding electrode conductor shall be listed or be part of listed equipment.

Part II. Receiving Equipment — Antenna Systems

810.11 Material.

Antennas and lead-in conductors shall be of hard-drawn copper, bronze, aluminum alloy, copper-clad steel, or other high-strength, corrosion-resistant material.

Exception: Soft-drawn or medium-drawn copper shall be permitted for lead-in conductors if the maximum span between points of support is less than 11 m (35 ft).

810.12 Supports.

Outdoor antennas and lead-in conductors shall be securely supported. The antennas or lead-in conductors shall not be attached to the electric service mast. They shall not be attached to poles or similar structures carrying open electric light or power wires or trolley wires of over 250 volts between conductors. Insulators supporting the antenna conductors shall have sufficient mechanical strength to safely support the conductors. Lead-in conductors shall be securely attached to the antennas.

810.13 Avoidance of Contacts with Conductors of Other Systems.

Outdoor antennas and lead-in conductors from an antenna to a building shall not cross over open conductors of electric light or power circuits and shall be kept well away from all such circuits so as to avoid the possibility of accidental contact. Where proximity to open electric light or power service conductors of less than 250 volts between conductors cannot be avoided, the installation shall be such as to provide a clearance of at least 600 mm (2 ft).

Where practicable, antenna conductors shall be installed so as not to cross under open electric light or power conductors.

810.14 Splices.

Splices and joints in antenna spans shall be made mechanically secure with approved splicing devices or by such other means and be suitable for the conditions of use and location in compliance with 110.14(A) and (B).

810.15 Grounding or Bonding.

Masts and metal structures supporting antennas shall be grounded or bonded in accordance with 810.21 , unless the antenna and its related supporting mast or structure are within a zone of protection defined by a 46 m (150 ft) radius rolling sphere.

Informational Note: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems* , 4.7.3.1, for the application of the term *rolling sphere* .

810.16 Size of Wire-Strung Antenna — Receiving Station.

(A) Size of Antenna Conductors.

Outdoor antenna conductors for receiving stations shall be of a size not less than given in Table 810.16(A) .

Table 810.16(A) Size of Receiving Station Outdoor Antenna Conductors

Material	Minimum Size of Conductors (AWG) Where Maximum Open Span Length Is		
	Less Than 11 m (35 ft)	11 m to 45 m (35 ft to 150 ft)	Over 45 m (150 ft)
Aluminum alloy, hard-drawn copper	19	14	12
Copper-clad steel, bronze, or other high-strength material	20	17	14

(B) Self-Supporting Antennas.

Outdoor antennas, such as vertical rods and flat, parabolic, or dipole structures, shall be of corrosion-resistant materials and of strength suitable to withstand ice and wind loading conditions and shall be located well away from overhead conductors of electric light and power circuits of over 150 volts to ground, so as to avoid the possibility of the antenna or structure falling into or making accidental contact with such circuits.

810.17 Size of Lead-in — Receiving Station.

Lead-in conductors from outside antennas for receiving stations shall, for various maximum open span lengths, be of such size as to have a tensile strength at least as great as that of the conductors for antennas as specified in 810.16 . If the lead-in consists of two or more conductors that are twisted together, are enclosed in the same covering, or are concentric, the conductor size shall, for various maximum open span lengths, be such that the tensile strength of the combination is at least as great as that of the conductors for antennas as specified in 810.16 .

810.18 Clearances — Receiving Stations.

(A) Outside of Buildings.

Lead-in conductors attached to buildings shall be installed so that they cannot swing closer than 600 mm (2 ft) to the conductors of circuits of 250 volts or less between conductors, or 3.0 m (10 ft) to the conductors of circuits of over 250 volts between conductors, except that in the case of circuits not over 150 volts between conductors, if all conductors involved are supported so as to ensure permanent separation, the clearance shall be permitted to be reduced but shall not be less than 100 mm (4 in.). The clearance between lead-in conductors and any conductor forming a part of a lightning protection system shall not be less than 1.8 m (6 ft). Underground conductors shall be separated at least 300 mm (12 in.) from conductors of any light or power circuits or Class 1 circuits.

Exception: The separation and clearance requirements shall not apply if the electric light or power conductors, Class 1 conductors, or lead-in conductors are installed in raceways or metal cable armor.

Informational Note No. 1: See 250.60 for grounding associated with lightning protection components — strike termination devices. See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems* , for detailed information on grounding, bonding, and spacing from lightning protection systems, and the calculation of specific separation distances using the sideflash equation in Section 4.6.

Informational Note No. 2: See NFPA 780-2020, *Standard for the Installation of Lighting Protection Systems* , for information on bonding or separation of metal raceways, enclosures, frames, and other non-current-carrying metal parts of electrical equipment installed on a building equipped with a lightning protection system. Separation from lightning protection conductors is typically 1.8 m (6 ft) through air or 900 mm (3 ft) through dense materials such as concrete, brick, or wood.

(B) Antennas and Lead-ins — Indoors.

Indoor antennas and indoor lead-ins shall not be run nearer than 50 mm (2 in.) to conductors of other wiring systems in the premises unless one of the following conditions applies:

(1) The other conductors are in metal raceways or cable armor.

(2) The indoor antennas and indoor lead-ins are permanently separated from such other conductors by a continuous firmly fixed nonconductor.

(C) In Boxes or Other Enclosures.

Indoor antennas and indoor lead-ins shall be permitted to occupy the same box or enclosure with conductors of other wiring systems if separated from such other conductors by an effective permanently installed barrier.

810.19 Electrical Supply Circuits Used in Lieu of Antenna — Receiving Stations.

If an electrical supply circuit is used in lieu of an antenna, the device by which the radio receiving set is connected to the supply circuit shall be listed.

810.20 Antenna Discharge Units — Receiving Stations.

(A) General Requirement.

Each lead-in conductor from an outdoor antenna shall be provided with a listed antenna discharge unit.

Exception: A separate antenna discharge unit is not required if the lead-in conductors are enclosed in a continuous metal shield that complies with one of the following:

(1) Is grounded or bonded with a conductor in accordance with 810.21

(2) Is protected by an antenna discharge unit

(B) Location.

Antenna discharge units shall be located outside the building or inside the building between the point of entrance of the lead-in and the radio set or transformers and as near as practicable to the entrance of the conductors to the building. The antenna discharge unit shall not be located near combustible material or in a hazardous (classified) location as defined in accordance with 500.5 and 505.5 .

(C) Grounding or Bonding.

The antenna discharge unit shall be grounded or bonded in accordance with 810.21 .

810.21 Bonding Conductors and Grounding Electrode Conductors — Receiving Stations.

Bonding conductors and grounding electrode conductors shall comply with 810.21(A) through 810.21(K) .

(A) Material.

The bonding conductor or grounding electrode conductor shall be of copper, aluminum, copper-clad steel, copper-clad aluminum, bronze, or similar corrosion-resistant material. Aluminum or copper-clad aluminum bonding conductors or grounding electrode conductors shall not be used if subject to corrosive conditions or in direct contact with masonry or the earth or where subject to corrosive conditions. If used outside, aluminum or copper-clad aluminum conductors shall not be installed within 450 mm (18 in.) of the earth.

(B) Insulation.

Insulation on bonding conductors or grounding electrode conductors shall not be required.

(C) Supports.

The bonding conductor or grounding electrode conductor shall be securely fastened in place and shall be permitted to be directly attached to the surface wired over without the use of insulating supports.

Exception: Where proper support cannot be provided, the size of the bonding conductors or grounding electrode conductors shall be increased proportionately.

(D) Physical Protection.

Bonding conductors and grounding electrode conductors shall be protected where exposed to physical damage. Where the bonding conductor or grounding electrode conductor is installed in a metal raceway, both ends of the raceway shall be bonded to the contained conductor or to the same terminal or electrode to which the bonding conductor or grounding electrode conductor is connected.

(E) Run in Straight Line.

The bonding conductor or grounding electrode conductor for an antenna mast or antenna discharge unit shall be run in as straight a line as practicable.

(F) Electrode.

The bonding conductor or grounding electrode conductor shall be connected as required in 810.21(F)(1) through 810.21(F)(3) .

(1) In Buildings or Structures with an Intersystem Bonding Termination.

If the building or structure served has an intersystem bonding termination as required by 250.94 , the bonding conductor shall be connected to the intersystem bonding termination.

(2) In Buildings or Structures with Grounding Means.

If the building or structure served has no intersystem bonding termination, the bonding conductor or grounding electrode conductor shall be connected to the nearest accessible location on one of the following:

(1) The building or structure grounding electrode system as covered in 250.50

(2) The power service accessible means external to the building, as covered in 250.94

(3) The nonflexible metal power service raceway

(4) The service equipment enclosure

(5) The grounding electrode conductor or the grounding electrode conductor metal enclosures of the power service

(6) The grounded interior metal water piping systems, within 1.52 m (5 ft) from its point of entrance to the building, as covered in 250.52

A bonding device intended to provide a termination point for the bonding conductor (intersystem bonding) shall not interfere with the opening of an equipment enclosure. A bonding device shall be mounted on nonremovable parts. A bonding device shall not be mounted on a door or cover even if the door or cover is nonremovable.

(3) In Buildings or Structures Without an Intersystem Bonding Termination or Grounding Means.

If the building or structure served has no intersystem bonding termination or grounding means as described in 810.21(F)(2) , the grounding electrode conductor shall be connected to a grounding electrode as described in 250.52 .

(G) Inside or Outside Building.

The bonding conductor or grounding electrode conductor shall be permitted to be run either inside or outside the building.

(H) Size.

The bonding conductor or grounding electrode conductor shall not be smaller than 10 AWG copper, 8 AWG aluminum, or 17 AWG copper-clad steel or bronze.

(I) Common Ground.

A single bonding conductor or grounding electrode conductor shall be permitted for both protective and operating purposes.

(J) Bonding of Electrodes.

A bonding jumper not smaller than 6 AWG copper or equivalent shall be connected between the radio and television equipment grounding electrode and the power grounding electrode system at the building or structure served if separate electrodes are used.

(K) Electrode Connection.

Connections to grounding electrodes shall comply with 250.70 .

Part III. Amateur and Citizen Band Transmitting and Receiving Stations — Antenna Systems

810.51 Other Sections.

In addition to complying with Part III, antenna systems for amateur and citizen band transmitting and receiving stations shall also comply with 810.11 through 810.15 .

810.52 Size of Conductors.

Antenna conductors for transmitting and receiving stations shall be of a size not less than given in Table 810.52 .

Table 810.52 Size of Outdoor Antenna Conductors

Material	Minimum Size of Conductors (AWG) If Maximum Open Span Length Is	
	Less Than 45 m (150 ft)	Over 45 m (150 ft)
Hard-drawn copper	14	10
Copper-clad steel, bronze, or other high-strength material	14	12

810.53 Size of Lead-in Conductors.

Lead-in conductors for transmitting stations shall, for various maximum span lengths, be of a size at least as great as that of conductors for antennas as specified in 810.52 .

810.54 Clearance on Building.

Antenna conductors for transmitting stations, attached to buildings, shall be firmly mounted at least 75 mm (3 in.) clear of the surface of the building on nonabsorbent insulating supports, such as treated pins or brackets equipped with insulators having not less than 75-mm (3-in.) creepage and airgap distances. Lead-in conductors attached to buildings shall also comply with these requirements.

Exception: If the lead-in conductors are enclosed in a continuous metal shield that is grounded with a conductor in accordance with 810.58 , they shall not be required to comply with these requirements. If grounded, the metal shield shall also be permitted to be used as a conductor.

810.55 Entrance to Building.

Except where protected with a continuous metallic shield that is grounded with a conductor in accordance with 810.58 , lead-in conductors for transmitting stations shall enter buildings by one of the following methods:

(1) Through a rigid, noncombustible, nonabsorbent insulating tube or bushing

(2) Through an opening provided for the purpose in which the entrance conductors are firmly secured so as to provide a clearance of at least 50 mm (2 in.)

(3) Through a drilled window pane

810.56 Protection Against Accidental Contact.

Lead-in conductors to radio transmitters shall be located or installed so as to make accidental contact with them difficult.

810.57 Antenna Discharge Units — Transmitting Stations.

Each lead-in conductor for outdoor antennas shall be provided with an antenna discharge unit or other suitable means that drain static charges from the antenna system.

Exception No. 1: If the lead-in conductor is protected by a continuous metal shield that is grounded with a conductor in accordance with 810.58 , an antenna discharge unit or other suitable means shall not be required for the lead-in conductor.

Exception No. 2: If the antenna is grounded or bonded with a conductor in accordance with 810.58 , an antenna discharge unit or other suitable means shall not be required.

810.58 Bonding Conductors and Grounding Electrode Conductors — Amateur and Citizen Band Transmitting and Receiving Stations.

Bonding conductors and grounding electrode conductors shall comply with 810.58(A) through 810.58(C).

(A) Other Sections.

All bonding conductors and grounding electrode conductors for amateur and citizen band transmitting and receiving stations shall comply with 810.21(A) through 810.21(C).

(B) Size of Protective Bonding Conductor or Grounding Electrode Conductor.

The protective bonding conductor or grounding electrode conductor for transmitting stations shall be as large as the lead-in but not smaller than 10 AWG copper, bronze, or copper-clad steel.

(C) Size of Operating Bonding Conductor or Grounding Electrode Conductor.

The operating bonding conductor or grounding electrode conductor for transmitting stations shall not be less than 14 AWG copper or its equivalent.

Part IV. Interior Installation — Transmitting Stations

810.70 Separation from Other Conductors.

All conductors inside the building shall be separated at least 100 mm (4 in.) from the conductors of any electric light, power, or signaling circuit unless one of the following conditions applies:

(1) The conductors of a permanent audio system are installed in compliance with Parts I and II of Article 640.

(2) The conductors of portable and temporary audio systems are installed in compliance with Parts I and III of Article 640.

(3) The conductors are separated from such other conductors by a continuous and firmly fixed nonconductor.

810.71 General.

Transmitters shall comply with 810.71(A) through (C).

(A) Enclosing.

The transmitter shall be enclosed in a metal frame or grille or separated from the operating space by a barrier or other equivalent means, all metallic parts of which are effectively connected to a bonding conductor or grounding electrode conductor.

(B) Grounding of Controls.

All external metal handles and controls accessible to the operating personnel shall be effectively connected to an equipment grounding conductor if the transmitter is powered by the premises wiring system or grounded with a conductor in accordance with 810.21.

(C) Interlocks on Doors.

All access doors shall be provided with interlocks that disconnect all voltages of over 350 volts between conductors when any access door is opened.

Article 820 Community Antenna Television and Radio Distribution Systems

Part I. General

820.1 Scope.

This article covers coaxial cable distribution of radio frequency signals typically employed in community antenna television (CATV) systems.

820.3 Other Articles.

The wiring methods of Article 830 shall be permitted to substitute for the wiring methods of Article 820.

Informational Note: Use of Article 830 wiring methods will facilitate the upgrading of Article 820 installations to network-powered broadband applications.

820.15 Power Limitations.

Coaxial cable shall be permitted to deliver power to equipment that is directly associated with the radio frequency distribution system if the voltage is not over 60 volts and if the current is supplied by a transformer or other device that has power-limiting characteristics.

Power shall be blocked from premises devices on the network that are not intended to be powered via the coaxial cable.

Part III. Protection

820.93 Grounding of the Outer Conductive Shield of Coaxial Cables.

Coaxial cables entering buildings or attached to buildings shall comply with 820.93(A) or (B). Where the outer conductive shield of a coaxial cable is grounded, no other protective devices shall be required. For purposes of this section, grounding located at mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.

> Informational Note: Selecting a grounding block location to achieve the shortest practicable bonding conductor or grounding electrode conductor helps limit potential differences between CATV and other metallic systems.

(A) Entering Buildings.

In installations where the coaxial cable enters the building, the outer conductive shield shall be grounded in accordance with 820.100 . The grounding shall be as close as practicable to the point of entrance.

(B) Terminating Outside of the Building.

In installations where the coaxial cable is terminated outside of the building, the outer conductive shield shall be grounded in accordance with 820.100 . The grounding shall be as close as practicable to the point of attachment or termination.

(C) Location.

Where installed, a listed primary protector shall be applied on each community antenna and radio distribution (CATV) cable external to the premises. The listed primary protector shall be located as close as practicable to the entrance point of the cable on either side or integral to the ground block.

(D) Hazardous (Classified) Locations.

If a primary protector or equipment providing the primary protection function is used, it shall not be located in any hazardous (classified) location as defined in 500.5 and 505.5 or in the vicinity of easily ignitible material.

Exception: Primary protection equipment shall be used only if permitted by 501.150 , 502.150 , and 503.150 .

Part IV. Grounding Methods

820.100 Cable Bonding and Grounding.

The shield of the coaxial cable shall be bonded or grounded as specified in 820.100(A) and (B).

Exception: For communications systems using coaxial cable completely contained within the building (i.e., they do not exit the building) or the exterior zone of protection defined by a 46 m (150 ft) radius rolling sphere and isolated from outside cable plant, the shield shall be permitted to be grounded by a connection to an equipment grounding conductor as described in 250.118. Connecting to an equipment grounding conductor through a grounded receptacle using a dedicated bonding jumper and a permanently connected listed device shall be permitted. Use of a cord and plug for the connection to an equipment grounding conductor shall not be permitted.

Informational Note: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems*, 4.7.3.1, for the application of the term *rolling sphere*.

(A) General Requirements.

The installation shall be in accordance with 800.100.

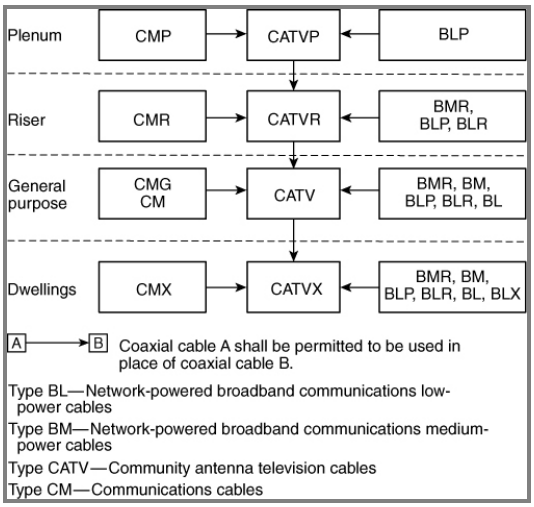
(B) Shield Protection Devices.

Grounding of a coaxial drop cable shield by means of a protective device that does not interrupt the grounding system within the premises shall be permitted.

820.103 Equipment Grounding.

Unpowered equipment and enclosures or equipment powered by the coaxial cable shall be considered grounded where connected to the metallic cable shield.

~~**Part V.** Installation Methods Within Buildings~~



Article 830 Network-Powered Broadband Communications Systems

Part I. General

830.1 Scope.

This article covers network-powered broadband communications systems that provide any combination of voice, audio, video, data, and interactive services through a network interface unit.

Informational Note: A typical basic system configuration includes a cable supplying power and broadband signal to a network interface unit that converts the broadband signal to the component signals. Typical cables are coaxial cable with both broadband signal and power on the center conductor, composite metallic cable with a coaxial member(s) or twisted pair members for the broadband signal and twisted pair members for power, and hybrid optical fiber cable with a pair of conductors for power. Larger systems may also include network components such as amplifiers that require network power.

830.15 Power Limitations.

Network-powered broadband communications systems shall be classified as having low- or medium-power sources as specified in the following:

(1) Sources shall be classified as defined in Table 830.15 .

(2) Direct-current power sources exceeding 150 volts to ground, but no more than 200 volts to ground, with the current to ground limited to 10 mA dc, that meet the current and power limitation for medium-power sources in Table 830.15 shall be classified as medium-power sources.

Informational Note: See UL 60950-21-2007, *Standard for Safety for Information Technology Equipment — Safety — Part 21: Remote Power Feeding* , for listing information on equipment that complies with 830.15(2).

Table 830.15 Limitations for Network-Powered Broadband Communications Systems

Network Power Source	Low	Medium
Circuit voltage, V_{max} (volts) [1]	0–100	0–150
Power limitation, VA_{max} (volt-amperes) [1]	250	250
Current limitation, I_{max} (amperes) [1]	1000/ V_{max}	1000/ V_{max}
Maximum power rating (volt-amperes)	100	100
Maximum voltage rating (volts)	100	150
Maximum overcurrent protection (amperes) [2]	100/ V_{max}	NA

[1] V_{max} , I_{max} , and VA_{max} are determined with the current-limiting impedance in the circuit (not bypassed) as follows:

V_{max} — Maximum system voltage regardless of load with rated input applied

I_{max} — Maximum system current under any noncapacitive load, including short circuit, and with overcurrent protection bypassed if used. I_{max} limits apply after 1 minute of operation

VA_{max} — Maximum volt-ampere output after 1 minute of operation regardless of load and overcurrent protection bypassed if used

[2] Overcurrent protection is not required if the current-limiting device provides equivalent current limitation and the current-limiting device does not reset until power or the load is removed.

Part

~~II. Cables Outside and Entering Buildings~~

~~**830.40** Entrance Cables.~~

~~Network-powered broadband communications cables located outside and entering buildings shall comply with 830.40(A) and (B).~~

(A) Medium-Power Circuits.

Medium-power network-powered broadband communications circuits located outside and entering buildings shall be installed using Type BMU, Type BM, or Type BMR network-powered broadband communications medium-power cables.

(B) Low-Power Circuits.

Low-power network-powered broadband communications circuits located outside and entering buildings shall be installed using Type BLU or Type BLX low-power network-powered broadband communications cables. Cables shown in Table 830.154 shall be permitted to substitute.

830.44 Overhead (Aerial) Cables.

Overhead (aerial) network-powered broadband communications cables shall comply with 830.44(A) through (F).

(A) On Poles and In-Span or Above Roofs.

Where network-powered broadband communications cables are installed on poles and in-span or above roofs, they shall comply with 800.44 .

(B) Clearance from Ground.

Overhead (aerial) spans of network-powered broadband communications cables shall conform to not less than the following:

(1) 2.9 m (9 **1** /**2** ft) — above finished grade, sidewalks, or from any platform or projection from which they might be reached and accessible to pedestrians only

(2) 3.5 m (11 **1** /**2** ft) — over residential property and driveways, and those commercial areas not subject to truck traffic

(3) 4.7 m (15 **1** /**2** ft) — over public streets, alleys, roads, parking areas subject to truck traffic, driveways on other than residential property, and other land traversed by vehicles such as cultivated, grazing, forest, and orchard

Informational Note: See ANSI/IEEE C2-2017, *National Electrical Safety Code* , Table 232-1, which provides for clearances of wires, conductors, and cables above ground and roadways, rather than using the clearances referenced in 225.18 .

(C) Over Pools.

Clearance of network-powered broadband communications cable in any direction from the water level, edge of pool, base of diving platform, or anchored raft shall comply with those clearances in 680.9 .

(D) Final Spans.

Final spans of network-powered broadband communications cables without an outer jacket shall be permitted to be attached to the building, but they shall be kept not less than 900 mm (3 ft) from windows that are designed to be opened, doors, porches, balconies, ladders, stairs, fire escapes, or similar locations.

Exception: Conductors run above the top level of a window shall be permitted to be less than the 900-mm (3-ft) requirement above.

Overhead (aerial) network-powered broadband communications cables shall not be installed beneath openings through which materials might be moved, such as openings in farm and commercial buildings, and shall not be installed where they obstruct entrance to these building openings.

(E) Between Buildings.

Network-powered broadband communications cables extending between buildings or structures, and also the supports or attachment fixtures, shall be identified as suitable for outdoor aerial applications and shall have sufficient strength to withstand the loads to which they may be subjected.

Exception: *Where a network-powered broadband communications cable does not have sufficient strength to be self-supporting, it shall be attached to a supporting messenger cable that, together with the attachment fixtures or supports, shall be acceptable for the purpose and shall have sufficient strength to withstand the loads to which they may be subjected.*

(F) On Buildings.

Where attached to buildings, network-powered broadband communications cables shall be securely fastened in such a manner that they are separated from other conductors in accordance with 830.44(F)(1) through (F)(3).

(1) Electric Light or Power.

The network-powered broadband communications cable shall have a separation of at least 100 mm (4 in.) from electric light, power, Class 1, or non-power-limited fire alarm circuit conductors not in raceway or cable, or be permanently separated from conductors of the other system by a continuous and firmly fixed nonconductor in addition to the insulation on the wires.

(2) Other Communications Systems.

Network-powered broadband communications cables shall be installed so that there will be no unnecessary interference in the maintenance of the separate systems. In no case shall the conductors, cables, messenger strand, or equipment of one system cause abrasion to the conductors, cables, messenger strand, or equipment of any other system.

(3) Protection from Damage.

Network-powered broadband communications cables attached to buildings or structures and located within 2.5 m (8 ft) of finished grade shall be protected by enclosures, raceways, or other approved means.

Exception: *A low-power network-powered broadband communications circuit that is equipped with a listed fault protection device, appropriate to the network-powered broadband communications cable used, and located on the network side of the network-powered broadband communications cable shall not be required to be additionally protected by enclosures, raceways, or other approved means.*

830.47 Underground Network-Powered Broadband Communications Cables Entering Buildings.

Underground network-powered broadband communications cables entering buildings shall comply with 830.47(A) and (B).

(A) Protection from Physical Damage.

Direct-buried cable, conduit, or other raceways shall be installed to meet the minimum cover requirements of Table 830.47(A). In addition, direct-buried cables emerging from the ground shall be protected by enclosures, raceways, or other approved means extending from the minimum cover distance required by Table 830.47(A) below grade to a point at least 2.5 m (8 ft) above finished grade. In no case shall the protection be required to exceed 450 mm (18 in.) below finished grade. Types BMU and BLU direct-buried cables emerging from the ground shall be installed in rigid metal conduit (RMC), intermediate metal conduit (IMC), rigid nonmetallic conduit, or other approved means extending from the minimum cover distance required by Table 830.47(A) below grade to the point of entrance.

Exception: *Protection from physical damage shall not be required if a low-power network-powered broadband communications circuit is equipped with a listed fault protection device that is located on the network side of the network-powered broadband cable being protected and the device is appropriate to the network-powered broadband communications cable used.*

Table 830.47(A) Network-Powered Broadband Communications Systems Minimum Cover Requirements

Location of	Wiring Method		
or Circuit	Direct Burial Cables	Rigid Metal Conduit (RMC) or Intermediate Metal Conduit (IMC)	Nonmetallic Raceways Listed for Direct Burial; Without Concrete Encasement or Other Approved Raceways
	mm in.	mm in.	mm in.
All locations not specified below	450 18	150 6	300 12
In trench below 50 mm (2 in.) thick concrete or equivalent	300 12	150 6	150 6
Under a building (in raceway only)	0 0	0 0	0 0
Under minimum of 100 mm (4 in.) thick concrete exterior slab with no vehicular traffic and the slab extending not less than 150 mm (6 in.) beyond the underground installation	300 12	100 4	100 4
One- and two-family dwelling driveways and outdoor parking areas and used only for dwelling-related purposes	300 12	300 12	300 12

Notes:

1. Cover is the shortest distance measured between a point on the top surface of any direct-buried cable, conduit, or other raceway and the top surface of finished grade, concrete, or similar cover.

2. Raceways approved for burial only where concrete encased shall require a concrete envelope not less than 50 mm (2 in.) thick.

3. Lesser depths shall be permitted where cables rise for terminations or splices or where access is otherwise required.

4. Where solid rock is encountered, all wiring shall be installed in metal or nonmetallic raceway permitted for direct burial.

The raceways shall be covered by a minimum of 50 mm (2 in.) of concrete extending down to rock.

(B) Pools.

Cables located under the pool or within the area extending 1.5 m (5 ft) horizontally from the inside wall of the pool shall meet those clearances and requirements specified in 680.11 .

~~Part~~

III. Protection

830.90 Primary Electrical Protection.

(A) Application.

Primary electrical protection shall be provided on all network-powered broadband communications conductors that are neither grounded nor interrupted and are run partly or entirely in aerial cable not confined within a block. Also, primary electrical protection shall be provided on all aerial or underground network-powered broadband communications conductors that are neither grounded nor interrupted and are located within the block containing the building served so as to be exposed to lightning or accidental contact with electric light or power conductors operating at over 300 volts to ground.

Exception: *Primary electrical protection shall not be required on the network-powered broadband communications conductors where electrical protection is provided on the derived circuit(s) (output side of the NIU) in accordance with* *830.90(B)(3)* .

Informational Note No. 1: On network-powered broadband communications conductors not exposed to lightning or accidental contact with power conductors, providing primary electrical protection in accordance with this article helps protect against other hazards, such as ground potential rise caused by power fault currents, and above-normal voltages induced by fault currents on power circuits in proximity to the network-powered broadband communications conductors.

Informational Note No. 2: Network-powered broadband communications circuits are considered to have a lightning exposure unless one or more of the following conditions exist:

(1) Circuits in large metropolitan areas where buildings are close together and sufficiently high to intercept lightning.

(2) Areas having an average of five or fewer thunderstorm days each year and earth resistivity of less than 100 ohm-meters. Such areas are found along the Pacific coast.

Informational Note No. 3: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems* , for information on lightning protection systems.

(1) Fuseless Primary Protectors.

Fuseless-type primary protectors shall be permitted where power fault currents on all protected conductors in the cable are safely limited to a value no greater than the current-carrying capacity of the primary protector and of the primary protector bonding conductor or grounding electrode conductor.

(2) Fused Primary Protectors.

Where the requirements listed in 830.90(A)(1) are not met, fused-type primary protectors shall be used. Fused-type primary protectors shall consist of an arrester connected between each conductor to be protected and ground, a fuse in series with each conductor to be protected, and an appropriate mounting arrangement. Fused primary protector terminals shall be marked to indicate line, instrument, and ground, as applicable.

(B) Location.

The location of the primary protector, where required, shall comply with the following:

(1) A listed primary protector shall be applied on each network-powered broadband communications cable external to and on the network side of the network interface unit.

(2) The primary protector function shall be an integral part of and contained in the network interface unit. The network interface unit shall be listed as being suitable for application with network-powered broadband communications systems and shall have an external marking indicating that it contains primary electrical protection.

(3) The primary protector(s) shall be provided on the derived circuit(s) (output side of the NIU), and the combination of the NIU and the protector(s) shall be listed as being suitable for application with network-powered broadband communications systems.

A primary protector, whether provided integrally or external to the network interface unit, shall be located as close as practicable to the point of entrance.

For purposes of this section, a network interface unit and any externally provided primary protectors located at mobile home service equipment located in sight from and not more than 9.0 m (30 ft) from the exterior wall of the mobile home it serves, or at a mobile home disconnecting means grounded in accordance with 250.32 and located in sight from and not more than 9.0 m (30 ft) from the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.

Informational Note: Selecting a network interface unit and primary protector location to achieve the shortest practicable primary protector bonding conductor or grounding electrode conductor helps limit potential differences between communications circuits and other metallic systems.

(C) Hazardous (Classified) Locations.

The primary protector or equipment providing the primary protection function shall not be located in any hazardous (classified) location as defined in 500.5 and 505.5 or in the vicinity of easily ignitible material.

Exception: As permitted in 501.150 , 502.150 , and 503.150 .

Part IV. Grounding Methods

830.93 Grounding or Interruption of Metallic Members of Network-Powered Broadband Communications Cables.

Network-powered communications cables entering buildings or attaching to buildings shall comply with 830.93(A) or (B).

For purposes of this section, grounding located at mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.

Informational Note: Selecting a grounding location to achieve the shortest practicable bonding conductor or grounding electrode conductor helps limit potential differences between the network-powered broadband communications circuits and other metallic systems.

(A) Entering Buildings.

In installations where the network-powered communications cable enters the building, the shield shall be grounded in accordance with 800.100 , and metallic members of the cable not used for communications or powering shall be grounded in accordance with 800.100 or interrupted by an insulating joint or equivalent device. The grounding or interruption shall be as close as practicable to the point of entrance.

(B) Terminating Outside of the Building.

In installations where the network-powered communications cable is terminated outside of the building, the shield shall be grounded in accordance with 800.100 , and metallic members of the cable not used for communications or powering shall be grounded in accordance with 800.100 or interrupted by an insulating joint or equivalent device. The grounding or interruption shall be as close as practicable to the point of attachment of the NIU.

Part V. Installation Methods Within Buildings

830.133 Installation of Network-Powered Broadband Communications Cables and Equipment.

Cable and equipment installations within buildings shall comply with 830.133(A) through (C), as applicable.

(A) Separation of Conductors.

(1) In Raceways, Cable Trays, Boxes, Enclosures, and Cable Routing Assemblies.

(a) *Low- and Medium-Power Network-Powered Broadband Communications Circuit Cables.* Low- and medium-power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly.

(b) *Low-Power Network-Powered Broadband Communications Circuit Cables with Other Circuits.* Low-power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with jacketed cables of any of the following circuits:

(3) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with Parts I and II of Article 725

(4) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(5) Communications circuits in compliance with Parts I and IV of Article 805

(6) Nonconductive and conductive optical fiber cables in compliance with Parts I and V of Article 770

(7) Community antenna television and radio distribution systems in compliance with Parts I and V of Article 820

(h) *Medium-Power Network-Powered Broadband Communications Circuit Cables with Optical Fiber Cables and Other Communications Cables* . Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with conductors of any of the following circuits:

(9) Communications circuits in compliance with Parts I and IV of Article 805

(10) Conductive optical fiber cables in compliance with Parts I and V of Article 770

(11) Community antenna television and radio distribution systems in compliance with Parts I and V of Article 820

(l) *Medium-Power Network-Powered Broadband Communications Circuit Cables with Other Circuits* . Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with conductors of any of the following circuits:

(13) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with Parts I and II of Article 725

(14) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(o) *Electric Light, Power, Class 1, Nonpowered Broadband Communications Circuit Cables.* Network-powered broadband communications cable shall not be placed in any raceway, cable tray, compartment, outlet box, junction box, or similar fittings with conductors of electric light, power, Class 1, or non-power-limited fire alarm circuit cables.

Exception No. 1: Network-powered broadband communications cable shall be permitted to be placed in a raceway, cable tray, compartment, outlet box, junction box, or similar fittings with conductors of electric light, power, Class 1, or non-power-limited fire alarm circuit cables where all of the conductors of electric light, power, Class 1, non-power-limited fire alarm circuits are separated from all of the network-powered broadband communications cables by a permanent barrier or listed divider.

Exception No. 2: Where power circuit conductors in outlet boxes, junction boxes, or similar fittings or compartments where such conductors are introduced solely for power supply to the network-powered broadband communications system distribution equipment, the power circuit conductors shall be routed within the enclosure to maintain a minimum 6 mm (1/4 in.) separation from network-powered broadband communications cables.

(2) Other Applications.

Network-powered broadband communications cable shall be separated at least 50 mm (2 in.) from conductors of any electric light, power, Class 1, and non-power-limited fire alarm circuits.

Exception No. 1: Separation shall not be required where: (1) all of the conductors of electric light, power, Class 1, and non-power-limited fire alarm circuits are in a raceway or in metal-sheathed, metal-clad, nonmetallic-sheathed, Type AC, or Type UF cables, or (2) all of the network-powered broadband communications cables are encased in a raceway.

Exception No. 2: Separation shall not be required where the network-powered broadband communications cables are permanently separated from the conductors of electric light, power, Class 1, and non-power-limited fire alarm circuits by a continuous and firmly fixed nonconductor, such as porcelain tubes or flexible tubing, in addition to the insulation on the wire.

(B) Support of Network-Powered Broadband Communications Cables.

Raceways shall be used for their intended purpose. Network-powered broadband communications cables shall not be strapped, taped, or attached by any means to the exterior of any conduit or raceway as a means of support.

(C) Splicing of Medium-Powered Network-Powered Communications Cables.

Where a medium-powered network-powered broadband communications cable is spliced or extended, a listed junction box or listed patch panel shall be used.

830.

~~154 Substitutions of Network-Powered Broadband Communications System Cables.~~

~~The substitutions for network-powered broadband system cables listed in Table 830.154 shall be permitted.~~

Table 830.154 Cable Substitutions

Cable Type	Permitted Cable Substitutions
BM	BMR BLP CMP, CL3P BLR CMP, CL3P, CMR, CL3R, BLP, BMR
BL	CMP, CMR, CM, CMG, CL3P, CL3R, CL3, BMR, BM, BLP, BLR
BLX	CMP, CMR, CM, CMG, CMX, CL3P, CL3R, CL3, CL3X, BMR, BM, BLP, BRP, BL
830.	

160 Bends.

Bends in network broadband cable shall be made so as not to damage the cable. The radius of the curve of the inner edge of any bend shall not be less than 10 times the diameter of the cable.

Informational Note: See ANSI/TIA-568.0-E *Generic Telecommunications Cabling for Customer Premises* , for information on bend radii of network broadband cable during different types of installation conditions.

Part VI. Listing Requirements

830.179 Network-Powered Broadband Communications Equipment and Cables.

Network-powered broadband communications equipment and cables shall be listed and marked in accordance with 830.179(A) through (C).

Exception No. 1: This listing requirement shall not apply to community antenna television and radio distribution system coaxial cables that were installed prior to January 1, 2000, in accordance with Article 820 and are used for low-power network-powered broadband communications circuits.

Exception No. 2: Substitute cables for network-powered broadband communications cables shall be permitted as shown in Table 830.154 :

(A) General Requirements.

The general requirements in 800.179 shall apply.

(B) Network-Powered Broadband Communications Medium-Power Cables.

Network-powered broadband communications medium-power cables shall be factory-assembled cables consisting of a jacketed coaxial cable, a jacketed combination of coaxial cable and multiple individual conductors, or a jacketed combination of an optical fiber cable and multiple individual conductors. The insulation for the individual conductors shall be rated for 300 volts minimum. Cables intended for outdoor use shall be listed as suitable for the application. Cables shall be marked in accordance with 310.8 . Type BMU cables shall be jacketed and listed as being suitable for outdoor underground use.

(C) Network-Powered Broadband Communication Low-Power Cables.

Network-powered broadband communications low-power cables shall be factory-assembled cables consisting of a jacketed coaxial cable, a jacketed combination of coaxial cable and multiple individual conductors, or a jacketed combination of an optical fiber cable and multiple individual conductors. The insulation for the individual conductors shall be rated for 300 volts minimum. Cables intended for outdoor use shall be listed as suitable for the application. Cables shall be marked in accordance with 310.8 . Type BLU cables shall be jacketed and listed as being suitable for outdoor underground use.

Article 840 Premises-Powered Broadband Communications Systems

Part I. General

840.1 Scope.

This article covers premises-powered broadband communications systems.

Informational Note: A typical basic system configuration consists of an optical fiber, twisted pair, or coaxial cable to the premises supplying a broadband signal to a network terminal that converts the broadband signal into component signals, such as traditional telephone, video, high-speed Internet, and interactive services. Powering for the network terminal and network devices is typically accomplished through a premises power supply that might be built into the network terminal or provided as a separate unit. In order to provide communications in the event of a power interruption, a battery backup unit or an uninterruptible power supply (UPS) is typically part of the powering system.

Part

~~II. Cables Outside and Entering Buildings~~

~~**840.47** Underground Wires and Cables Entering Buildings.~~

~~Direct-buried cables shall be installed to have a minimum cover of 150 mm (6 in.).~~

~~Part~~

III. Protection

840.90 Protective Devices.

The requirements of 805.90 shall apply.

840.93 Grounding or Interruption.

Non-current-carrying metallic members of optical fiber cables, communications cables, or coaxial cables entering buildings or attaching to buildings shall comply with 840.93(A) , (B), or (C), respectively.

(A) Non-Current-Carrying Metallic Members of Optical Fiber Cables.

Non-current-carrying metallic members of optical fiber cables entering a building or terminating on the outside of a building shall comply with 770.93(A) or (B).

(B) Communications Cables.

The grounding or interruption of the metallic sheath of communications cable shall comply with 805.93 .

(C) Coaxial Cables.

Where the network terminal is installed inside or outside of the building, with coaxial cables terminating at the network terminal, and is either entering, exiting, or attached to the outside of the building, 820.93 shall apply.

840.94 Premises Circuits Leaving the Building.

Where circuits leave the building to power equipment remote to the building or outside the exterior zone of protection defined by a 46 m (150 ft) radius rolling sphere, 805.90 and 805.93 shall apply.

Informational Note: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems* , for the theory of the term *rolling sphere* .

Part IV. Grounding Methods

840.101 Premises Circuits Not Leaving the Building.

If the network terminal is served by a nonconductive optical fiber cable, or where any non-current-carrying metal member of a conductive optical fiber cable is interrupted by an insulating joint or equivalent device, and circuits that terminate at the network terminal are completely contained within the building (i.e., they do not exit the building), 840.101(A) , (B), or (C) shall apply, as applicable.

(A) Coaxial Cable Shield Grounding.

The shield of coaxial cable shall be grounded by one of the following:

(1) Any of the methods described in 820.100 or 800.106

(2) A fixed connection to an equipment grounding conductor as described in 250.118

(3) Connection to the network terminal grounding terminal provided that the terminal is connected to ground by one of the methods described in 820.100 or 800.106 , or to an equipment grounding conductor through a listed grounding device that will retain the ground connection if the network terminal is unplugged

(B) Communications Circuit Grounding.

Communications circuits shall not be required to be grounded.

(C) Network Terminal Grounding.

The network terminal shall not be required to be grounded unless required by its listing. If the coaxial cable shield is separately grounded as described in 840.101(A)(1) or 840.101(A)(2), the use of a cord and plug for the connection to the network terminal grounding connection shall be permitted.

Informational Note: If required to be grounded, a listed device that extends the equipment grounding conductor from the receptacle to the network terminal equipment grounding terminal is permitted. Sizing of the extended equipment grounding conductor is covered in Table 250.122.

840.102 Premises Circuits Leaving the Building.

If circuits leave the building to power equipment remote to the building or outside the exterior zone of protection defined by a 46 m (150 ft) radius rolling sphere, the installation of communications wires and cables shall comply with 800.100 and 800.106, and the installation of coaxial cables shall comply with 820.100 and 800.106.

Informational Note: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems*, for the application of the term *rolling sphere*.

Part

~~VI.~~ ~~Premises Powering of Communications Equipment over Communications Cables~~

~~840.160~~ ~~Powering Circuits.~~

~~Listed communications cables, in addition to carrying the communications circuit, shall also be permitted to carry circuits for powering listed communications equipment. The power source shall be listed in accordance with 840.170(C). Installation of the listed 4-pair communications cables for a communications circuit or installation where 4-pair communications cables are substituted for Class 2 and Class 3 cables in accordance with 722.135(E) shall comply with 725.144.~~

~~*Exception: Installing communications cables in compliance with 725.144 shall not be required for listed 4-pair communications cables where the rated current of the power source does not exceed 0.3 amperes in any conductor 24 AWG or larger.*~~

~~Informational Note No. 1: A typical communications cable for this application is a 4-pair cable sometimes referred to as Category 5e (or higher) LAN cable or balanced twisted pair cable. These types of cables are often used to provide Ethernet- and Power over Ethernet (PoE)-type services.~~

~~Informational Note No. 2: See 725.144 for requirements to manage the temperature rise of bundles of cables that provide power.~~

~~Part~~

VII. Listing Requirements

840.170 Equipment and Cables.

Premises-powered broadband communications systems equipment and cables shall comply with 840.170(A) through (D).

(A) Network Terminal.

The network terminal and applicable grounding means shall be listed for application with premises-powered broadband communications systems.

Informational Note No. 1: See ANSI/UL 60950-1-2014, *Standard for Safety of Information Technology Equipment* ; ANSI/UL 498A-2015, *Current Taps and Adapters* ; ANSI/UL 467-2013, *Grounding and Bonding Equipment;* or ANSI/UL 62368-1-2014, *Audio/Video, Information and Communication Technology Equipment – Part 1: Safety Requirements* .

Informational Note No. 2: There are no requirements on the network terminal and its grounding methodologies except for those covered by the listing of the product.

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~~B) Premises Communications Wires and Cables.~~

~~Communications wires and cables shall be listed and marked in accordance with 800.179 .~~

~~(~~

~~**C)** Power Source.~~

~~The power source for circuits intended to provide power over communications cables to remote equipment shall be limited in accordance with Table 11(B) in Chapter 9 for voltage sources up to 60 volts dc and be listed as specified in either of the following:~~

(1) ~~A power source shall be listed as specified in 725.60(A)(1) , (A)(2), (A)(3), or (A)(4). The power sources shall not have the output connections paralleled or otherwise interconnected unless listed for such interconnection.~~

(2) ~~A power source shall be listed as communications equipment for limited-power circuits.~~

~~Informational Note: See ANSI/UL 60950-1-2014, *Standard for Safety of Information Technology Equipment-Safety — Part 1* , or ANSI/UL 62368-1-2014, *Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements* . Typically, such circuits are used to interconnect equipment for the purpose of exchanging information (data).~~

~~**(D)** Accessory Equipment.~~

~~Communications accessory equipment and/or assemblies shall be listed for application with premises-powered communications systems.~~

~~Informational Note: See ANSI/UL 1863-2004, *Communications-Circuit Accessories* .~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Substantiation	

Statement of Problem and Substantiation for Public Input

This PI is submitted as part of the work of the 722 Limited Energy Task group. It deletes text that was relocated by the TG. See the attachment for the substantiation from the overall TG.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3673-NFPA 70-2023 [Article 722]	same TG effort
Public Input No. 3674-NFPA 70-2023 [Article 724]	same TG effort
Public Input No. 3684-NFPA 70-2023 [Article 725]	same TG effort
Public Input No. 3686-NFPA 70-2023 [Article 726]	same TG effort
Public Input No. 3687-NFPA 70-2023 [Article 760]	same TG effort
Public Input No. 3690-NFPA 70-2023 [Article 770]	same TG effort

Submitter Information Verification

Submitter Full Name: Chad Jones
Organization: Cisco Systems
Street Address:
City:
State:
Zip:
Submittal Date: Tue Sep 05 14:14:23 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: This public input does not provide technical substantiation and reasons for the changes to ensure the structure of the code.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

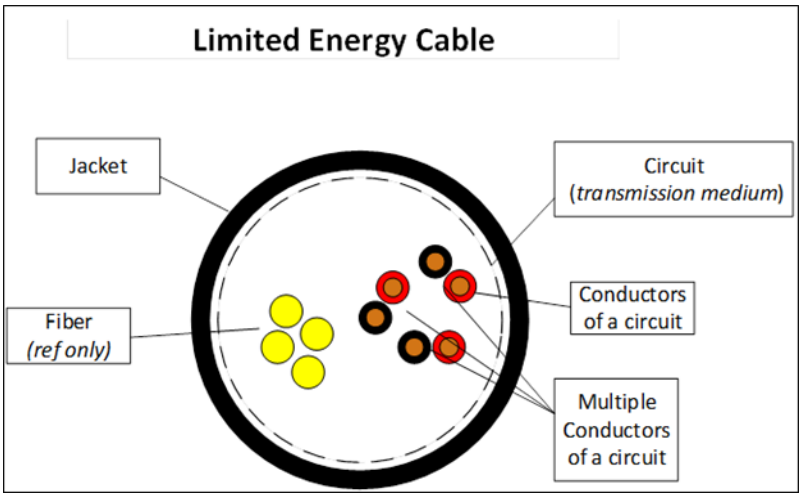
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

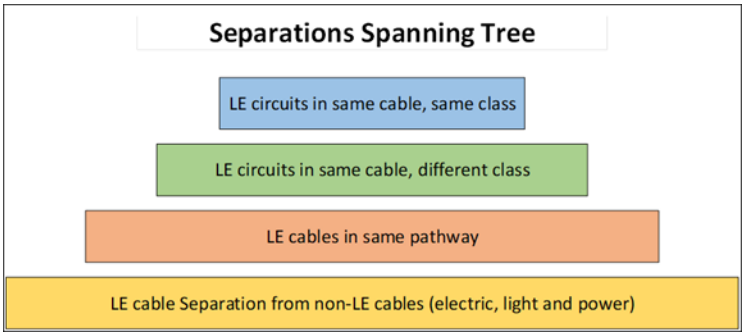
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 2478-NFPA 70-2023 [Section No. 800.1]

800.1 Scope.

This article covers general requirements for communications systems. These general requirements apply to communications circuits, community antenna television and radio distribution systems, network-powered broadband communications systems, and premises-powered broadband communications systems, unless modified by Articles 805, 820, 830, or 840.

Informational Note No. 1: See 90.2(D)(4) for installations of circuits and equipment that are not covered.

Informational Note No. 2: See ~~Part II of~~ Article 725, Part II for information on the installation of Class 2 and Class 3 power-limited circuits and 722.135(E) for the substitution of communications cables for Class 2 and Class 3 cables.

Informational Note No. 3: See ~~Part II of~~ Article 760, Part II for information on the installation of power-limited fire alarm circuits, including the substitution of communications cables for power-limited fire alarm cables.

Informational Note No. 4: See C2-2023, National Electrical Safety Code, for information on outside plant cabling.

Statement of Problem and Substantiation for Public Input

NEC Chapter 8, Communications Systems, and Article 770, Optical Fiber Cables, coordinate with the National Electrical Safety Code. The NESC covers outside plant installations, while NEC Chapter 8 and Article 770 cover in-building installations of communications systems. Communications systems utilize both metallic conductor cables and optical fiber cables.

Informational Notes 2 & 3 were edited to comply with the NEC Style manual.

Submitter Information Verification

Submitter Full Name: Leslie Jutte
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Affiliation: Plastics Industry Association (PLASTICS)
Street Address:
City:
State:
Zip:
Submittal Date: Fri Aug 18 10:24:54 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7549-NFPA 70-2024
Statement: Including data communications in Article 800 improves the usability of the Code since most Code users assume it's already in Article 800.

In order to comply with 4.1.4 of the NEC Style Manual, references to the individual

Articles in Chapter 8 were replaced with a general reference to other Articles in the Chapter. Additional compliance with 4.1.4 required stating the Article number before the Part number in the Article.

Adding a reference to Class 4 systems improves usability since these systems are often used to power communications systems.

Adding a reference to the NESC improves usability since the NESC covers outside plant installations and coordinated with Article 800.

An informational note was added to identify specialty definitions in Article 100 that are important to communications and thereby improve usability.

Public Input No. 2964-NFPA 70-2023 [Section No. 800.1]

800.1 Scope.

This article covers general requirements for communications systems. These general requirements apply to communications circuits, community antenna television and radio distribution systems, network-powered broadband communications systems, and premises-powered broadband communications systems, unless modified by Articles 805, 820, 830, or 840.

Informational Note No. 1: See 90.2(D)(4) for installations of circuits and equipment that are not covered.

Informational Note No. 2: See ~~Part II of~~ Article 725 ~~for~~ , Part II for information on the installation of Class 2 and Class 3 circuits and 722.135(E) for the substitution of communications cables for Class 2 and Class 3 cables.

Informational Note No. 3: See ~~Part II of~~ Article 760 ~~for~~ , Part II for information on the installation of power-limited fire alarm circuits, including the substitution of communications cables for power-limited fire alarm cables.

Statement of Problem and Substantiation for Public Input

This Public Input is being submitted on behalf of the NEC Correlating Committee Usability Task Group in order to provide correlation throughout the document. The text is revised to to comply with the NEC Style Manual Section 4.1.4, regarding the use of Parts.
4.1.4 References to an Entire Article. References shall not be made to an entire article, except for the Article 100 or where referenced to provide the necessary context. References to specific parts within articles shall be permitted. References to all parts of an article shall not be permitted. The article number shall precede the part number.
The Usability Task Group members are: Derrick Atkins, David Hittinger, Richard Holub, Dean Hunter, Chad Kennedy and David Williams.

Submitter Information Verification

Submitter Full Name: David Williams
Organization: Delta Charter Township
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 28 13:21:52 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7549-NFPA 70-2024
Statement: Including data communications in Article 800 improves the usability of the Code since most Code users assume it's already in Article 800.

In order to comply with 4.1.4 of the NEC Style Manual, references to the individual Articles in Chapter 8 were replaced with a general reference to other Articles in the

Chapter. Additional compliance with 4.1.4 required stating the Article number before the Part number in the Article.

Adding a reference to Class 4 systems improves usability since these systems are often used to power communications systems.

Adding a reference to the NESC improves usability since the NESC covers outside plant installations and coordinated with Article 800.

An informational note was added to identify specialty definitions in Article 100 that are important to communications and thereby improve usability.

Public Input No. 3613-NFPA 70-2023 [Section No. 800.1]

800.1 Scope.

This article covers general requirements for communications systems. These general requirements apply to communications circuits, community antenna television and radio distribution systems, network-powered broadband communications systems, and premises-powered broadband communications systems, unless modified by ~~Articles~~ ~~805~~ ~~,~~ ~~820~~ ~~,~~ ~~830~~ ~~, or 840~~ other articles in this Chapter .

Informational Note No. 1: See 90.2(D)(4) for installations of circuits and equipment that are not covered.

Informational Note No. 2: See Part II of Article 725 for information on the installation of Class 2 and Class 3 circuits and 722.135(E) for the substitution of communications cables for Class 2 and Class 3 cables.

Informational Note No. 3: See Part II of Article 760 for information on the installation of power-limited fire alarm circuits, including the substitution of communications cables for power-limited fire alarm cables.

Statement of Problem and Substantiation for Public Input

Section 4.1.4 of the NEC(r) Style Manual prohibits referencing an entire article except Article 100 or where required for context. In this scope statement, a simple change to acknowledge that other articles in this chapter may modify these general requirements should comply with the Style Manual without changing the intent of the statement.

Submitter Information Verification

Submitter Full Name: Richard Holub
Organization: The DuPont Company, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Tue Sep 05 08:04:06 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7549-NFPA 70-2024

Statement: Including data communications in Article 800 improves the usability of the Code since most Code users assume it's already in Article 800.

In order to comply with 4.1.4 of the NEC Style Manual, references to the individual Articles in Chapter 8 were replaced with a general reference to other Articles in the Chapter. Additional compliance with 4.1.4 required stating the Article number before the Part number in the Article.

Adding a reference to Class 4 systems improves usability since these systems are often used to power communications systems.

Adding a reference to the NESC improves usability since the NESC covers outside plant installations and coordinated with Article 800.

An informational note was added to identify specialty definitions in Article 100 that are important to communications and thereby improve usability.

Public Input No. 3683-NFPA 70-2023 [Section No. 800.1]

800.1 Scope.

This article covers general requirements for communications systems. These general requirements apply to communications circuits, community antenna television and radio distribution systems, network-powered broadband communications systems, and premises-powered broadband communications systems, unless modified by Articles 805, 820, 830, or 840.

Informational Note No. 1: See 90.2(D)(4) for installations of circuits and equipment that are not covered.

Informational Note No. 2: See Part II of Article 725 for information on the installation of Class 2 and Class 3 circuits and 722.135(E) for the substitution of communications cables for Class 2 and Class 3 cables.

Informational Note No. 3: See Part II of Article 760 for information on the installation of power-limited fire alarm circuits, including the substitution of communications cables for power-limited fire alarm cables.

800.1+ Community Broadband Reliability. For the purpose of mitigating fire and other hazards to a community adopting this Code the reliability of the telecommunication network shall be determined by and assessed for conformance by the Authority Having Jurisdiction.

Statement of Problem and Substantiation for Public Input

This proposal is intended to open best practice discovery and promulgation onto another, perhaps a more important, front – community resilience to all hazards when internet access has failed.

Communities – larger than single buildings or campuses - whose fire hazards are relatively well managed with titles in the NFPA catalog – are at greater risk when communication facilities have vanished. In other words, disaster and/or outage resilience is far more impeded with the loss of internet access than with the loss of power alone. Installation of backup generators among property owners continues to gather pace, but property owners have less control over the reliability of internet access when the power to telecommunication infrastructure is scattered across central offices, remote terminal cabinets power supply units and similarly capable technologies.

People can live without power but commerce comes to a virtual standstill day and night without internet access. Since rollout of iPhone apps in 2007 nothing in community life has been the same. Friends of the National Electrical Code are important and capable stakeholders in advancing community broadband reliability and should not depend solely upon action by state and federal regulators.

We do not have to start from scratch. ATIS has a committee that provides information in the document linked below:

Search: “ATIS Network Reliability Steering Committee 2021-2022 Operational Report”

https://access.atis.org/apps/group_public/download.php/70750/ATIS-0100071,%20Network%20Reliability%20Steering%20Committee%202021-2022%20Operational%20Report.pdf

Submitter Information Verification

Submitter Full Name: Michael Anthony
Organization: Standards Michigan LLC
Affiliation: StandardsMichigan.COM
Street Address:
City:
State:
Zip:
Submittal Date: Tue Sep 05 13:53:37 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: Assessing the reliability of the telephone network would require assessing the reliability of parts of the network that are under the exclusive control of communications utilities and therefore not covered by the NEC. See 90.2(D)(4).

Public Input No. 4068-NFPA 70-2023 [Section No. 800.1]

800.1 Scope.

This article covers general requirements for communications systems. These general requirements apply to communications circuits, data communications, community antenna television and radio distribution systems, network-powered broadband communications systems, and premises-powered broadband communications systems, unless modified by Articles 805, 820, 830, or 840.

Informational Note No. 1: See 90.2(D)(4) for installations of circuits and equipment that are not covered.

Informational Note No. 2: See Part II of Article 725 for information on the installation of Class 2 and Class 3 power-limited circuits and 722.135(E) for the substitution of communications cables for Class 2 and Class 3 cables.

Informational Note No. 3: See Part II of Article 760 for information on the installation of power-limited fire alarm circuits, including the substitution of communications cables for power-limited fire alarm cables.

Statement of Problem and Substantiation for Public Input

- Moving data communications into Article 800 (from Article 725) improves usability of the Code since most Code users assume it's already in Article 800
- Refines the note to just power-limited circuits.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 4064-NFPA 70-2023 [New Definition after Definition: Data Center, Modular (MDC)...]	Related

Submitter Information Verification

Submitter Full Name: Jeff Silveira
Organization: Bicsi
Street Address:
City:
State:
Zip:
Submittal Date: Wed Sep 06 15:31:42 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7549-NFPA 70-2024
Statement: Including data communications in Article 800 improves the usability of the Code since most Code users assume it's already in Article 800.

In order to comply with 4.1.4 of the NEC Style Manual, references to the individual

Articles in Chapter 8 were replaced with a general reference to other Articles in the Chapter. Additional compliance with 4.1.4 required stating the Article number before the Part number in the Article.

Adding a reference to Class 4 systems improves usability since these systems are often used to power communications systems.

Adding a reference to the NESC improves usability since the NESC covers outside plant installations and coordinated with Article 800.

An informational note was added to identify specialty definitions in Article 100 that are important to communications and thereby improve usability.

Public Input No. 4174-NFPA 70-2023 [Section No. 800.1]

800.1 Scope.

This article covers general requirements for communications systems. These general requirements apply to communications circuits, community antenna television and radio distribution systems, network-powered broadband communications systems, and premises-powered broadband communications systems, unless modified by Articles 805, 820, 830, or 840.

Informational Note No. 1: See 90.2(D)(4) for installations of circuits and equipment that are not covered.

Informational Note No. 2: See Part II of Article 725 for information on the installation of Class 2 and Class 3 circuits and 722.135(E) for the substitution of communications cables for Class 2 and Class 3 cables.

Informational Note No. 3: See Part II of Article 726 for information on the installation of Class 4 circuits.

Informational Note No. 4: See Part II of Article 760 for information on the installation of power-limited fire alarm circuits, including the substitution of communications cables for power-limited fire alarm cables.

Statement of Problem and Substantiation for Public Input

Adding Class 4 to the list. Class 4 systems were added in the 2023 code and have equivalent or better than fire and life safety requirements as Class 2 circuits. An effort to analyze all the locations of Class 2 in the code to see if Class 4 was also appropriate in the application should have happened for the 2023 code and not doing it was an oversight.

Submitter Information Verification

Submitter Full Name: Chad Jones
Organization: Cisco Systems
Street Address:
City:
State:
Zip:
Submittal Date: Wed Sep 06 19:28:46 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7549-NFPA 70-2024
Statement: Including data communications in Article 800 improves the usability of the Code since most Code users assume it's already in Article 800.

In order to comply with 4.1.4 of the NEC Style Manual, references to the individual Articles in Chapter 8 were replaced with a general reference to other Articles in the Chapter. Additional compliance with 4.1.4 required stating the Article number before the Part number in the Article.

Adding a reference to Class 4 systems improves usability since these systems are often used to power communications systems.

Adding a reference to the NESC improves usability since the NESC covers outside plant installations and coordinated with Article 800.

An informational note was added to identify specialty definitions in Article 100 that are important to communications and thereby improve usability.

Public Input No. 4281-NFPA 70-2023 [Section No. 800.1]

800.1 Scope.

This article covers general requirements for communications systems. These general requirements apply to communications circuits, data communications, community antenna television and radio distribution systems, network-powered broadband communications systems, and premises-powered broadband communications systems, unless modified by Articles 805, 820, 830, or 840.

Informational Note No. 1: See 90.2(D)(4) for installations of circuits and equipment that are not covered.

Informational Note No. 2: See Part II of Article 725 for information on the installation of Class 2 and Class 3 power-limited circuits and 722.135(E) for the substitution of communications cables for Class 2 and Class 3 cables.

Informational Note No. 3: See Part II of Article 760 for information on the installation of power-limited fire alarm circuits, including the substitution of communications cables for power-limited fire alarm cables.

Statement of Problem and Substantiation for Public Input

Moving data communications into Article 800 (from Article 725) improves usability of the Code since most Code users assume it's already in Article 800

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 4278-NFPA 70-2023 [New Definition after Definition: Communications Circuit, Pr...]	Defines data communications
Public Input No. 4285-NFPA 70-2023 [Section No. 725.60(A)]	

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: CableSafe, Inc./OFS
Street Address:
City:
State:
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Submittal Date: Thu Sep 07 09:22:04 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7549-NFPA 70-2024
Statement: Including data communications in Article 800 improves the usability of the Code since most Code users assume it's already in Article 800.

In order to comply with 4.1.4 of the NEC Style Manual, references to the individual

Articles in Chapter 8 were replaced with a general reference to other Articles in the Chapter. Additional compliance with 4.1.4 required stating the Article number before the Part number in the Article.

Adding a reference to Class 4 systems improves usability since these systems are often used to power communications systems.

Adding a reference to the NESC improves usability since the NESC covers outside plant installations and coordinated with Article 800.

An informational note was added to identify specialty definitions in Article 100 that are important to communications and thereby improve usability.

Public Input No. 819-NFPA 70-2023 [Section No. 800.1]

800.1 Scope.

This article covers general requirements for communications systems. These general requirements apply to communications circuits, community antenna television and radio distribution systems, network-powered broadband communications systems, and premises-powered broadband communications systems, unless modified by Articles 805, 820, 830, or 840.

Informational Note No. 1: See 90.2(D)(4) for installations of circuits and equipment that are not covered.

Informational Note No. 2: See ~~Part II of~~ Article 725, Part II for information on the installation of Class 2 and Class 3 circuits and 722.135(E) for the substitution of communications cables for Class 2 and Class 3 cables.

Informational Note No. 3: See ~~Part II of~~ Article 760, Part II for information on the installation of power-limited fire alarm circuits, including the substitution of communications cables for power-limited fire alarm cables.

Informational Note No. 4: See Article 726, Part II for information on powering of communications circuits and the installation of Class 4 circuits.

Statement of Problem and Substantiation for Public Input

Adding an informational note to refer to Class 4 Fault-Managed Power Systems improves usability since these power systems are often used to power communications systems.

The references to other Articles have been revised to comply with the 2023 NEC Style Manual section 4.1.4 which states, “The article number shall precede the part number.”

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 820-NFPA 70-2023 [Section No. 800.3(A)]	Include Class 4 in NIU output
Public Input No. 820-NFPA 70-2023 [Section No. 800.3(A)]	

Submitter Information Verification

Submitter Full Name: David Kiddoo
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Affiliation: Communications Cable & Connectivity Association
Street Address:
City:
State:
Zip:
Submittal Date: Sat May 13 08:42:52 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7549-NFPA 70-2024

Statement: Including data communications in Article 800 improves the usability of the Code since most Code users assume it's already in Article 800.

In order to comply with 4.1.4 of the NEC Style Manual, references to the individual Articles in Chapter 8 were replaced with a general reference to other Articles in the Chapter. Additional compliance with 4.1.4 required stating the Article number before the Part number in the Article.

Adding a reference to Class 4 systems improves usability since these systems are often used to power communications systems.

Adding a reference to the NESC improves usability since the NESC covers outside plant installations and coordinated with Article 800.

An informational note was added to identify specialty definitions in Article 100 that are important to communications and thereby improve usability.

Public Input No. 2620-NFPA 70-2023 [Section No. 800.2]

800. ~~2~~ **3** Reconditioned Equipment.

The requirements of 110.21(A)(2) shall apply.

Statement of Problem and Substantiation for Public Input

This Public Input is being submitted on behalf of the NEC Correlating Committee Usability Task Group in order to provide correlation throughout the document. The text is revised to comply with the NEC Style Manual Section 2.2.1 regarding reconditioned equipment.
2.2.1 Parallel Numbering Required. Technical committees shall use the following section numbers for the same purposes within articles. This requirement shall not apply to Articles 90, 100, and 110. If the article does not contain listing or reconditioning requirements, the subdivisions shall not be included in the article.
Required Parallel Numbering Format
XXX.1 Scope.
XXX.2 Listing Requirements.
XXX.3 Reconditioned Equipment.
XXX.3(A) Permitted to be Installed.
XXX.3(B) Not Permitted to be Installed.
The Usability Task Group members are: Derrick Atkins, David Hittinger, Richard Holub, Dean Hunter, Chad Kennedy and David Williams.

Submitter Information Verification

Submitter Full Name: David Williams
Organization: Delta Charter Township
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 23 20:24:39 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7559-NFPA 70-2024
Statement: This revision to 800.3 maintains the reference to 110.21(A)(2) but clarifies that reconditioned protectors are not permitted. Protectors are the most important safety protection within communications circuits and systems. Based on the action taken by the committee on 805.18, this section is automatically moved to 800.3 without further action by the committee panel.

Public Input No. 3089-NFPA 70-2023 [Section No. 800.2]

800.~~2~~ 3 Reconditioned Equipment.

The requirements of 110.21(A)(2) shall apply.

Statement of Problem and Substantiation for Public Input

This Public Input is being submitted on behalf of the NEC Correlating Committee Usability Task Group in order to provide correlation throughout the document. The text is revised to to comply with the NEC Style Manual Section 2.2.1 regarding reconditioned equipment.
2.2.1 Parallel Numbering Required. Technical committees shall use the following section numbers for the same purposes within articles. This requirement shall not apply to Articles 90, 100, and 110. If the article does not contain listing or reconditioning requirements, the subdivisions shall not be included in the article.
Required Parallel Numbering Format
XXX.1 Scope.
XXX.2 Listing Requirements.
XXX.3 Reconditioned Equipment.
XXX.3(A) Permitted to be Installed.
XXX.3(B) Not Permitted to be Installed.
The Usability Task Group members are: Derrick Atkins, David Hittinger, Richard Holub, Dean Hunter, Chad Kennedy and David Williams.

Submitter Information Verification

Submitter Full Name: David Williams
Organization: Delta Charter Township
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 29 11:26:27 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7559-NFPA 70-2024
Statement: This revision to 800.3 maintains the reference to 110.21(A)(2) but clarifies that reconditioned protectors are not permitted. Protectors are the most important safety protection within communications circuits and systems. Based on the action taken by the committee on 805.18, this section is automatically moved to 800.3 without further action by the committee panel.

Public Input No. 3446-NFPA 70-2023 [Section No. 800.2]

~~**800.2** Reconditioned Equipment.~~

~~The requirements of 110.21(A)(2) shall apply.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_First_Draft_Substantiation.docx	First Draft Substantiation	

Statement of Problem and Substantiation for Public Input

This text is being deleted as part of the reorganization of the limited energy articles. The deleted text is relocated as a general requirement to new Article X00.

Submitter Information Verification

Submitter Full Name: Mark Hilbert
Organization: MR Hilbert Insp. & Training
Street Address:
City:
State:
Zip:
Submittal Date: Sun Sep 03 06:14:01 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity, and ease-of-use it is more appropriate to have as many requirements as practical for communications systems explicitly in one article such as 800. The relocated text in the proposed X00 does not address the proposed revision of PI 3628 submitted to modify 800.2 which concerns placing limits on use of protectors in communications systems.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

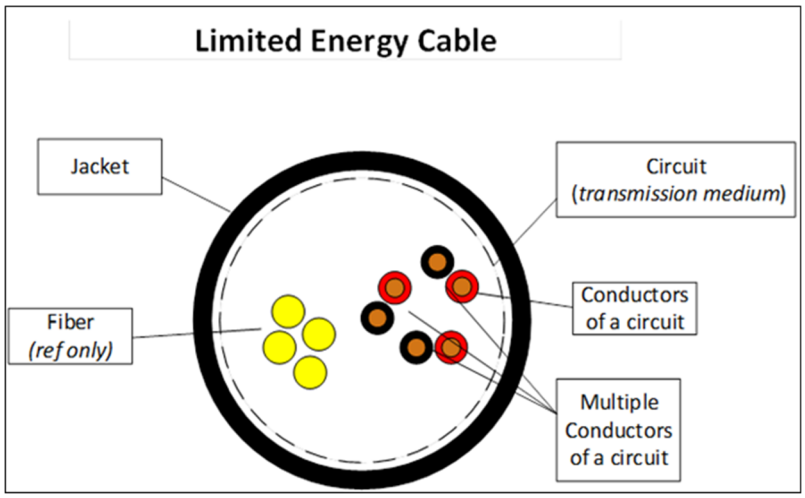
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

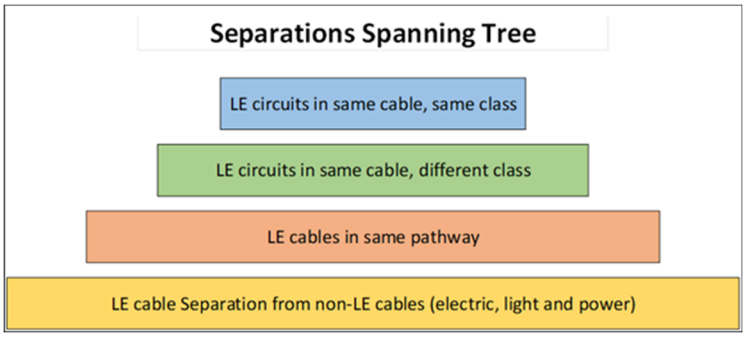
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 3628-NFPA 70-2023 [Section No. 800.2]

800.2 Reconditioned Equipment.

(A) The requirements of 110.21(A)(2) shall apply.

(B) The installation of the following reconditioned equipment shall not be permitted:

(1) Primary protectors

(2) Secondary protectors

(3) Antenna lead-in protectors

Statement of Problem and Substantiation for Public Input

This revision to 800.2 maintains the reference to 110.21(A)(2) but provides for a prohibition on using reconditioned protectors that provide one of the most important safety protection within communications circuits and systems.

Submitter Information Verification

Submitter Full Name: Trevor Bowmer
Organization: Bunya Telecom Consulting, LLC
Street Address:
City:
State:
Zip:
Submittal Date: Tue Sep 05 10:32:46 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7559-NFPA 70-2024

Statement: This revision to 800.3 maintains the reference to 110.21(A)(2) but clarifies that reconditioned protectors are not permitted. Protectors are the most important safety protection within communications circuits and systems. Based on the action taken by the committee on 805.18, this section is automatically moved to 800.3 without further action by the committee panel.

Public Input No. 1182-NFPA 70-2023 [New Section after 800.3]

800.18 Installation of Equipment.

Equipment electrically connected to a communications network shall be listed in accordance with 800.171.

Exception: This listing requirement shall not apply to test equipment that is intended for temporary connection to a telecommunications network by qualified persons during the course of installation, maintenance, or repair of telecommunications equipment or systems.

Statement of Problem and Substantiation for Public Input

The requirement to use listed equipment is a general requirement and should be in the general Article (Article 800).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1183-NFPA 70-2023 [Section No. 805.18]	Deletes 805.18
Public Input No. 1183-NFPA 70-2023 [Section No. 805.18]	

Submitter Information Verification

Submitter Full Name: Leslie Jutte
Organization: Plastics Industry Association
Affiliation: Plastics Industry Association (PLASTICS)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 22 11:58:23 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7552-NFPA 70-2024
Statement: The requirement to use listed equipment is a general requirement and has been moved to Section 800.2. This aligns with the NFPA manual of style.

Public Input No. 1708-NFPA 70-2023 [New Section after 800.3]

800.9 Qualified Persons.

Communications systems, circuits and equipment covered by Articles 805, 820, 830 and 840 shall be installed by qualified persons.

Informational Note: See definition of *Qualified Persons* in Article 100.

Statement of Problem and Substantiation for Public Input

Technology in the limited energy and communications system segments of the electrical industry is rapidly evolving and expanding and is becoming more complicated. These systems require far more training and experience. These systems are often part of essential electrical systems and critical operations power systems requiring a greater degree of training and experience, in design, planning, installation, and programing in many instances. These systems and others require trained qualified personnel and contractors. ANSI standards such as NFPA 72, NECA 301 and others, address these systems and include requirements that qualified persons perform installations of these systems and equipment, so these new NEC requirements are proposed to correlate and align with those ANSI-accredited industry standards and codes.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1706-NFPA 70-2023 [New Section after 770.3]	
Public Input No. 1701-NFPA 70-2023 [New Section after 760.3]	
Public Input No. 1698-NFPA 70-2023 [New Section after 726.3]	
Public Input No. 1695-NFPA 70-2023 [New Section after 725.3]	
Public Input No. 1694-NFPA 70-2023 [New Section after 724.3]	
Public Input No. 1690-NFPA 70-2023 [New Section after 722.3]	
Public Input No. 1686-NFPA 70-2023 [New Section after 708.8]	
Public Input No. 1684-NFPA 70-2023 [New Section after 701.7]	
Public Input No. 1672-NFPA 70-2023 [New Section after 700.8]	
Public Input No. 4394-NFPA 70-2023 [New Section after 625.6]	
Public Input No. 1629-NFPA 70-2023 [New Section after 393.6]	
Public Input No. 1557-NFPA 70-2023 [Section No. 90.2(A)]	
Public Input No. 1557-NFPA 70-2023 [Section No. 90.2(A)]	
Public Input No. 1629-NFPA 70-2023 [New Section after 393.6]	
Public Input No. 1672-NFPA 70-2023 [New Section after 700.8]	
Public Input No. 1684-NFPA 70-2023 [New Section after 701.7]	
Public Input No. 1686-NFPA 70-2023 [New Section after 708.8]	
Public Input No. 1690-NFPA 70-2023 [New Section after 722.3]	
Public Input No. 1694-NFPA 70-2023 [New Section after 724.3]	
Public Input No. 1695-NFPA 70-2023 [New Section after 725.3]	
Public Input No. 1698-NFPA 70-2023 [New Section after 726.3]	
Public Input No. 1701-NFPA 70-2023 [New Section after 760.3]	
Public Input No. 1706-NFPA 70-2023 [New Section after 770.3]	

Public Input No. 4394-NFPA 70-2023 [New Section after 625.6]

Submitter Information Verification

Submitter Full Name: Kyle Krueger
Organization: NECA
Affiliation: NECA
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jul 28 20:56:59 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The definition of a Qualified Person in Article 100 references “electrical equipment and installations”; which is for installers of electric light and power circuits, not communications circuits.

Public Input No. 3197-NFPA 70-2023 [Section No. 800.3]

800.3 Other Articles.

Only those sections of Chapters 1 through 7 referenced in Chapter 8 shall apply to Chapter 8. The definitions from Article 100 apply to Chapter 8. Installations of circuits and equipment shall comply with 800.3(A) through (I).

(A) Output Circuits.

As appropriate for the services provided, the output circuits derived from a network-powered broadband communications system's network interface unit (NIU) or from a premises-powered broadband communications system's network terminal shall comply with the requirements of the following:

(1) Installations of Class 2 and Class 3 circuits — Part II of Article 725 and Parts I and II of Article 722

(2) Installations of power-limited fire alarm circuits — Part III of Article 760

(3) Installations of optical fiber cables — Part V of Article 770

(4) Installations of communications circuits — Part IV of Article 805

Informational Note: The communications circuits covered by Article 805 are commonly referred to as POTS (plain old telephone service) circuits.

(5) Installations of premises (within buildings) community antenna television and radio distribution circuits — Part V of Article 820

(B) Spread of Fire or Products of Combustion.

Installation of communication circuits shall comply with 300.21.

(C) Hazardous (Classified) Locations.

Circuits and equipment installed in a location that is classified in accordance with 500.5 and 505.5 shall comply with the applicable requirements of Chapter 5.

(~~C~~ D) Wiring in Ducts for Dust, Loose Stock, or Vapor Removal.

The requirements of 300.22(A) shall apply.

(~~D~~ E) Equipment in Other Space Used for Environmental Air.

The requirements of 300.22(C)(3) shall apply.

(~~E~~ F) Installation and Use.

The requirements of 110.3(B) shall apply.

(~~F~~ G) Optical Fiber Cable.

Where optical fiber cable is used to provide a communications circuit within a building, Article 770 shall apply.

(~~G~~ H) Vertical Support for Fire-Resistive Cables and Conductors.

Vertical installations of circuit integrity (CI) cables and conductors installed in a raceway or conductors and cables of fire-resistive cable systems shall be installed in accordance with 300.19.

(~~H~~ I) Bonding and Grounding of Cable Shields.

The requirements of 250.4(A)(5) shall apply to the metal shields of cables used for communications.

Statement of Problem and Substantiation for Public Input

Added new requirement for spread of fire of communication circuits to be consistent with 722.3, 724.3, 725.3, and 760.3. Submitting another public input to remove 800.26 and simply add a reference to 300.21. This will improve usability and add clarity for Code users.

Submitter Information Verification

Submitter Full Name: Mike Holt
Organization: Mike Holt Enterprises Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 30 10:32:28 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: Since communications circuits include optical fiber cable and Section 300.21 only applies to electrical installations, the revisions of the PI have not been adopted.

Public Input No. 2965-NFPA 70-2023 [Section No. 800.3(A)]

(A) Output Circuits.

As appropriate for the services provided, the output circuits derived from a network-powered broadband communications system's network interface unit (NIU) or from a premises-powered broadband communications system's network terminal shall comply with the requirements of the following:

(1) Installations of Class 2 and Class 3 circuits — ~~Part II of~~ Article 725 ~~and~~ , Part II and Article 722, Parts I and II ~~of Article 722~~

(2) Installations of power-limited fire alarm circuits — Article 770, Part III ~~of Article 760~~

(3) Installations of optical fiber cables — ~~Part V of~~ Article 770 , Part V

(4) Installations of communications circuits — ~~Part IV of~~ Article 805 , Part IV

Informational Note: The communications circuits covered by Article 805 are commonly referred to as POTS (plain old telephone service) circuits.

(5) Installations of premises (within buildings) community antenna television and radio distribution circuits — ~~Part V of~~ Article 820 , Part V

Statement of Problem and Substantiation for Public Input

This Public Input is being submitted on behalf of the NEC Correlating Committee Usability Task Group in order to provide correlation throughout the document. The text is revised to to comply with the NEC Style Manual Section 4.1.4, regarding the use of Parts.
4.1.4 References to an Entire Article. References shall not be made to an entire article, except for the Article 100 or where referenced to provide the necessary context. References to specific parts within articles shall be permitted. References to all parts of an article shall not be permitted. The article number shall precede the part number.
The Usability Task Group members are: Derrick Atkins, David Hittinger, Richard Holub, Dean Hunter, Chad Kennedy and David Williams.

Submitter Information Verification

Submitter Full Name: David Williams
Organization: Delta Charter Township
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 28 13:23:01 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7950-NFPA 70-2024
Statement: Compliance with 4.1.4 of the NEC Style Manual requires stating the Article number before the Part number in the Article.

New item (2) has been added since Class 4 circuits can be derived from a network-powered broadband circuit.

Public Input No. 4178-NFPA 70-2023 [Section No. 800.3(A)]

(A) Output Circuits.

As appropriate for the services provided, the output circuits derived from a network-powered broadband communications system's network interface unit (NIU) or from a premises-powered broadband communications system's network terminal shall comply with the requirements of the following:

(1) Installations of Class 2 and Class 3 circuits — Part II of Article 725 and Parts I and II of Article 722

(2) Installations of Class 4 circuits — Part II of Article 726 and Parts I and II of Article 722

(3) Installations of power-limited fire alarm circuits — Part III of Article 760

(4) Installations of optical fiber cables — Part V of Article 770

(5) Installations of communications circuits — Part IV of Article 805

Informational Note: The communications circuits covered by Article 805 are commonly referred to as POTS (plain old telephone service) circuits.

(6) Installations of premises (within buildings) community antenna television and radio distribution circuits — Part V of Article 820

Statement of Problem and Substantiation for Public Input

Adding Class 4 to the list. Class 4 systems were added in the 2023 code and have equivalent or better than fire and life safety requirements as Class 2 circuits. An effort to analyze all the locations of Class 2 in the code to see if Class 4 was also appropriate in the application should have happened for the 2023 code and not doing it was an oversight.

Submitter Information Verification

Submitter Full Name: Chad Jones
Organization: Cisco Systems
Street Address:
City:
State:
Zip:
Submittal Date: Wed Sep 06 19:34:49 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7950-NFPA 70-2024
Statement: Compliance with 4.1.4 of the NEC Style Manual requires stating the Article number before the Part number in the Article.

New item (2) has been added since Class 4 circuits can be derived from a network-powered broadband circuit.

Public Input No. 820-NFPA 70-2023 [Section No. 800.3(A)]

(A) Output Circuits.

As appropriate for the services provided, the output circuits derived from a network-powered broadband communications system's network interface unit (NIU) or from a premises-powered broadband communications system's network terminal shall comply with the requirements of the following:

(1) Installations of Class 2 and Class 3 circuits — ~~Part II of~~ Article 725, Part II and Article 722, Parts I and II

(2) Installations of Class 4 circuits - Article 726, Part II and Article 722, Parts I and II

(3) Installations of power-limited fire alarm circuits — ~~Part III of~~ Article 760, Part III

(4) Installations of optical fiber cables — ~~Part V of~~ Article, 770, Part V

(5) Installations of communications circuits — Article 800, Part IV- ~~of Article 805~~

~~Informational Note: The communications circuits covered by Article 805 are commonly referred to as POTS (plain old telephone service) circuits.~~

(6) Installations of premises (within buildings) community antenna television and radio distribution circuits —

~~Part V of~~

-
- Article 820 , Part V

Statement of Problem and Substantiation for Public Input

Class 4 circuits can be derived from a network-powered broadband circuit.

The installation rules for communications cables were moved to Article 800 in the 2023 NEC

The references to other Articles have been revised to comply with the 2023 NEC Style Manual section 4.1.4 which states, “The article number shall precede the part number.”

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 819-NFPA 70-2023 [Section No. 800.1]	Refer to Class 4 wiring in informational note
Public Input No. 819-NFPA 70-2023 [Section No. 800.1]	

Submitter Information Verification

Submitter Full Name: David Kiddoo
Organization: CCCA
Affiliation: Communications Cable & Connectivity Association
Street Address:
City:

State:
Zip:
Submittal Date: Sat May 13 08:49:58 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7950-NFPA 70-2024
Statement: Compliance with 4.1.4 of the NEC Style Manual requires stating the Article number before the Part number in the Article.

New item (2) has been added since Class 4 circuits can be derived from a network-powered broadband circuit.

Public Input No. 3999-NFPA 70-2023 [Section No. 800.3(B)]

(B) Hazardous (Classified) Locations.

Circuits and equipment installed in a location that is classified in accordance with 500.5 and 505.5 shall comply with the applicable requirements of ~~Chapter 5~~ NOT SURE WHAT TO PUT HERE .

Statement of Problem and Substantiation for Public Input

"the appropriate requirements of Chapter 5" violates the style guide restriction of calling out whole articles. A chapter is a collection of articles, therefore it must be disallowed. I don't know the appropriate replacement text. I'm hoping the panel can reach out to the appropriate CMP (14?) and get the correct answer.

Submitter Information Verification

Submitter Full Name: Chad Jones
Organization: Cisco Systems
Street Address:
City:
State:
Zip:
Submittal Date: Wed Sep 06 13:17:09 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The submitter of the proposal has not provided a technical change, as required by the 4.3.4.1 of the Regulations.

Public Input No. 3447-NFPA 70-2023 [Sections 800.3(B), 800.3(C), 800.3(D)]

~~**Sections 800.3(B), 800.3(C), 800.3(D)**~~

~~**(B)** Hazardous (Classified) Locations.~~

~~Circuits and equipment installed in a location that is classified in accordance with 500.5 and 505.5 shall comply with the applicable requirements of Chapter 5 .~~

~~**(C)** Wiring in Ducts for Dust, Loose Stock, or Vapor Removal.~~

~~The requirements of 300.22(A) shall apply.~~

~~**(D)** Equipment in Other Space Used for Environmental Air.~~

~~The requirements of 300.22(C)(3) shall apply.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_First_Draft_Substantiation.docx	First Draft Substantiation	

Statement of Problem and Substantiation for Public Input

This text is being deleted as part of the reorganization of the limited energy articles. The deleted text is relocated as a general requirement to new Article X00.

Submitter Information Verification

Submitter Full Name: Mark Hilbert
Organization: MR Hilbert Insp. & Training
Street Address:
City:
State:
Zip:
Submittal Date: Sun Sep 03 06:15:14 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The text from Article 800.3 is not relocated but deleted from the new Article X00 under PI 3234. There is no technical justification supplied for the deletion of the requirement. The reference in current 800.3 to sealing requirements in 501.15 , 502.15 , 505.16 , or 506.16 were deleted as well as any reference to 300.22A for optical fiber cables used in Ducts for dust, loose stock, or vapor removal.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

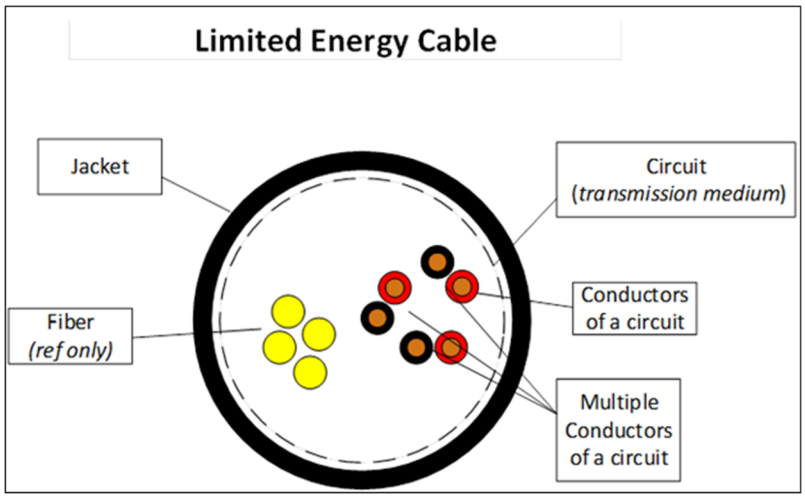
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
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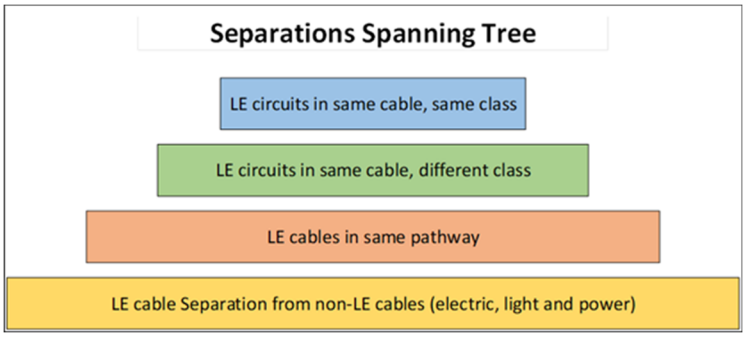
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 2564-NFPA 70-2023 [Section No. 800.3(C)]

(C) Wiring in Ducts for Dust, Loose Stock, or Vapor Removal.

The requirements of 300.22(A) shall apply to communications wires and cables, CATV-type coaxial cables, network-powered broadband communications cables, and conductive optical fiber cables . . .

Statement of Problem and Substantiation for Public Input

The revised text clarifies which of the cables used for communications that 300.22(A) applies to.

Submitter Information Verification

Submitter Full Name: Leslie Jutte
Organization: Plastics Industry Association
Affiliation: Plastics Industry Association (PLASTICS)
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 22 09:27:24 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7618-NFPA 70-2024
Statement: The revised text clarifies which of the cables, used for communications, 300.22(A) applies to.

Public Input No. 2565-NFPA 70-2023 [Section No. 800.3(E)]

(E) Installation and Use.of Equipment

The requirements of 110.3(B) shall apply.

Statement of Problem and Substantiation for Public Input

The recommended text of title of 800.3(E) is expanded to include “equipment” to correlate with the title of the section, 110.3.

Submitter Information Verification

Submitter Full Name: Leslie Jutte
Organization: Plastics Industry Association
Affiliation: Plastics Industry Association (PLASTICS)
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 22 09:36:24 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7619-NFPA 70-2024
Statement: The title has been revised to correlate with 110.3.

Public Input No. 1181-NFPA 70-2023 [Section No. 800.3(F)]

~~(F) Optical Fiber Cable.~~

~~Where optical fiber cable is used to provide a communications circuit within a building, Article 770 shall apply.~~

Statement of Problem and Substantiation for Public Input

Multiple PIs have been submitted to include optical fiber cables in Article 800 when they are used for communications, thereby increasing the usability of Article 800 and eliminating the need for a reference to Article 770 in 800.3, "Other Articles".

Submitter Information Verification

Submitter Full Name: Leslie Jutte
Organization: Plastics Industry Association
Affiliation: Plastics Industry Association (PLASTICS)
Street Address:
City:
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Zip:
Submittal Date: Thu Jun 22 11:52:46 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7620-NFPA 70-2024
Statement: This revision aligns with the committee panel's actions to not include optical fiber cables in Article 800 when they are used for communications, thereby increasing the usability of Article 800 and eliminating the need for a reference to Article 770.

Public Input No. 3382-NFPA 70-2023 [New Section after 800.3(H)]

800.3 (I) Circuits with Communications and Power

Circuits carrying data and power shall be classified as electrical power circuits in accordance with the type of electrical power carried.

Informational Note: Communications circuits carrying power in accordance with Part II of article 805, 820.15, 830.15, or 840.160 are considered according to their appropriate article for each type of circuit.

Statement of Problem and Substantiation for Public Input

The broadening of the definition of communications circuit in the 2023 code cycle (to eliminate connection to the communications service provider) makes 800.3(A) inapplicable to a variety of premises circuits with both communications and power. 800.3(A) only applies to Output Circuits from a Network Interface Unit (NIU) or a Network Terminal (NT) - devices which interface to a carrier. In contrast, circuits carrying power and data can be local area network circuits, such as Ethernet, and are provided not from a network terminal but from a local area network switch. Circuits carrying data and power may be provided by powerline communications, and these are now routinely installed to bridge internet connections to systems such as surveillance, security, and local data systems such as wifi access points. Under the current definition, these applications could be considered communications circuits, so it is important to make it clear that when they carry power, the requirements of the power circuit still apply.

A related PI adds an informational note to the definition of communications circuit to make it clear that a circuit may both meet the definition of a communications circuit and of another circuit type in the code.

Additionally, it is also important to make it clear that chapter 8 includes certain classes of powering circuits with their own treatment. The informational note points out that these are not the subject of the reference to other article, and points out the powered circuits handled in chapter 8, including coaxial, network-powered broadband, premises-powered broadband, and POTS (article 800) circuits, protecting these traditional communications applications.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3378-NFPA 70-2023 [Definition: Communications Circuit.]	Associated Definition
Public Input No. 3378-NFPA 70-2023 [Definition: Communications Circuit.]	

Submitter Information Verification

Submitter Full Name: George Zimmerman
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City:
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Submittal Date: Fri Sep 01 16:39:54 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7621-NFPA 70-2024
Statement: The new text adds clarity on the classification of dual power and communications circuits.

Public Input No. 1007-NFPA 70-2023 [Section No. 800.3(H)]

~~(H) Bonding and Grounding of Cable Shields.~~

~~The requirements of 250.4(A)(5) shall apply to the metal shields of cables used for communications.~~

Statement of Problem and Substantiation for Public Input

This is a companion Public Input to PI 1006 which moves the cable shield grounding requirements to new 800.114.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1006-NFPA 70-2023 [New Section after 800.113]	Moves shield grounding to new section 800.114.

Submitter Information Verification

Submitter Full Name: David Kiddoo
Organization: CCCA
Affiliation: Communications Cable & Connectivity Association
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 10 09:29:59 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7769-NFPA 70-2024

Statement: A new section of bonding and grounding requirements for communication cables has been created, which makes 800.3(H) no longer needed. See action taken on PI-1006, PI-2482, PI-4069.

Public Input No. 2503-NFPA 70-2023 [Section No. 800.3(H)]

~~(H) Bonding and Grounding of Cable Shields.~~

~~The requirements of 250.4(A)(5) shall apply to the metal shields of cables used for communications.~~

Statement of Problem and Substantiation for Public Input

Yo u can't comply with 250.4(A)(5) if you do not have an overcurrent device or ground detector. What circuit breaker or fuse is supposed to open should the cable's sheilding become energized?

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Self-employed
Street Address:
City:
State:
Zip:
Submittal Date: Fri Aug 18 13:00:21 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7769-NFPA 70-2024
Statement: A new section of bonding and grounding requirements for communication cables has been created, which makes 800.3(H) no longer needed. See action taken on PI-1006, PI-2482, PI-4069.

Public Input No. 3196-NFPA 70-2023 [Section No. 800.3(H)]

~~(H) Bonding and Grounding of Cable Shields.~~

~~The requirements of 250.4(A)(5) shall apply to the metal shields of cables used for communications.~~

Statement of Problem and Substantiation for Public Input

Removing 800.3(H) because it references 240.4(A)(5) which is about the effective ground-fault current path which has nothing to do with grounding and bonding of cable shields; the proper requirements for grounding and bonding of cable shields are already located in 800.100. This will improve usability and add clarity for Code users.

Submitter Information Verification

Submitter Full Name: Mike Holt
Organization: Mike Holt Enterprises Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 30 10:31:21 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7769-NFPA 70-2024
Statement: A new section of bonding and grounding requirements for communication cables has been created, which makes 800.3(H) no longer needed. See action taken on PI-1006, PI-2482, PI-4069.

Public Input No. 4071-NFPA 70-2023 [Section No. 800.3(H)]

~~(H) Bonding and Grounding of Cable Shields.~~

~~The requirements of 250.4(A)(5) shall apply to the metal shields of cables used for communications.~~

Statement of Problem and Substantiation for Public Input

The requirement to bond or ground a communications cable shield was added to the 2023 NEC "because shields could become energized and thereby pose a fire or shock hazard". However, with the approval of PI 4069), Article 800.3(H) is no longer required as all locations for communication cables and required grounding/bonding methods to mitigate the risk are provided within Part III of Article 800 and as modified within Articles 805-840 inclusively.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 4069-NFPA 70-2023 [New Section after 800.106]	Dependent

Submitter Information Verification

Submitter Full Name: Jeff Silveira
Organization: Bicsi
Street Address:
City:
State:
Zip:
Submittal Date: Wed Sep 06 15:37:09 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7769-NFPA 70-2024

Statement: A new section of bonding and grounding requirements for communication cables has been created, which makes 800.3(H) no longer needed. See action taken on PI-1006, PI-2482, PI-4069.

Public Input No. 3448-NFPA 70-2023 [Section No. 800.21]

~~**800.21** Access to Electrical Equipment Behind Panels Designed to Allow Access.~~

~~Access to electrical equipment shall not be denied by an accumulation of wires and cables that prevents removal of panels, including suspended ceiling panels.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_First_Draft_Substantiation.docx	First Draft Substantiation	

Statement of Problem and Substantiation for Public Input

This text is being deleted as part of the reorganization of the limited energy articles. The deleted text is relocated as a general requirement to new Article X00.

Submitter Information Verification

Submitter Full Name: Mark Hilbert
Organization: MR Hilbert Insp. & Training
Street Address:
City:
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Zip:
Submittal Date: Sun Sep 03 06:16:46 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use, and avoiding confusion it is more appropriate to have as many requirements as practical for communications systems explicitly in one article such as 800.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

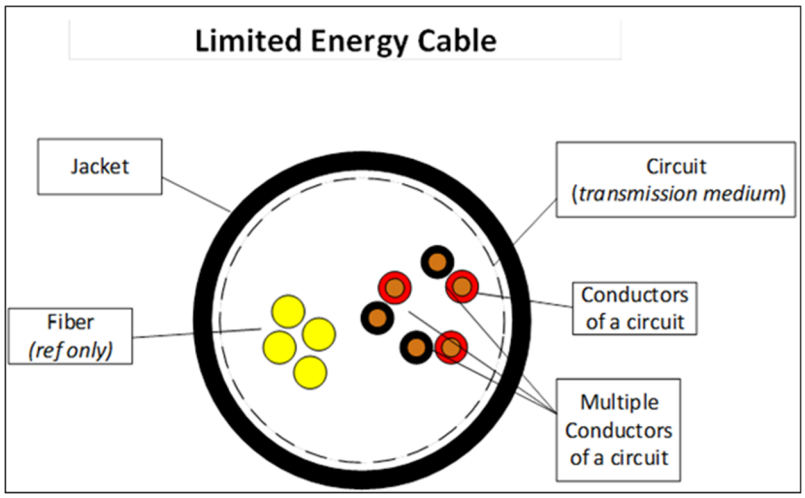
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

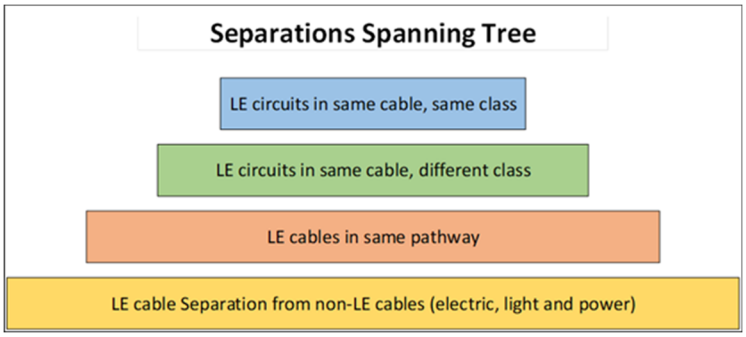
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 1709-NFPA 70-2023 [Section No. 800.24]

800.~~24~~ ~~Mechanical Execution of Work~~ 24 Installation .

(A) General.

~~Circuits and equipment shall be installed in a neat and workmanlike manner.~~ Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/BICSI N1-2019, *Installation Practices for Telecommunications and IC Cabling and Related Cabling Infrastructure*; ANSI/TIA-568.1-E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* and other ANSI-approved installation standards for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.

(B) ~~Circuit~~ **Workmanship.**

Circuits, Cables and equipment shall be mechanically executed and installed in a manner consistant with industry practices and standards.

Informational Note No. 1: See definition of *Workmanship* in Article 100.

Informational Note No. 2: See Section 110.12 for more information on Workmanship.

(C) Circuit Integrity (CI) Cable.

CI cable shall be supported at a distance not exceeding 610 mm (24 in.). Cable shall be secured to the noncombustible surface of the building structure. Cable supports and fasteners shall be steel.

Statement of Problem and Substantiation for Public Input

Workmanship is an egalitarian term, that focuses on evaluating the craftsmanship of any individual or group, the overall standard of work, precision, and dedication put forth in achieving a desirable outcome regardless of gender.

These revisions provide clarity that the focus of Section 800.24 is on the General Installation rules and by adding a separate subsection on “Workmanship” it emphasizes the need for Workmanship in these installations, as well as creating consistency with other parts of this Code where Workmanship is either XXX.24 or XXX.24(X).

See Companion PIs pertaining to Sections:

- Article 100 Definition of “Workmanship”
- 110.12
- 393.24
- 600.24
- 600.33(B)
- 724.22
- 724.24
- 725.24
- 726.24
- 760.24
- 770.24

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1707-NFPA 70-2023 [Section No. 770.24]	
Public Input No. 1702-NFPA 70-2023 [Section No. 760.24]	
Public Input No. 1700-NFPA 70-2023 [Section No. 726.24]	
Public Input No. 1699-NFPA 70-2023 [New Section after 726.12]	
Public Input No. 1697-NFPA 70-2023 [Section No. 725.24]	
Public Input No. 1696-NFPA 70-2023 [New Section after 725.21]	
Public Input No. 1691-NFPA 70-2023 [Section No. 724.24]	
Public Input No. 1692-NFPA 70-2023 [New Section after 724.21]	
Public Input No. 1687-NFPA 70-2023 [Section No. 722.24]	
Public Input No. 1670-NFPA 70-2023 [Section No. 600.33(B)]	
Public Input No. 1668-NFPA 70-2023 [Section No. 600.24]	
Public Input No. 1669-NFPA 70-2023 [New Section after 600.24]	
Public Input No. 1632-NFPA 70-2023 [New Section after 393.21]	
Public Input No. 1630-NFPA 70-2023 [Section No. 393.14]	
Public Input No. 1596-NFPA 70-2023 [Section No. 110.12]	
Public Input No. 1571-NFPA 70-2023 [New Definition after Definition: Work Surface.]	
Public Input No. 1571-NFPA 70-2023 [New Definition after Definition: Work Surface.]	
Public Input No. 1596-NFPA 70-2023 [Section No. 110.12]	
Public Input No. 1630-NFPA 70-2023 [Section No. 393.14]	
Public Input No. 1632-NFPA 70-2023 [New Section after 393.21]	
Public Input No. 1668-NFPA 70-2023 [Section No. 600.24]	
Public Input No. 1669-NFPA 70-2023 [New Section after 600.24]	
Public Input No. 1670-NFPA 70-2023 [Section No. 600.33(B)]	
Public Input No. 1687-NFPA 70-2023 [Section No. 722.24]	
Public Input No. 1692-NFPA 70-2023 [New Section after 724.21]	
Public Input No. 1696-NFPA 70-2023 [New Section after 725.21]	
Public Input No. 1697-NFPA 70-2023 [Section No. 725.24]	
Public Input No. 1699-NFPA 70-2023 [New Section after 726.12]	
Public Input No. 1700-NFPA 70-2023 [Section No. 726.24]	
Public Input No. 1702-NFPA 70-2023 [Section No. 760.24]	
Public Input No. 1707-NFPA 70-2023 [Section No. 770.24]	

Submitter Information Verification

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State:
Zip:
Submittal Date: Fri Jul 28 21:00:26 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The term “workmanship” is not a defined term in Article 100.

Public Input No. 1184-NFPA 70-2023 [Section No. 800.24(A)]

(A) General.

Circuits and equipment shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/BICSI N1-2019, *Installation Practices for Telecommunications and IC Cabling and Related Cabling Infrastructure*; ANSI/TIA-568.1-E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* ANSI/NECA/FOA 301-2016, *Standard for Installing and Testing Fiber Optic Cables* , ANSI/TIA-568.0-D-2015, *Generic Telecommunications Cabling for Customer Premises* , and ANSI/TIA 568.3-D-2016, *Optical Fiber Cabling and Components Standard* , and other ANSI-approved installation standards for accepted industry practices.

Informational Note No. 2: See NFPA 90A ~~-2021~~ , *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 8.5.5.6 for listing information for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.

Statement of Problem and Substantiation for Public Input

Multiple PIs have been submitted to include optical fiber cables in Article 800 when they are used for communications, thereby increasing the usability of Article 800.

The edition date for NFPA 90A has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

The requirements for discrete products in 4.3.11.2.6.5 in NFPA 90A-2021 have been moved to 8.5.5.6 in the current (2024) edition of NFPA 90A.

Submitter Information Verification

Submitter Full Name: Leslie Jutte
Organization: Plastics Industry Association
Affiliation: Plastics Industry Association (PLASTICS)
Street Address:
City:

State:
Zip:
Submittal Date: Thu Jun 22 12:09:02 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7581-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

Neat and workmanlike was changed to professional and skillful to correlate with 110.12.

The first sentence in 800.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Additional standards were added to Informational Note No. 1 to improve usability.

Section 800.24(A) was subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 1386-NFPA 70-2023 [Section No. 800.24(A)]

(A) General.

Circuits and equipment shall be installed in a ~~neat~~ professional and ~~workmanlike manner~~ skillful manner . Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/BICSI N1-2019, *Installation Practices for Telecommunications and IC Cabling and Related Cabling Infrastructure*; ANSI/TIA-568.1-E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* and other ANSI-approved installation standards for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.

Statement of Problem and Substantiation for Public Input

To more closely correlate with wording in 110.12

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 203-NFPA 70-2023 [Global Input]	

Submitter Information Verification

Submitter Full Name: Kelly Wofford
Organization: EIG
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jul 12 11:27:35 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7581-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

Neat and workmanlike was changed to professional and skillful to correlate with 110.12.

The first sentence in 800.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Additional standards were added to Informational Note No. 1 to improve usability.

Section 800.24(A) was subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 2013-NFPA 70-2023 [Section No. 800.24(A)]

(A) General.

Circuits and equipment shall be installed in a ~~neat~~ professional and ~~workmanlike manner~~ skillful manner . Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/BICSI N1-2019, *Installation Practices for Telecommunications and IC Cabling and Related Cabling Infrastructure*; ANSI/TIA-568.1-E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* and other ANSI-approved installation standards for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.

Statement of Problem and Substantiation for Public Input

This revision is needed to correlate with the wording in 110.12

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2009-NFPA 70-2023 [Section No. 722.24(A)]	“professional and skillful” instead of “neat and workmanlike”
Public Input No. 2010-NFPA 70-2023 [Section No. 724.24]	“professional and skillful” instead of “neat and workmanlike”
Public Input No. 2011-NFPA 70-2023 [Section No. 725.24]	“professional and skillful” instead of “neat and workmanlike”
Public Input No. 2012-NFPA 70-2023 [Section No. 726.24]	“professional and skillful” instead of “neat and workmanlike”
Public Input No. 2014-NFPA 70-2023 [Section No. 770.24(A)]	
Public Input No. 2015-NFPA 70-2023 [Section No. 600.33(B)]	
Public Input No. 2016-NFPA 70-2023 [Section No. 393.14(A)]	

Public Input No. 2017-NFPA 70-2023 [Section No. 760.24(A)]

Submitter Information Verification

Submitter Full Name: Russ Leblanc
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Street Address:
City:
State:
Zip:
Submittal Date: Fri Aug 11 06:41:12 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7581-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

Neat and workmanlike was changed to professional and skillful to correlate with 110.12.

The first sentence in 800.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Additional standards were added to Informational Note No. 1 to improve usability.

Section 800.24(A) was subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]

(A) General.

Circuits and equipment shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/BICSI N1-2019, *Installation Practices for Telecommunications and IC Cabling and Related Cabling Infrastructure*; ANSI/TIA-568.1-E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* and other ANSI-approved installation standards for accepted industry practices.

Informational Note No. 2: See NFPA 90A ~~-2021~~ , *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 8.5.5.6 for listing information of discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.

Statement of Problem and Substantiation for Public Input

The edition date for NFPA 90A has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

The requirements for discrete products in 4.3.11.2.6.5 in NFPA 90A-2021 will be moved to 8.5.5.6 in the next (2024) edition of NFPA 90A.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	Revise NFPA 90A reference
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	Revise NFPA 90A reference
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	Revise NFPA 90A reference
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	Revise NFPA 90A reference
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	Revise NFPA 90A reference
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]	Revise NFPA 90A reference

Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]	Revise NFPA 90A reference
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]	
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]	
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]	
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]	
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]	

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: CableSafe, Inc./OFS
Affiliation: Plastics Industry Association (PLASTICS)
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jan 04 11:06:58 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7581-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

Neat and workmanlike was changed to professional and skillful to correlate with 110.12.

The first sentence in 800.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Additional standards were added to Informational Note No. 1 to improve usability.

Section 800.24(A) was subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 2444-NFPA 70-2023 [Section No. 800.24(A)]

(A) General.

Circuits and equipment shall be installed in a ~~neat~~ proffesional and ~~workmanlike~~ skillful manner. Cables shall be permitted to be installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/BICSI N1-2019, *Installation Practices for Telecommunications and IC Cabling and Related Cabling Infrastructure*; ANSI/TIA-568.1-E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* and other ANSI-approved installation standards for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.

Statement of Problem and Substantiation for Public Input

Changed 'neat and workmanlike' to 'professional and skillful' matching the language in 110.12 for consistency. Adding language that clarifies to Code users that communication cables can be run exposed. I searched Chapter 8 in the NEC and nowhere it states communication cables can be run exposed.

Submitter Information Verification

Submitter Full Name: Mike Holt
Organization: Mike Holt Enterprises Inc
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 17 12:09:56 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7581-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

Neat and workmanlike was changed to professional and skillful to correlate with 110.12.

The first sentence in 800.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Additional standards were added to Informational Note No. 1 to improve usability.

Section 800.24(A) was subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 2446-NFPA 70-2023 [Section No. 800.24(A)]

(A) General.

Circuits and equipment shall be installed in a neat and workmanlike manner.

(1) Supporting.

Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use.

(2) Securing.

Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11.

(3) Plenum Rated.

Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/BICSI N1-2019, *Installation Practices for Telecommunications and IC Cabling and Related Cabling Infrastructure*; ANSI/TIA-568.1-E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* and other ANSI-approved installation standards for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.

Statement of Problem and Substantiation for Public Input

Breaking first level subdivision into a list item format to provide clarity for Code users. In accordance with NEC Style Manual section 3.5.1.2 multiple requirements within a single subdivision shall be avoided. Additional subdivisions or lists shall be used to express independent requirements.

Submitter Information Verification

Submitter Full Name: Mike Holt
Organization: Mike Holt Enterprises Inc
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 17 12:18:55 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7581-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

Neat and workmanlike was changed to professional and skillful to correlate with 110.12.

The first sentence in 800.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Additional standards were added to Informational Note No. 1 to improve usability.

Section 800.24(A) was subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 2495-NFPA 70-2023 [Section No. 800.24(A)]

(A) General.

Circuits and equipment shall be installed in a ~~neat~~ professional and ~~workmanlike~~ skillful manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/BICSI N1-2019, *Installation Practices for Telecommunications and IC Cabling and Related Cabling Infrastructure*; ANSI/TIA-568.1-E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* and other ANSI-approved installation standards for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.

Statement of Problem and Substantiation for Public Input

Changing the wording matches what is in 110.12. Keeping the wording the same promotes consistency throughout the code. Additional inputs will be done for other code articles. 722.24, 724.24, 725.24 726.24 , 760.24(A), 770.24(A).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2486-NFPA 70-2023 [Section No. 722.24(A)]	
Public Input No. 2488-NFPA 70-2023 [Section No. 724.24]	
Public Input No. 2491-NFPA 70-2023 [Section No. 725.24]	
Public Input No. 2492-NFPA 70-2023 [Section No. 726.24]	
Public Input No. 2493-NFPA 70-2023 [Section No. 760.24(A)]	
Public Input No. 2494-NFPA 70-2023 [Section No. 770.24(A)]	
Public Input No. 2486-NFPA 70-2023 [Section No. 722.24(A)]	
Public Input No. 2488-NFPA 70-2023 [Section No. 724.24]	
Public Input No. 2491-NFPA 70-2023 [Section No. 725.24]	
Public Input No. 2492-NFPA 70-2023 [Section No. 726.24]	
Public Input No. 2493-NFPA 70-2023 [Section No. 760.24(A)]	
Public Input No. 2494-NFPA 70-2023 [Section No. 770.24(A)]	

Submitter Information Verification

Submitter Full Name: Lowell Reith
Organization: Interstates Construction Servi
Affiliation: IEC
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City:
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Zip:
Submittal Date: Fri Aug 18 12:32:47 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7581-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

Neat and workmanlike was changed to professional and skillful to correlate with 110.12.

The first sentence in 800.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Additional standards were added to Informational Note No. 1 to improve usability.

Section 800.24(A) was subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 3449-NFPA 70-2023 [Section No. 800.24(A)]

~~(A) General.~~

~~Circuits and equipment shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11 . Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170 .~~

~~Informational Note No. 1: See ANSI/BICSI N1-2019, *Installation Practices for Telecommunications and IC Cabling and Related Cabling Infrastructure* ; ANSI/TIA-568.1- E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* and other ANSI-approved installation standards for accepted industry practices.~~

~~Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems* , for discrete combustible components installed in accordance with 300.22(C) .~~

~~Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_First_Draft_Substantiation.docx	First Draft Substantiation	

Statement of Problem and Substantiation for Public Input

This text is being deleted as part of the reorganization of the limited energy articles. The deleted text is relocated as a general requirement to new Article X00.

Submitter Information Verification

Submitter Full Name: Mark Hilbert
Organization: MR Hilbert Insp. & Training
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City:
State:
Zip:
Submittal Date: Sun Sep 03 06:18:59 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: A considerable part of the text from Article 800 Section 24 is not relocated but deleted from the referenced new Article X00 under PI-3234. There is no technical justification supplied for the deletion of these requirements. The relocated text in the proposed X00 does not address the proposed revisions of PI-3694, PI-1709, PI-1184, PI-1386, PI-2013, PI-22, PI-2444, PI-2446, PI-2495, PI-4045, and PI-51 with concerns updates, word changes and deletions to the text. Without including such revisions will result in conflicts and confusion between the new X00 Article and possible First Draft actions on these PIs.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

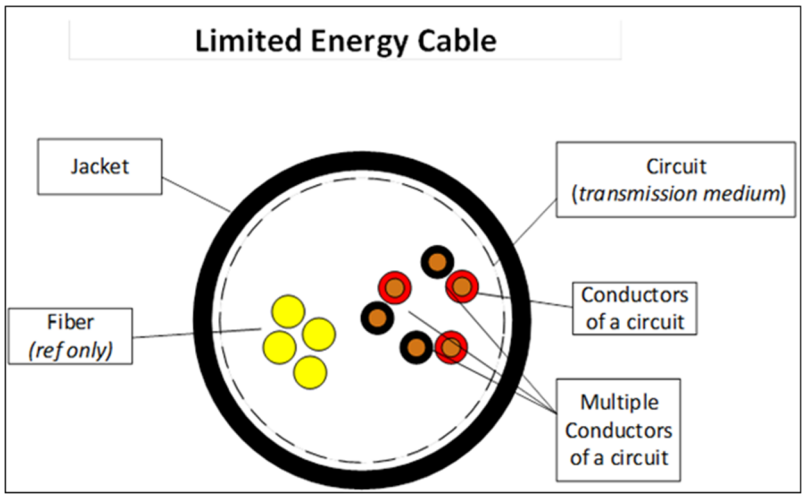
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

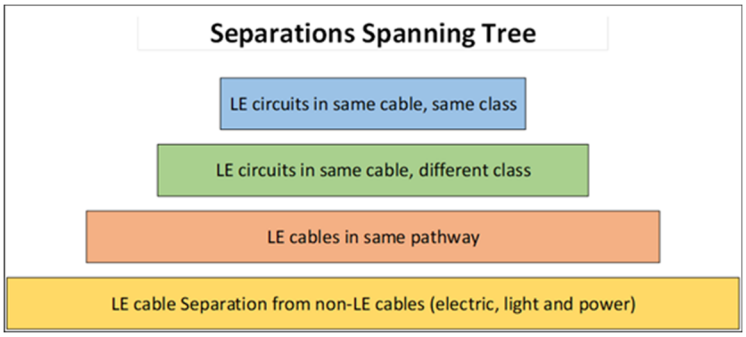
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 4045-NFPA 70-2023 [Section No. 800.24(A)]

(A) General.

Circuits and equipment shall be installed in a neat and workmanlike manner. Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/BICSI N1~~-2019~~ , *Installation Practices for Telecommunications and ~~IC~~ ICT Cabling and Related Cabling Infrastructure*; ANSI/TIA-568.1- E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* and other ANSI-approved installation standards for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.

Statement of Problem and Substantiation for Public Input

- The edition date for ANSI/BICSI N1 has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”
- Corrects the title of the standard.

Submitter Information Verification

Submitter Full Name: Jeff Silveira
Organization: Bicsi
Street Address:
City:
State:
Zip:
Submittal Date: Wed Sep 06 14:53:54 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7581-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

Neat and workmanlike was changed to professional and skillful to correlate with 110.12.

The first sentence in 800.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Additional standards were added to Informational Note No. 1 to improve usability.

Section 800.24(A) was subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 51-NFPA 70-2023 [Section No. 800.24(A)]

(A) General.

Circuits and equipment shall be installed in a ~~neat and workmanlike manner~~ professional and skillful manner . Cables installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be secured by hardware, including straps; staples: cable ties listed and identified for securement and support; and hangers, or similar fittings, designed and installed so as not to damage the cable. The installation shall also conform to 300.4 and 300.11. Plenum cable ties and other nonmetallic cable accessories used to secure and support cables in other spaces used for environmental air (plenums) shall be listed as having low smoke and heat release properties in accordance with 800.170.

Informational Note No. 1: See ANSI/BICSI N1-2019, *Installation Practices for Telecommunications and IC Cabling and Related Cabling Infrastructure*; ANSI/TIA-568.1-E-2020, *Commercial Building Telecommunications Infrastructure Standard;* ANSI/TIA-569-E-2019, *Telecommunications Pathways and Spaces;* ANSI/TIA-570-C-2012, *Residential Telecommunications Infrastructure Standard;* ANSI/TIA-1005-A-2012, *Telecommunications Infrastructure Standard for Industrial Premises;* ANSI/ TIA-1179-A-2017, *Healthcare Facility Telecommunications Infrastructure Standard;* ANSI/TIA-4966-2014, *Telecommunications Infrastructure Standard for Educational Facilities;* and other ANSI-approved installation standards for accepted industry practices.

Informational Note No. 2: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for discrete combustible components installed in accordance with 300.22(C).

Informational Note No. 3: Paint, plaster, cleaners, abrasives, corrosive residues, or other contaminants may result in an undetermined alteration of wire and cable properties.

Statement of Problem and Substantiation for Public Input

The requirements of this section do not correlate with 110.12. Further, the requirements in this section do not comply with the NEC Style Manual whereby it was determined that "neat" and "workmanlike" were vague and unenforceable and were therefore changed to "professional" and "skillful" in 110.12.

Submitter Information Verification

Submitter Full Name: Palmer Hickman
Organization: Electrical Training Alliance
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jan 06 11:39:44 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7581-NFPA 70-2024

Statement: The issue dates of NFPA 90A and ANSI/BICSI N1 were updated to align with the NFPA manual of style. The section in NFPA 90A dealing with discrete products was added to improve usability.

Neat and workmanlike was changed to professional and skillful to correlate with 110.12.

The first sentence in 800.24(A) has been deleted since “neat and workmanlike” is unenforceable. Additionally, the recommended language of professional and skillful is also unenforceable and ambiguous and has not been adopted.

Additional standards were added to Informational Note No. 1 to improve usability.

Section 800.24(A) was subdivided to comply with section 3.5.1.2 of the NEC Style Manual.

Public Input No. 700-NFPA 70-2023 [Section No. 800.24(B)]

(B) Circuit Integrity (CI) Cable.

CI cable shall be supported at ~~a distance not exceeding~~ 610 mm (24 in.) maximum intervals . Cable shall be secured to the noncombustible surface of the building structure. Cable supports and fasteners shall be steel.

Statement of Problem and Substantiation for Public Input

Shall be supported at a distance....from what? And what happens after that? Am I finished with the securing and supporting requirements? Do I really only need to secure it once, regardless of cable length?

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Self-employed
Street Address:
City:
State:
Zip:
Submittal Date: Thu Apr 20 16:02:48 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7583-NFPA 70-2024
Statement: Section 800.24(B) was revised to improve clarity.

Public Input No. 3450-NFPA 70-2023 [Sections 800.25, 800.26]

~~**Sections 800.25, 800.26**~~

~~**800.25** Abandoned Cables.~~

~~The accessible portion of abandoned cables shall be removed. Where cables are identified for future use with a tag, the tag shall be of sufficient durability to withstand the environment involved.~~

~~**800.26** Spread of Fire or Products of Combustion.~~

~~Installations of cables, communications raceways, cable routing assemblies in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around penetrations of cables, communications raceways, and cable routing assemblies through fire-resistant-rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating.~~

~~Informational Note: Directories of electrical construction materials published by qualified testing laboratories contain many listing installation restrictions necessary to maintain the fire-resistive rating of assemblies where penetrations or openings are made. Building codes also contain restrictions on membrane penetrations on opposite sides of a fire resistance–rated wall assembly. An example is the 600 mm (24 in.) minimum horizontal separation that usually applies between boxes installed on opposite sides of the wall. Assistance in complying with 800.26 can be found in building codes, fire resistance directories, and product listings.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_First_Draft_Substantiation.docx	First Draft Substantiation	

Statement of Problem and Substantiation for Public Input

This text is being deleted as part of the reorganization of the limited energy articles. The deleted text is relocated as a general requirement to new Article X00.

Submitter Information Verification

Submitter Full Name: Mark Hilbert
Organization: MR Hilbert Insp. & Training
Street Address:
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Zip:
Submittal Date: Sun Sep 03 06:20:39 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use, and avoiding confusion it is more appropriate to have as many requirements as practical for communications systems explicitly in one article such as 800. The relocated text in the proposed X00 does not address the proposed revisions of PI-700 with textual changes.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

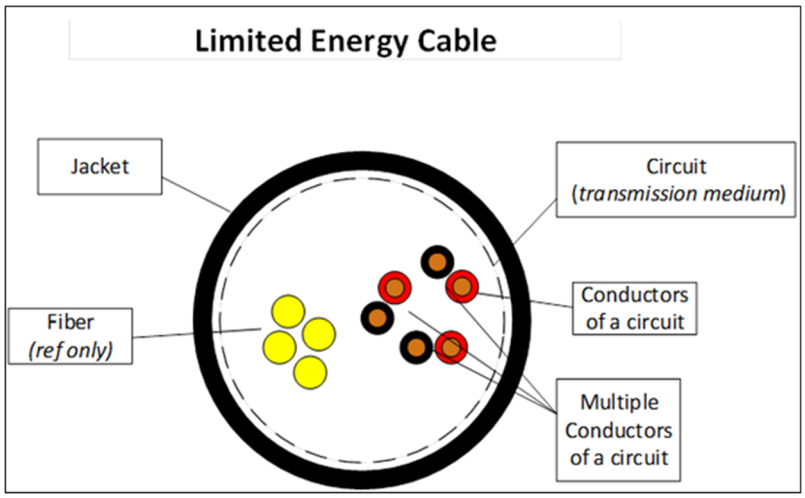
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

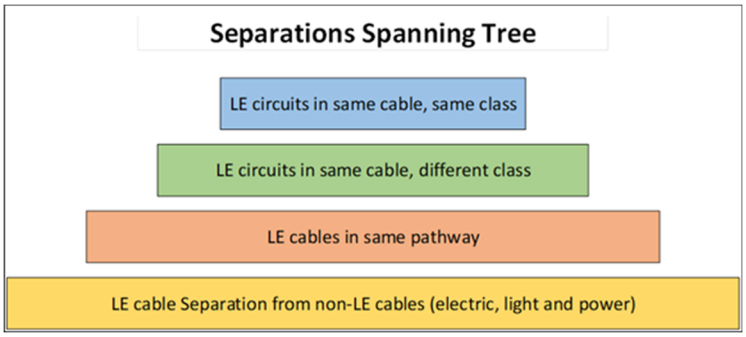
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 2566-NFPA 70-2023 [Section No. 800.26]

800.26 Spread of Fire or Products of Combustion.

Installations of cables, communications raceways, and cable routing assemblies in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around penetrations of cables, communications raceways, and cable routing assemblies through fire-resistant-rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating.

Informational Note: Directories of electrical construction materials published by qualified testing laboratories contain many listing installation restrictions necessary to maintain the fire-resistive rating of assemblies where penetrations or openings are made. Building codes also contain restrictions on membrane penetrations on opposite sides of a fire resistance–rated wall assembly. An example is the 600 mm (24 in.) minimum horizontal separation that usually applies between boxes installed on opposite sides of the wall. Assistance in complying with 800.26 can be found in building codes, fire resistance directories, and product listings.

Statement of Problem and Substantiation for Public Input

Editorial correction.

Submitter Information Verification

Submitter Full Name: Leslie Jutte
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Affiliation: Plastics Industry Association (PLASTICS)
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Zip:
Submittal Date: Tue Aug 22 09:42:06 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7584-NFPA 70-2024
Statement: An editorial correction was made to 800.26.

Public Input No. 3200-NFPA 70-2023 [Section No. 800.26]

~~**800.26** Spread of Fire or Products of Combustion.~~

~~Installations of cables, communications raceways, cable routing assemblies in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around penetrations of cables, communications raceways, and cable routing assemblies through fire-resistant-rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating.~~

~~Informational Note: Directories of electrical construction materials published by qualified testing laboratories contain many listing installation restrictions necessary to maintain the fire-resistive rating of assemblies where penetrations or openings are made. Building codes also contain restrictions on membrane penetrations on opposite sides of a fire resistance–rated wall assembly. An example is the 600 mm (24 in.) minimum horizontal separation that usually applies between boxes installed on opposite sides of the wall. Assistance in complying with 800.26 can be found in building codes, fire resistance directories, and product listings.~~

Statement of Problem and Substantiation for Public Input

Submitted another public input to add spread of fire to 800.3. Removing this requirement will improve usability and add clarity for Code users.

Submitter Information Verification

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Submittal Date: Wed Aug 30 10:49:50 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The action by the committee panel did not adopt the revision recommended by PI-3197. Therefore, the removal of 800.26 would lead to a loss of important requirements.

Public Input No. 3337-NFPA 70-2023 [New Section after 800.44]

800.46 Communications Service Point

The Communication Service Point shall be at a readily accessible location either outside or inside of a building or structure near to the point of entrance of the conductors in accordance with the one or more of the following:

1. The point of connection at which the communication service provider's network (outside plant) transitions to the premises wiring. The location of this point shall not be located further than 50 feet from the point of entrance.

2. The point of connection in an individual dwelling shall be located so as not to exceed 48 inches from the primary protector on the premises side of the protector.

3. A physical protection point or communications cable exiting the connection enclosure on the individual building side of the enclosure.

4. The point of connection at the Grounding Block, where required.

5. The point where a wireless signal transitions from the antenna or dish through a wired connection to transmitting or receiving equipment. The location of this point shall be permitted to include the ground connection at the antenna discharge unit or coaxial cable connection to the transmitting/receiving station (see 810.21).

6. The point of connection between nonconductive optical fiber cable entering the building and premises optical fiber cable inside the building not to exceed 50 feet from the point of entrance.

7. The Communication Service Point shall be permitted to be extended from the penetration of the external wall or floor slab by continuously enclosing the entrance cables in rigid metal conduit (RMC), Electrical metallic tubing (EMT), intermediate metal conduit (IMC), or Rigid polyvinyl chloride conduit (PVC) to the point of emergence (see 770.48, 805.48, 820.48 and 830.48).

Informational Note: The transition and connection points listed above may be co-located. For example, a primary protector may be located inside a network interface unit (item 3) with a connection to an adjacent grounding block (Item 4) within 24 inches, and a connection to the premise wiring (item 2).

Statement of Problem and Substantiation for Public Input

This public input is a follow up to work performed in the 2023 code cycle by a Task Group chartered by the chair of the NEC AAC to consider correlation issues between chapters 7 and 8. The work is being resubmitted to align with limited energy reorganization recommendations made in this code cycle through new correlating committee Task Groups.
By identifying the communications service point, analogous to the electrical service point, the domain of the communications circuits in chapter 8 become more clearly inspectable. The definition of communications circuit in chapter 8 extends service from the communications utility or service provider, which this definition would do. In civilian telecommunications, outside plant refers to all of the physical cabling and supporting infrastructure (such as conduit, cabinets, tower or poles), and any associated hardware (such as repeaters) located between a demarcation point in a switching facility and a demarcation point in another switching center or customer premises. The term “outside plant communications cable” is also used in 805.48 to distinguish cable coming from the service provider. The 50 feet references the outside plant cable entry to the premises in 770.48 and 805.48. The reference to extension of communications point references 770.48(B) and 805.48, where extension in conduit is described. The portion of this infrastructure contained within a building is the inside plant, and the portion of this infrastructure connecting buildings or facilities is the outside plant. Where these two plants meet in a given structure is the Communications service point. The distance of 50 feet permits an unlisted Outside Plant (OSP) cable to enter a building (single family home, apartment block, or commercial building) and to reach a practical transition point to the premises wiring in a cable vault, telecom closet/room, cross connect frame or cabinet, in the vicinity of the main grounding means for the building. It is desirable for this OSP segment be as short as practical. Service drop service communications cables that are Listed are permitted to extend further than 50 feet. The distance of 48 inches is derived from the recommended horizontal separation for equipment boxes on opposite sides of wall, including separation requirements from gas, communications, and power, as well as considerations of providing sufficient working space around equipment closure and for stress--relaxation and drip loops of cables. (see 800.26 IFN - “… An example is the 600 mm (24 in.) minimum horizontal separation that usually applies between boxes installed on opposite sides of the wall……)

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3336-NFPA 70-2023 [New Definition after Definition: Communications Equipment.]	related definition

Submitter Information Verification

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Submittal Date: Fri Sep 01 13:07:21 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The action taken on 800.48 adds two informational notes to 800.48 to clarify that the protector (for multipair communications cable) and the grounding block (for CATV installations) are typically communications service points. The substantiation provided in the proposed revision does not include a sufficient technical reason or identify a need for enhanced safety regarding communication service points. The concerns raised in this proposed new section have been addressed in the actions taken on 800.48.

Public Input No. 1185-NFPA 70-2023 [Section No. 800.44]

800.44 Overhead (Aerial) Wires and Cables.

Overhead (aerial) communications wires and cables, optical fiber cables, and CATV-type coaxial cables entering buildings shall comply with 800.44(A) through (D).

Informational Note: See ~~ANSI~~ C2-~~2017~~ 2023 , *National Electrical ~~Safety Code~~ Safety* Code® (NESC®) , *Part 2 Safety Rules for Overhead Lines*, for additional information regarding overhead (aerial) wires and cables.

(A) On Poles, In-Span, Above Roofs, on Masts, or Between Buildings.

If communications wires and cables, optical fiber cables, or CATV-type coaxial cables and electric light or power conductors are supported by the same pole or are run parallel to each other in-span, the conditions described in 800.44(A)(1) through (A)(4) shall be met.

(1) Relative Location.

If practicable, the communications wires and cables, optical fiber cables, and CATV- type coaxial cables shall be located below the electric light or power conductors.

(2) Attachment to Cross-Arms.

Communications wires and cables, optical fiber cables, and CATV-type coaxial cables shall not be attached to a cross-arm that carries electric light or power conductors.

(3) ~~Climbing Space~~ Spacing .

The climbing ~~space~~ spacing through wires and cables shall comply with the requirements of 225.14(B).

(4) Clearance.

Supply service drops and sets of overhead service conductors of 0 volts to 750 volts running above and parallel to communications wires and cables, optical fiber cables, and CATV-type coaxial service drops shall have a minimum separation of 300 mm (12 in.) at any point in the span, including the point of their attachment to the building, provided that the ungrounded conductors are insulated and that a clearance of not less than 1.0 m (40 in.) is maintained between the two services at the pole.

(B) Above Roofs.

Communications wires and cables, optical fiber cables, and CATV-type coaxial cables shall have a vertical clearance of not less than 2.5 m (8 ft) from all points of roofs above which they pass.

Exception No. 1: Communications wires and cables, optical fiber cables, and CATV-type coaxial cables shall not be required to have a vertical clearance of not less than 2.5 m (8 ft) above auxiliary buildings, such as garages and the like.

Exception No. 2: A reduction in clearance above only the overhanging portion of the roof to not less than 450 mm (18 in.) shall be permitted if (1) not more than 1.2 m (4 ft) of communications, optical fiber, and CATV-type service-drop conductors pass above the roof overhang and (2) they are terminated at a through- or above-the-roof raceway or approved support.

Exception No. 3: ~~Where~~ If the roof has a slope of not less than 100 mm in 300 mm (4 in. in 12 in.), a reduction in clearance to not less than 900 mm (3 ft) shall be permitted.

Informational Note: See ~~ANSI/IEEE~~ C2-~~2017~~ 2023 , *National Electrical Safety ~~Code~~* Code® (NESC®) , *Part 2, Safety Rules for Overhead Lines,* for additional information regarding overhead (aerial) wire and cables.

(C) On Masts.

Overhead (aerial) communications wires and cables, conductive optical fiber cables, and CATV-type coaxial cables shall be permitted to be attached to an above-the-roof raceway mast that does not enclose or support conductors of electric light or power circuits. Nonconductive optical fiber cables shall be permitted to be attached to an above-the -roof mast that encloses or supports conductors of electric light or power circuits.

(D) Between Buildings.

Communications cables, optical fiber cables and CATV-type coaxial cables extending between buildings or structures, and also the supports or attachment fixtures, shall be identified and shall have sufficient strength to withstand the loads to which they might be subjected.

Exception: If a communications cable, or optical fiber cable, or a CATV-type coaxial cable does not have sufficient strength to be self-supporting, it shall be attached to a supporting messenger cable that, together with the attachment fixtures or supports, shall be acceptable for the purpose and shall have sufficient strength to withstand the loads to which they may be subjected.

(E) On Buildings.

Where attached to buildings, communications wires and cables, optical fiber cables, and CATV-type coaxial cables shall be securely fastened in such a manner that they will be separated from other conductors in accordance with 800.44(E)(1) and (E)(2).

(1) Electric Light or Power.

The communications wires and cables, conductive optical fiber cables, and CATV-type coaxial cables shall have a separation of at least 100 mm (4 in.) from electric light, power, Class 1, or non-power-limited fire alarm circuit conductors not in raceway or cable, or shall be permanently separated from conductors of the other system by a continuous and firmly fixed nonconductive barrier in addition to the insulation on the wires.

(2) Other Communications Systems.

Communications wires and cables, optical fiber cables, and CATV-type coaxial cables shall be installed so that there will be no unnecessary interference in the maintenance of the separate systems. In no case shall the wires, cables, messenger strand, or equipment of one system cause abrasion to the wires, cables, messenger strand, or equipment of any other system.

Statement of Problem and Substantiation for Public Input

Multiple PIs have been submitted to include optical fiber cables in Article 800 when they are used for communications, thereby increasing the usability of Article 800.

The references to the National Electrical Safety Code have been updated.

Submitter Information Verification

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Submittal Date: Thu Jun 22 13:24:11 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7665-NFPA 70-2024

Statement: This revision is one of many that complete the inclusion of optical fiber cable in Article 800 that was started two codes cycles ago.

In order to provide consistent terminology throughout the section, the term “supply service drops” was changed to “electric light or power conductors”. “Electric light or power conductors” is the term used in the lead in sentence for 800.44.

Public Input No. 2487-NFPA 70-2023 [Section No. 800.44(A)(4)]

(4) Clearance.

~~Supply service~~ Service drops and ~~sets of~~ overhead service conductors of 0 volts to 750 volts running above and parallel to communications wires and cables and CATV-type coaxial service drops shall have a minimum separation of 300 mm (12 in.) at ~~any point~~ all points in the span, including the point of their attachment to the building~~, provided that the ungrounded conductors are insulated and that a clearance of not less than 1~~ .~~0 m (40 in.) is maintained between the two services at the pole.~~

Statement of Problem and Substantiation for Public Input

There are a couple of editorial revisions suggested, such as deleting the word "supply." As currently constructed, this sentence appears to only apply if the clearance at the pole is at least 40" and if the power conductors are insulated. Which means there is NO clearance if the conductors are not insulated, and there is no clearance if there is less than 40 " seperation at the pole. If the intent of this section is to require the 40" seperation, then the rules needs to be rewritten. I'm not certain what the intent truly is, so I'm afraid I have no suggestion on how to fix it other than to simply point it out to CMP 16.

Submitter Information Verification

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Submittal Date: Fri Aug 18 12:19:44 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: This revision has not been adopted since the action taken on 800.44(A)(4) does not use the term “Supply service drop.”

Public Input No. 416-NFPA 70-2023 [Section No. 800.44(A)(4)]

(4) Clearance.

Supply ~~service drops~~ utility drops and sets of overhead service conductors of 0 volts to 750 volts running above and parallel to communications wires and cables and CATV-type coaxial ~~service drops~~ utility drops shall have a minimum separation of 300 mm (12 in.) at any point in the span, including the point of their attachment to the building, provided that the ungrounded conductors are insulated and that a clearance of not less than 1.0 m (40 in.) is maintained between the two services at the pole.

Statement of Problem and Substantiation for Public Input

This PI is associated with several other PIs to recommend a global change from “service drop” to “utility drop” and from “service lateral” to “utility lateral.” “Service drop” appears 23 times in the Code and “service lateral” appears 15 times. There are 11 definitions that begin with the word ‘service.’ Of these, 9 are customer owned and only “service drop” and “service lateral” are utility owned and, therefore, outside the scope of the Code. “service drops” and “service laterals” are not service conductors as they do not fit the definition. Confining the word “service” to only those items that are customer owned would clear up much confusion on this topic. Appendix A shows UL 523 as having the title “telephone service drop wire” and the UL standard does, in fact, have that title. However, the text of UL 523 defines this wire as customer owned and Article 805 refers to this wire as a “drop wire.”

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 411-NFPA 70-2023 [Section No. 90.2(D)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 412-NFPA 70-2023 [Definition: Service Drop.]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 413-NFPA 70-2023 [Definition: Service-Entrance Conductors.]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 414-NFPA 70-2023 [Definition: Distribution Point (Center Yard Pole) (Meter Po...]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 415-NFPA 70-2023 [Definition: Service Lateral.]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 417-NFPA 70-2023 [Section No. 700.12(F)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 418-NFPA 70-2023 [Section No. 701.12(F)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 419-NFPA 70-2023 [Section No. 770.44(A)(4)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 420-NFPA 70-2023 [Section No. 770.44(B)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 421-NFPA 70-2023 [Section No. 230.24(A)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 422-NFPA 70-2023 [Section No. 230.40]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 423-NFPA 70-2023 [Section No.	Global change from 'service drop' to 'utility

250.24(A)(1)]	drop' and 'service lateral' to 'utility lateral'
Public Input No. 424-NFPA 70-2023 [Section No. 250.24(F)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 425-NFPA 70-2023 [Section No. 250.64(D)(1)]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 426-NFPA 70-2023 [Section No. 250.66 [Excluding any Sub-Sections]]	Global change from 'service drop' to 'utility drop' and 'service lateral' to 'utility lateral'
Public Input No. 411-NFPA 70-2023 [Section No. 90.2(D)]	
Public Input No. 412-NFPA 70-2023 [Definition: Service Drop.]	
Public Input No. 413-NFPA 70-2023 [Definition: Service-Entrance Conductors.]	
Public Input No. 414-NFPA 70-2023 [Definition: Distribution Point (Center Yard Pole) (Meter Po...]	
Public Input No. 415-NFPA 70-2023 [Definition: Service Lateral.]	
Public Input No. 417-NFPA 70-2023 [Section No. 700.12(F)]	
Public Input No. 418-NFPA 70-2023 [Section No. 701.12(F)]	
Public Input No. 419-NFPA 70-2023 [Section No. 770.44(A)(4)]	
Public Input No. 420-NFPA 70-2023 [Section No. 770.44(B)]	
Public Input No. 421-NFPA 70-2023 [Section No. 230.24(A)]	
Public Input No. 422-NFPA 70-2023 [Section No. 230.40]	
Public Input No. 423-NFPA 70-2023 [Section No. 250.24(A)(1)]	
Public Input No. 424-NFPA 70-2023 [Section No. 250.24(F)]	
Public Input No. 425-NFPA 70-2023 [Section No. 250.64(D)(1)]	
Public Input No. 426-NFPA 70-2023 [Section No. 250.66 [Excluding any Sub-Sections]]	

Submitter Information Verification

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Submittal Date: Sat Mar 04 16:35:21 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: This revision has not been adopted since the action taken on 800.44(A)(4) does not use the term “Supply service drop.”

Public Input No. 1186-NFPA 70-2023 [Section No. 800.47]

800.47 Underground Systems Entering Buildings.

Underground communications wires and cables, optical fiber cables, CATV-type coaxial cables, and network-powered broadband communications cables entering buildings shall comply with 800.47(A) and (B). ~~The requirements of 310.10(C) shall not apply to communications wires and cables and CATV-type coaxial cables.~~

(A) Underground Systems with Electric Light, Power, Class 1, or Non-Power-Limited Fire Alarm Circuit Conductors.

Underground communications wires and cables, conductive optical fiber cables, CATV-type coaxial cables, and network-powered broadband communications cables in a raceway, pedestal, handhole enclosure, or manhole containing electric light, power, Class 1, or non-power-limited fire alarm circuit conductors shall be in a section separated from such conductors by means of brick, concrete, or tile partitions or by means of a suitable barrier.

(B) Direct-Buried Cables and Raceways.

Direct-buried communications wires and cables, conductive optical fiber cables, CATV-type coaxial cables, and network-powered broadband communications cables shall be separated at least 300 mm (12 in.) from conductors of any light or power, non-power-limited fire alarm circuit conductors, or Class 1 circuit.

Exception No. 1: Separation shall not be required if electric service conductors or all the direct-buried communications wires and cables, conductive optical fiber cables, CATV-type coaxial cables, and network-powered broadband communications cables are installed in raceways or have metal cable armor.

Exception No. 2: Separation shall not be required under one of the following conditions:

(1) If the electric light or power branch-circuit or feeder conductors or Class 1 circuit conductors are installed in a raceway or in metal-sheathed, metal-clad, or Type UF or Type USE cables

(2) If all the direct-buried communications wires cables, CATV-type coaxial cables, and network-powered broadband communications cables have metal cable armor or are installed in raceway

Statement of Problem and Substantiation for Public Input

Multiple PIs have been submitted to include optical fiber cables in Article 800 when they are used for communications, thereby increasing the usability of Article 800.

The reference to 310.10(C) was deleted because it refers to text in an earlier edition of the Code that has been deleted.

Submitter Information Verification

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Zip:
Submittal Date: Thu Jun 22 13:41:00 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7674-NFPA 70-2024
Statement: This revision is one of many that complete the inclusion of optical fiber cable in Article 800. The reference to 310.10(C) has not been deleted since it is a current section in the code.

Public Input No. 1131-NFPA 70-2023 [Section No. 800.48]

800.48 Unlisted Cables Entering Buildings.

Unlisted outside plant communications cables ~~and~~ , unlisted outside plant CATV-type coaxial cables and unlisted conductive and nonconductive optical fiber cables, shall be permitted to be installed in building spaces other than risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air if all of the following applies:

(1) The length of the cable within the building, measured from its point of entrance, does not exceed 15 m (50 ft).

(2) The cable enters the building from the outside.

(3) The unlisted outside plant communications cable is terminated in an enclosure or on a listed primary protector~~, or the~~ .

(4) The unlisted outside plant CATV type coaxial cable is terminated at a grounding block.

(5) The unlisted conductive or nonconductive optical fiber cable is terminated in and enclosure.

The point of entrance of the unlisted outside plant communications cables, unlisted outside plant CATV-type coaxial cables, and unlisted outside plant conductive and nonconductive optical fiber cables, shall be permitted to be extended from the penetration of the external wall, roof, or floor slab by continuously enclosing the entrance cables in rigid metal conduit (RMC) or intermediate metal conduit (IMC) to the point of emergence.

The point of entrance of unlisted nonconductive optical fiber cables shall be permitted to be extended from the penetration of the external wall, roof, or floor slab by continuously enclosing the cables in rigid polyvinyl chloride conduit (PVC), or electrical metallic tubing (EMT), in spaces other than risers, ducts used for environmental air, plenums used for environmental air, and other spaces used for environmental air.

Informational Note No. 1: Splice cases or terminal boxes, both metallic and plastic types, are typically used as enclosures for splicing or terminating communications cables and optical fiber cables .

Informational Note No. 2: This section limits the length of unlisted outside plant communications cable to 15 m (50 ft) from the point of entrance, while 805.90(B) requires that the primary protector be located as close as practicable to the point of entrance of the cable. Therefore, in installations requiring a primary protector, the outside plant communications cable may not extend 15 m (50 ft) into the building if it is practicable to place the primary protector closer to the point of entrance.

Statement of Problem and Substantiation for Public Input

There are only three types of unlisted outside plant cables used as entrance cables in communications installations, communications cables, CATV-type coaxial cables, and optical fiber cables. Section 800.48 already covers the installation requirements for unlisted outside plant communications cables and unlisted outside plant CATV-type coaxial cables. The text of his Public Comment enhances usability by bringing into 800.48 the requirements for installing unlisted outside plant optical fiber cables, thereby having the installation requirements for all unlisted entrance cables in one section. The recommended text requirements for optical fiber cables correlate with 770.48.

The word “communications” was added to Informational Note No. 2 for clarity, since that Informational Note only applies to communications cables.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2561-NFPA 70-2023 [Section No. 770.48]	Deletes 770.48
Public Input No. 2561-NFPA 70-2023 [Section No. 770.48]	

Submitter Information Verification

Submitter Full Name: Leslie Jutte
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Submittal Date: Mon Jun 19 15:19:25 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7678-NFPA 70-2024

Statement: There are only three types of unlisted outside plant cables used as entrance cables in communications installations, communications cables, CATV-type coaxial cables, and optical fiber cables. Section 800.48 already covers the installation requirements for unlisted outside plant communications cables and unlisted outside plant CATV-type coaxial cables. This revision enhances usability by bringing into 800.48 the requirements for installing unlisted outside plant optical fiber cables, thereby having the installation requirements for all unlisted entrance cables in one section. The recommended text requirements for optical fiber cables correlate with 770.48. The word “communications” was added to Informational Note No. 2 for clarity, since that Informational Note only applies to communications cables.

The text has been revised to clarify that “continuously enclosing” a cable in a raceway is “without the use of pull or junction boxes”.

Informational notes 3 and 4 have been added to 800.48 to clarify that the protector (for multipair communications cable) and the grounding block (for CATV installations) are typically communications service points.

Public Input No. 3340-NFPA 70-2023 [Section No. 800.49]

~~**800.49** Metal Entrance Conduit Grounding.~~

~~Metal conduit containing entrance wire or cable shall be connected by a bonding conductor or grounding electrode conductor to a grounding electrode or, where present, the building grounding electrode system in accordance with 800.100(B) .~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3341-NFPA 70-2023 [Sections 800.100, 800.106]	
Public Input No. 3344-NFPA 70-2023 [Section No. 805.50(C)(3)]	
Public Input No. 3346-NFPA 70-2023 [Section No. 805.170]	

Submitter Information Verification

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Zip:
Submittal Date: Fri Sep 01 13:50:41 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The text from Article 800.49 is not just relocated but modified and revised when moved to X50.42 and X50.48 in the proposed new Article X50 under PI 3333. There is no technical justification supplied for the removal of reference to 800.100 (or X50.100 in proposed new article).

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

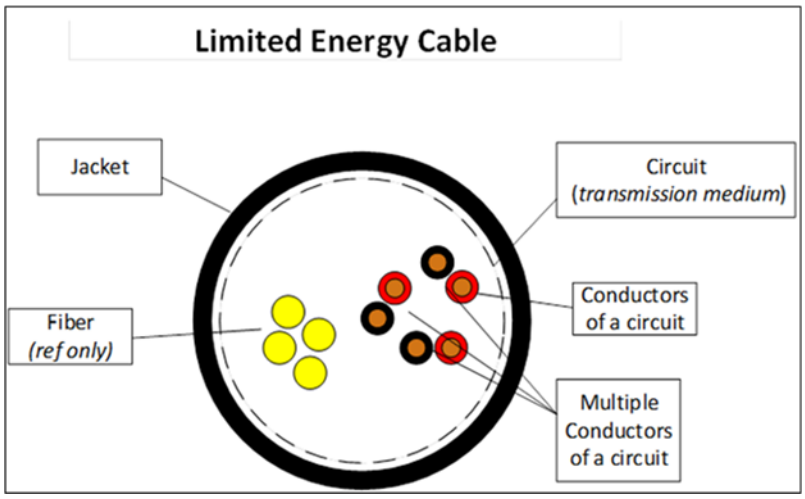
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

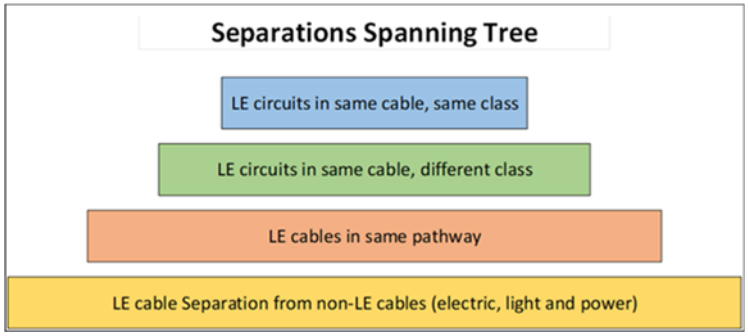
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 1187-NFPA 70-2023 [New Section after 800.53]

800.93 Grounding, Bonding, or Interruption of Non–Current-Carrying Metallic Sheath Members of Communications Cables and Conductive Optical Fiber Cables.

Installations of communications cables and entering the building or terminating on the outside of the building shall comply with 800.93(A) or (B).

800.93(A) Entering Buildings. In installations where the communications cable or conductive optical fiber cable enters a building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of entrance.

800.93(B) Terminating on the Outside of Buildings. In installations where the communications cable or conductive optical fiber cable is terminated on the outside of the building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of termination of the cable.

Statement of Problem and Substantiation for Public Input

This new section 800.93 combines 770.93 and 805.93 in the general article thereby improving usability.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1188-NFPA 70-2023 [Section No. 805.93]	Deletes requirements from Article 805
Public Input No. 1188-NFPA 70-2023 [Section No. 805.93]	

Submitter Information Verification

Submitter Full Name: Leslie Jutte
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Submittal Date: Thu Jun 22 13:52:49 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7700-NFPA 70-2024
Statement: This revision establishes a new Section 800.93 Grounding, Bonding or Interruption of Metallic Members of Cables and incorporates the common requirements of 805.93, 820.93, and 830.93.

Public Input No. 1542-NFPA 70-2023 [Section No. 800.53]

800.53 Separation from Lightning Conductors.

Where practicable on buildings, a separation of at least 1.8 m (6 ft) shall be maintained between lightning protection conductors and all communications wires and cables, conductive optical fiber cables, and CATV-type coaxial cables.

Informational Note No. 1: See ~~ANSI~~ C2- ~~2017~~ 2023, National Electrical Safety ~~Code~~ Code® (NESC®), *Part 2, Safety Rules for Overhead Lines*, for additional information regarding overhead (aerial) wires and cables.

Informational Note No. 2: See NFPA 780~~-2020~~, *Standard for the Installation of Lightning Protection Systems*, for information on calculation of separation distances using the sideflash equation.

Statement of Problem and Substantiation for Public Input

Multiple PIs have been submitted to include optical fiber cables in Article 800 when they are used for communications, thereby increasing the usability of Article 800.

The reference to the National Electrical Safety Code has been updated.

The edition date for NFPA 780A has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

Submitter Information Verification

Submitter Full Name: Leslie Jutte
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Submittal Date: Tue Jul 25 07:16:06 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7677-NFPA 70-2024
Statement: This revision incorporates optical fiber cable in Article 800 to enhance usability of the code.

The reference to the National Electrical Safety Code has been updated. The edition date for NFPA 780A has been updated.

Public Input No. 3341-NFPA 70-2023 [Sections 800.100, 800.106]

~~**Sections 800.100, 800.106**~~

~~**800.100** Cable and Primary Protector Bonding and Grounding.~~

~~**(A)** Bonding Conductor or Grounding Electrode Conductor.~~

~~**(1)** Insulation.~~

~~The bonding conductor or grounding electrode conductor shall be listed and shall be permitted to be insulated, covered, or bare.~~

~~**(2)** Material.~~

~~The bonding conductor or grounding electrode conductor shall be copper or other corrosion-resistant conductive material, stranded or solid.~~

~~**(3)** Size.~~

~~The bonding conductor or grounding electrode conductor shall not be smaller than 14 AWG. The bonding conductor or grounding electrode conductor shall have a current-carrying capacity not less than the aggregate of the grounded metal cable sheath member, the metal strength member(s), and the protected conductor(s) of the communications cable, or the outer sheath of the coaxial cable, as applicable. The bonding conductor or grounding electrode conductor shall not be required to exceed 6 AWG.~~

~~**(4)** Length.~~

~~The bonding conductor or grounding electrode conductor shall be as short as practicable. In one- and two-family dwellings, the bonding conductor or grounding electrode conductor shall be as short as practicable, not to exceed 6.0 m (20 ft) in length.~~

> ~~Informational Note: Similar bonding conductor or grounding electrode conductor length limitations applied at apartment buildings and commercial buildings help to reduce voltages that may be developed between the building's power and communications systems during lightning events. See ANSI/TIA-607-D-2019, *Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises,* which includes useful information to reduce such voltages.~~

~~*Exception: In one- and two-family dwellings if it is not practicable to achieve an overall maximum bonding conductor or grounding electrode conductor length of 6.0 m (20 ft), a separate ground rod meeting the minimum dimensional criteria of 800.100(B)(3) (2) or (B)(3) (3) shall be driven, the bonding conductor or grounding electrode conductor shall be connected to the ground rod in accordance with 800.100(C) , and the ground rod shall be connected to the power grounding electrode system in accordance with 800.100(D) .*~~

~~**(5)** Run in Straight Line.~~

~~The bonding conductor or grounding electrode conductor shall be run in as straight a line as practicable.~~

~~**(6)** Physical Protection.~~

~~Bonding conductors and grounding electrode conductors shall be protected where exposed to physical damage. If the bonding conductor or grounding electrode conductor is installed in a metal raceway, both ends of the raceway shall be bonded to the contained conductor or to the same terminal or electrode to which the bonding conductor or grounding electrode conductor is connected.~~

~~**(B)** Electrode.~~

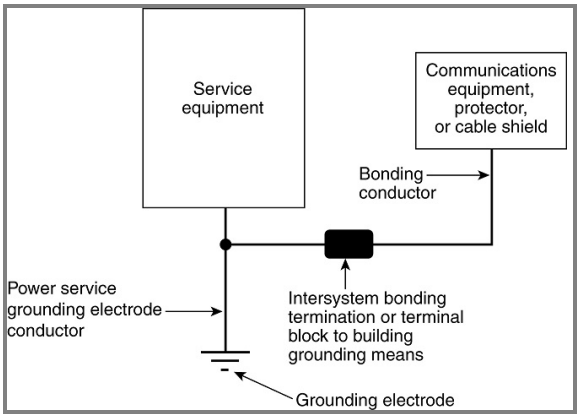
~~The bonding conductor or grounding electrode conductor shall be connected in accordance with 800.100(B)(1) , (B)(2), or (B)(3).~~

(1) In Buildings or Structures with an Intersystem Bonding Termination.

If the building or structure served has an intersystem bonding termination as required by 250.94 , the bonding conductor shall be connected to the intersystem bonding termination.

Informational Note: Informational Note Figure 800.100(B)(1) illustrates the connection of the bonding conductor in buildings or structures equipped with an intersystem bonding termination or a terminal block providing access to the building grounding means.

Figure Informational Note Figure 800.100(B)(1) Illustration of a Bonding Conductor in a Communications Installation Equipped With an Intersystem Bonding Termination or Terminal Block Providing Access To the Building Grounding Means.



(2) In Buildings or Structures with Grounding Means.

If an intersystem bonding termination is established, 250.94(A) shall apply. If the building or structure served has no intersystem bonding termination, the bonding conductor or grounding electrode conductor shall be connected to the nearest accessible location on one of the following:

(1) The building or structure grounding electrode system as covered in 250.50

(2) The power service accessible means external to enclosures using the options identified in 250.94(A) , Exception

(3) The nonflexible metal power service raceway

(4) The service equipment enclosure

(5) The grounding electrode conductor or the grounding electrode conductor metal enclosure of the power service

(6) The grounding electrode conductor or the grounding electrode of a building or structure disconnecting means that is connected to a grounding electrode as covered in 250.32

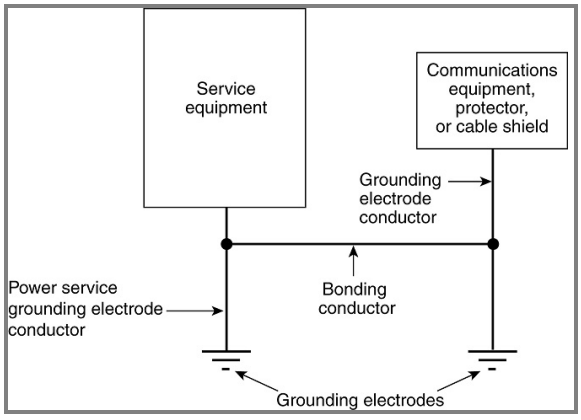
(7) The grounded interior metal water piping system, within 1.5 m (5 ft) from its point of entrance to the building, as covered in 250.52

A bonding device intended to provide a termination point for the bonding conductor (intersystem bonding) shall not interfere with the opening of an equipment enclosure. A bonding device shall be mounted on nonremovable parts. A bonding device shall not be mounted on a door or cover even if the door or cover is nonremovable.

For purposes of this section, the mobile home service equipment or the mobile home disconnecting means located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means connected to an electrode by a grounding electrode conductor in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.

Informational Note: See Informational Note Figure 800.100(B)(2) for an illustration of a grounding electrode conductor and a bonding conductor in a communications installation not equipped with an intersystem bonding termination or terminal block.

Figure Informational Note Figure 800.100(B)(2) Illustration of a Grounding Electrode Conductor and a Bonding Conductor in a Communications Installation Not Equipped with an Intersystem Bonding Termination or Terminal Block Providing Access to the Building Grounding Means.



(3) In Buildings or Structures Without an Intersystem Bonding Termination or Grounding Means.

If the building or structure served has no intersystem bonding termination or grounding means, as described in 800.100(B)(2), the grounding electrode conductor shall be connected to one of the following:

(1) To any one of the individual grounding electrodes described in 250.52(A)(1), (A)(2), (A)(3), or (A)(4)

(2) If the building or structure served has no intersystem bonding termination or grounding means, as described in 800.100(B)(2) or (B)(3)(1), to any one of the individual grounding electrodes described in 250.52(A)(5), (A)(7), and (A)(8)

(3) For communications circuits covered in Article 805 or network-powered broadband communications systems covered in Article 830, to a ground rod or pipe not less than 1.5 m (5 ft) in length and 12.7 mm (0.5 in.) in diameter, driven, where practicable, into permanently damp earth and separated from lightning protection system conductors, as covered in 800.53, and at least 1.8 m (6 ft) from electrodes of other systems

Steam pipes, hot water pipes, or lightning protection system conductors shall not be employed as grounding electrodes or as a bonding or grounding electrode conductor for protectors and grounded metal members.

(C) Electrode Connection.

Connections to grounding electrodes shall comply with 250.70.

(D) Bonding of Electrodes.

A bonding jumper not smaller than 6 AWG copper or equivalent shall be connected between the grounding electrode and power grounding electrode system at the building or structure served if separate electrodes are used.

Exception: *Bonding of electrodes at mobile homes shall be in accordance with* *800.106*.

Informational Note No. 1: See 250.60 for connection to a lightning protection system.

Informational Note No. 2: Bonding together of all separate electrodes limits potential differences between them and between their associated wiring systems.

800.106 Primary Protector Grounding and Bonding at Mobile Homes.

(A) Grounding.

Grounding shall comply with 800.106(A)(1) and (A)(2).

(1) Mobile Home Service Equipment.

Where there is no mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, grounding shall comply with one of the following:

(1) The following components (if present) shall be connected to a grounding electrode in accordance with 800.100(B)(3) :

(2) Primary protector grounding terminal

(3) Network interface unit

(4) Coaxial cable shield ground

(5) Surge arrester grounding terminal

(6) Network-powered broadband communications cable shield

(7) Network-powered broadband communications cable metal members not used for communications or powering

(8) The non-current-carrying metal members of optical fiber cables shall be connected to a grounding electrode in accordance with 770.106(A)(1) . The network terminal, if required to be grounded, shall be connected to a grounding electrode in accordance with 800.106(A)(1)(1) . The grounding electrode shall be bonded in accordance with 770.106(B) .

(2) Mobile Home Feeder Disconnecting Means.

Where there is no mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, grounding shall comply with one of the following:

(1) The following components (if present) shall be connected to a grounding electrode in accordance with 800.100(B)(3) :

(2) Primary protector grounding terminal

(3) Network interface unit

(4) Network-powered broadband communications shield

(5) Network-powered broadband communications cable metal members not used for communications or powering

(6) The non-current-carrying metal members of optical fiber cables shall be connected to a grounding electrode in accordance with 770.106(A)(2) . The network terminal, if required to be grounded, shall be connected to a grounding electrode in accordance with 800.106(A)(2) . The grounding electrode shall be bonded in accordance with 770.106(B) .

~~**(B)** Bonding.~~

~~The primary protector grounding terminal or grounding electrode, network-powered broadband communications cable grounding terminal, or network interface unit grounding terminal shall be bonded together and connected to the metal frame or available grounding terminal of the mobile home with a copper conductor not smaller than 12 AWG under either of the following conditions:~~

(1) ~~If there is no mobile home service equipment or disconnecting means as in 800.106(A)~~

(2) ~~If the mobile home is supplied by cord and plug~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3340-NFPA 70-2023 [Section No. 800.49]	
Public Input No. 3342-NFPA 70-2023 [Section No. 800.180]	

Submitter Information Verification

Submitter Full Name: Derrick Atkins
Organization: Minneapolis Electrical JATC
Street Address:
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Submittal Date: Fri Sep 01 13:56:09 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity and ease-of-use it is more appropriate to have as many requirements as practical for communications systems explicitly in one article such as 800. The relocated text in the proposed X00 does not address the proposed revisions of PI 1189, PI200, PI4069, PI 1991, and PI 992, which were submitted to modify 800.100 and 800.106. This would result in conflicts between the new X50 Article and possible First Draft actions on these PIs.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

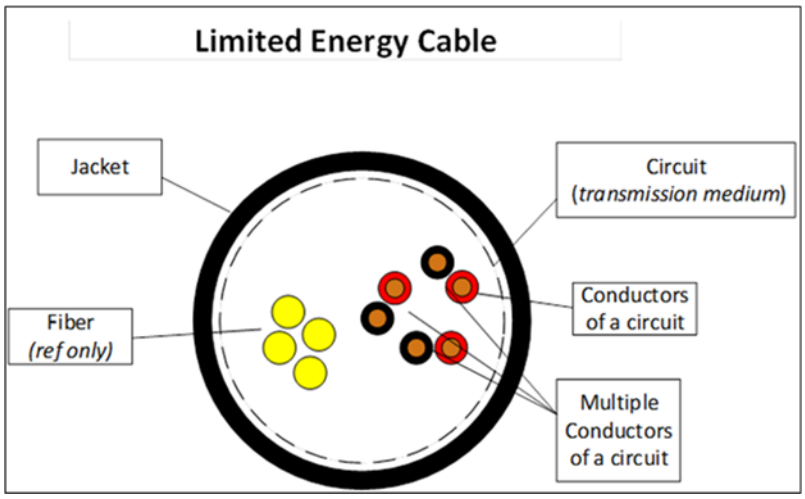
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
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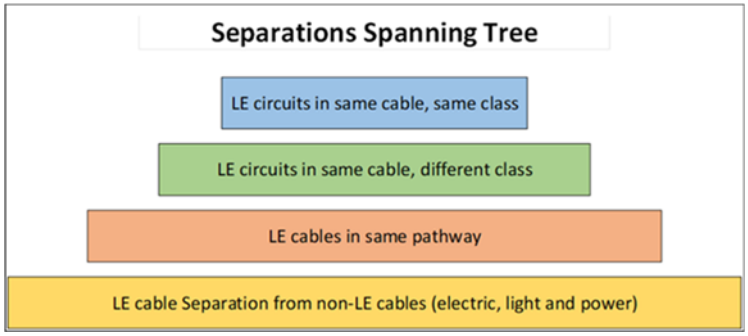
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 1189-NFPA 70-2023 [Section No. 800.100(A)(3)]

(3) Size.

The bonding conductor or grounding electrode conductor shall not be smaller than 14 AWG. The bonding conductor or grounding electrode conductor shall have a current-carrying capacity not less than the aggregate of the grounded metal cable sheath member, the metal strength member(s), and the protected conductor(s) of the communications cable, conductive optical fiber cable, or the outer sheath of the coaxial cable, as applicable. The bonding conductor or grounding electrode conductor shall not be required to exceed 6 AWG.

Statement of Problem and Substantiation for Public Input

Optical fiber cables are included to improve usability.

Submitter Information Verification

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Submittal Date: Thu Jun 22 14:04:58 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7709-NFPA 70-2024
Statement: This revision adds conductive optical fiber cable to the requirements. This aligns with the consolidation efforts of moving communications applications of optical fiber requirements into Article 800.

Public Input No. 200-NFPA 70-2023 [New Section after 800.100(D)]

(E) Grounding Devices.

If bonding or grounding is required, devices used to connect a shield, a sheath, or non–current-carrying metallic members of a cable to a bonding conductor or grounding electrode conductor shall be listed or be part of listed equipment.

Statement of Problem and Substantiation for Public Input

Section 800.180 Grounding Devices in Part V Listing Requirements, requires that the grounding device be a listed device or be part of listed equipment. This requirement is not actually a listing requirement but an installation requirement that belongs in Part III, Ground Methods.

We have submitted two PIs to improve the usability of the code by moving the text of 800.180 to (new) 800.100(E). Two PIs are needed, one the delete 800.180 and another to create 800.100(E).

“Where bonding or grounding is required” was changed to “If bonding or grounding is required” to comply with NEC Style Manual section 3.5.4 Word Clarity.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 193-NFPA 70-2023 [New Section after 770.100(D)]	creates new section 770.100(E)
Public Input No. 194-NFPA 70-2023 [Section No. 770.180]	deletes 770.180
Public Input No. 201-NFPA 70-2023 [Section No. 800.180]	creates new section 800.100(E)
Public Input No. 201-NFPA 70-2023 [Section No. 800.180]	

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Submittal Date: Fri Jan 20 06:46:35 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7712-NFPA 70-2024
Statement: Section 800.180 for Grounding Devices in Part V Listing requirements, requires that the grounding device be a listed device or be part of listed equipment. This requirement is

not a listing requirement, but an installation requirement and has therefore been moved to Part III, Grounding Methods.

Public Input No. 4069-NFPA 70-2023 [New Section after 800.106]

800.108 Grounding and Bonding of Communication Cables Within Buildings.

The shields of cables used for communications installed in buildings shall be bonded to a grounded equipment rack or enclosure, or grounded in accordance with the grounding methods specified in 800.100(B) using a conductor specified in 800.100(A).

Statement of Problem and Substantiation for Public Input

This public input provides requirements to allow methods of bonding or grounding of communications cables which will not alter the equipotential layer of the communication cable or otherwise impede the cable from performing as intended.
The need for these requirements is to address compliance issues introduced with the addition of Article 800.3(H).
This text parallels text found in 770.114, as the NEC Style manual Section 3.3.5 encourages parallel language for clarity.
However, as this proposed text is specific to grounding methods and references Article 800.100 found in Part III: Grounding Methods, the proposed section number places this new text within Part III. This number was also chosen as it is an unused Article number both within Articles 800-840 inclusively, as well as Article 770 to allow for parallelism to be created in other PIs during this period

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 4071-NFPA 70-2023 [Section No. 800.3(H)]	
Public Input No. 4072-NFPA 70-2023 [New Section after 770.106]	

Submitter Information Verification

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Submittal Date: Wed Sep 06 15:35:29 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7663-NFPA 70-2024

Statement: This revision creates a new Section 800.108 within the appropriate Part III (Grounding Methods) of the general Article 800 covering the common grounding and bonding requirements for non-current-carrying conductive members and shields of communications cables within buildings. This continues the consolidation of general rules for communications cables in Article 800.

The creation this new 800.108 covering communications cables enables the deletion the

now redundant reference to Article 770 within 800.3(H).

Public Input No. 1991-NFPA 70-2023 [Section No. 800.106(A)(1)]

(1) Mobile Home Service Equipment.

~~Where~~ If there is no mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, grounding shall comply with one of the following:

(1) The following components (if present) shall be connected to a grounding electrode in accordance with 800.100(B)(3):

(2) Primary protector grounding terminal

(3) Network interface unit or network terminal

(4) Coaxial cable shield ground

(5) Surge arrester grounding terminal

(6) Network-powered broadband communications cable shield

(7) Network-powered broadband communications cable metal members not used for communications or powering

~~The non~~

(8)

a. Non -current-carrying metal members of conductive optical fiber cables

~~shall be connected to a grounding electrode in accordance with 770.106(A)(1) . The network terminal, if required to be grounded, shall be connected to a grounding electrode in accordance with 800.106(A)(1)(1) . The grounding electrode shall be bonded in accordance with 770.106(B) .~~

(9)

a.

Statement of Problem and Substantiation for Public Input

Multiple PIs have been submitted to include optical fiber cables in Article 800 when they are used for communications, thereby increasing the usability of Article 800. To coordinate with those PIs, the recommended text deletes reference to Article 770 and includes grounding of conductive optical fiber cables in 800.106(A)(1) as new subsection “g”.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1992-NFPA 70-2023 [Section No. 800.106(A)(2)]	Companion PI
Public Input No. 1992-NFPA 70-2023 [Section No. 800.106(A)(2)]	

Submitter Information Verification

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Submittal Date: Thu Aug 10 10:07:16 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7956-NFPA 70-2024

Statement: Several actions have been made to include optical fiber cables in Article 800 when they are used for communications, thereby increasing the usability of Article 800. This revision aligns this effort by removing the reference to article 770. Additionally, an editorial change was made to align with the NEC style manual.

Public Input No. 1992-NFPA 70-2023 [Section No. 800.106(A)(2)]

(2) Mobile Home Feeder Disconnecting Means.

~~Where~~ If there is no mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, grounding shall comply with one of the following:

(1) The following components (if present) shall be connected to a grounding electrode in accordance with 800.100(B)(3):

(2) Primary protector grounding terminal

(3) Network interface unit or network terminal

(4) Network-powered broadband communications shield

(5) Network-powered broadband communications cable metal members not used for communications or powering

~~The non~~

(6)

a. Non -current-carrying metal members of conductive optical

~~fiber 770~~

(7)

a. cables

~~shall be connected to a grounding electrode in accordance with~~

(8)

a. .

~~106(A)(2). The network terminal, if required to be grounded, shall be connected to a grounding electrode in accordance with 800.106(A)(2) . The grounding electrode shall be bonded in accordance with 770.106(B) .~~

(9)

a.

Statement of Problem and Substantiation for Public Input

Multiple PIs have been submitted to include optical fiber cables in Article 800 when they are used for communications, thereby increasing the usability of Article 800. To coordinate with those PIs, the recommended text deletes reference to Article 770 and includes grounding of conductive optical fiber cables in 800.106(A)(1) as new subsection “e”.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1991-NFPA 70-2023 [Section No. 800.106(A)(1)]	Companion PI
Public Input No. 1991-NFPA 70-2023 [Section No. 800.106(A)(1)]	

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Submittal Date: Thu Aug 10 10:21:05 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7956-NFPA 70-2024
Statement: Several actions have been made to include optical fiber cables in Article 800 when they are used for communications, thereby increasing the usability of Article 800. This revision aligns this effort by removing the reference to article 770. Additionally, an editorial change was made to align with the NEC style manual.

Public Input No. 1006-NFPA 70-2023 [New Section after 800.113]

800.114 Grounding. The shields of cables used for communications installed in buildings shall be bonded to a grounded equipment rack or enclosure, or grounded in accordance with the grounding methods specified in 800.100(B) using a conductor specified in 800.100(A).

Statement of Problem and Substantiation for Public Input

The requirement to bond or ground a communications cable shield was added to the 2023 NEC "because shields could become energized and thereby pose a fire or shock hazard". However, placing the shield bonding or grounding requirement in Part I, General of Article 800 was problematical because section 805.93 requires bonding, grounding or interruption of the shields of entrance cables. In order to remove this inconsistency, the requirement for grounding and bonding of communications cable shields of cables installed in buildings (not entrance cables) needs to be moved from Part I of Article 800 to Part IV, Installation Methods Within Buildings.

The recommended text for new section 800.114 is parallel to the text for 770.114 which states: 770.114 Grounding. Non-current-carrying conductive members of optical fiber cables shall be bonded to a grounded equipment rack or enclosure, or grounded in accordance with the grounding methods specified by 770.100(B) using a conductor specified in 770.100(A).

The NEC Style manual Section 3.3.5 encourages parallel language for clarity. The recommended text for (new) 800.114 improves usability by eliminating a reference to Article 250 and instead refers to the identical requirements with the Article, just as 770.114 does.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1007-NFPA 70-2023 [Section No. 800.3(H)]	

Submitter Information Verification

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Submittal Date: Sat Jun 10 09:22:34 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7663-NFPA 70-2024

Statement: This revision creates a new Section 800.108 within the appropriate Part III (Grounding Methods) of the general Article 800 covering the common grounding and bonding requirements for non-current-carrying conductive members and shields of communications cables within buildings. This continues the consolidation of general rules for communications cables in Article 800.

The creation this new 800.108 covering communications cables enables the deletion the now redundant reference to Article 770 within 800.3(H).

Public Input No. 1180-NFPA 70-2023 [Section No. 800.113(B)(1)]

(1) Uses Permitted.

The following cables shall be permitted in ducts specifically fabricated for environmental air as described in 300.22(B) if they are directly associated with the air distribution system:

(1) Plenum cables up to 1.22 m (4 ft) in length

(2) Plenum, ~~rise~~ riser , general-purpose, and limited-use cables installed in raceways that are installed in compliance with 300.22(B)

Statement of Problem and Substantiation for Public Input

Typo corrected.

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Submittal Date: Thu Jun 22 10:02:11 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7743-NFPA 70-2024
Statement: Revised text to correct a typo.

Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]

(2) Uses Not Permitted.

The following cables, wires, cable routing assemblies, and communications raceways shall not be permitted in ducts specifically fabricated for environmental air as described in 300.22(B):

(1) Plenum, riser, and general-purpose communications raceways

(2) Plenum, riser, and general-purpose cable routing assemblies

(3) Riser, general-purpose, and limited-use cables

(4) Type CMUC cables and wires

(5) Types BMU and BLU cables

(6) Communications wires

(7) Hybrid power and communications cables

Informational Note: See NFPA 90A ~~-2021~~ , *Standard for the Installation of Air-Conditioning and Ventilating Systems*, Chapter 10, Electrical and Optical Fiber Wiring and Equipment in Plenums and Ducts for information on fire protection of wiring installed in fabricated ducts.

Statement of Problem and Substantiation for Public Input

The edition date for NFPA 90A has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

The current edition of NFPA 90A, the 2024 edition, has been significantly reorganized. In previous editions, electrical requirements for installation in ducts and plenums were in Chapter 4, HVAC Systems. The 2024 edition has a new Chapter 10, Electrical and Optical Fiber Wiring and Equipment in Plenums and Ducts. Consequently, Informational Notes referencing electrical requirements in NFPA 90A need to be revised.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	Revise NFPA 90A reference
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	Revise NFPA 90A reference
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	Revise NFPA 90A reference
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	Revise NFPA 90A reference
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	Revise NFPA 90A reference
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]	Revise NFPA 90A reference
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]	Revise NFPA 90A reference
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]	Revise NFPA 90A reference
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	

Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]

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Submittal Date: Wed Jan 04 11:09:24 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7747-NFPA 70-2024
Statement: Revised informational note to align with the NEC style manual and added a reference to NFPA 90A, Chapter 10 for user clarity.

Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]

(2) Uses Not Permitted.

The following cables, wires, cable routing assemblies, and communications raceways shall not be permitted in other spaces used for environmental air as described in 300.22(C):

(1) Riser, general-purpose, and limited-use cables

(2) Riser and general-purpose communications raceways

(3) Riser and general-purpose cable routing assemblies

(4) Type CMUC cables and wires

(5) Types BMR, BM, BMU, and BLU cables

(6) Communications wires

(7) Hybrid power and communications cables

Informational Note: See NFPA 90A ~~-2021~~ , *Standard for the Installation of Air-Conditioning and Ventilating Systems*, Chapter 10, Electrical and Optical Fiber Wiring and Equipment in Plenums and Ducts for information on fire protection of wiring installed in other spaces used for environmental air.

Statement of Problem and Substantiation for Public Input

The edition date for NFPA 90A has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

The current edition of NFPA 90A, the 2024 edition, has been significantly reorganized. In previous editions, electrical requirements for installation in ducts and plenums were in Chapter 4, HVAC Systems. The 2024 edition has a new Chapter 10, Electrical and Optical Fiber Wiring and Equipment in Plenums and Ducts. Consequently, Informational Notes referencing electrical requirements in NFPA 90A need to be revised.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	Revise NFPA 90A reference
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	Revise NFPA 90A reference
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	Revise NFPA 90A reference
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	Revise NFPA 90A reference
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	Revise NFPA 90A reference
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]	Revise NFPA 90A reference
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]	Revise NFPA 90A reference
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]	Revise NFPA 90A reference
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	

Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]

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Submittal Date: Wed Jan 04 11:11:09 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7749-NFPA 70-2024
Statement: Revised informational note to align with the NEC style manual and added a reference to NFPA 90A, Chapter 10 for user clarity.

Public Input No. 978-NFPA 70-2023 [Section No. 800.113(H)(2)]

(2) Uses Not Permitted.

The following cables and wires shall not be supported by cable trays:

(1) Limited-use cables

(2) Type CMUC cables and wires

(3) Type BMU and BLU cables

(4) Communications wires

(5) Hybrid power and communications cables, unless also listed at type TC cable

Statement of Problem and Substantiation for Public Input

There are hybrid communications cables that are also listed as tray cable and this language is confusing today. In the 2020 edition, the listing requirement in 805.179(F) discussed a particular cable construction that was NM or NM-B but never contemplated (or described) a type TC construction. As such, the prior prohibitions to installing these hybrid communications cables in tray made sense. Gai-tronics makes such a product and their listing specifically lists the cable as type TC, so this prohibition to supporting it with a cable tray should not apply. See the Gai-tronics Cable Selection Guide at this address for documentation: https://hubbellcdn.com/literature/SKU-GTC-PUB-020212.pdf

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Committee: NEC-P16

Committee Statement

Resolution: TC cables are already permitted for use in cable trays by Article 336. The inclusion of an exception in 800.113(H)(2) is not required.

Public Input No. 2482-NFPA 70-2023 [New Section after 800.133]

800.114 Grounding. The non-current-carrying conductive members of conductive optical fiber cables, and the shields of cables used for communications installed in buildings shall be bonded to a grounded equipment rack or enclosure, or grounded in accordance with the grounding methods specified in 800.100(B) using a conductor specified in 800.100(A).

Statement of Problem and Substantiation for Public Input

The recommended text for new section 800.114 is parallel to the text for 770.114 which states: 770.114 Grounding. Non-current-carrying conductive members of optical fiber cables shall be bonded to a grounded equipment rack or enclosure, or grounded in accordance with the grounding methods specified by 770.100(B) using a conductor specified in 770.100(A). However, the recommended text includes grounding of the metallic members of conductive optical fiber cables as well as the shields of communications cables in order to include all cables used for communications.

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Submittal Date: Fri Aug 18 11:44:55 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7663-NFPA 70-2024

Statement: This revision creates a new Section 800.108 within the appropriate Part III (Grounding Methods) of the general Article 800 covering the common grounding and bonding requirements for non-current-carrying conductive members and shields of communications cables within buildings. This continues the consolidation of general rules for communications cables in Article 800.

The creation this new 800.108 covering communications cables enables the deletion the now redundant reference to Article 770 within 800.3(H).

Public Input No. 1177-NFPA 70-2023 [Section No. 800.133]

800.133 Installation of Communications Wires and Cables ~~and~~ , CATV-Type Coaxial Cables, and Optical Fiber Cables .

Installation of communications wires and cables, from the protector to the equipment, or where no protector is required, communications wires and cables attached to the outside or inside of the building, shall comply with 800.133(A) ~~and~~ through 800.133(B). Installation of CATV-type coaxial cables, beyond the point of grounding as defined in 820.93, shall comply with 800.133(A) through (C). Installation of optical fiber cables shall comply with 800.133(A) through (C).

(A) In Raceways, Cable Trays, Boxes, Cables, Enclosures, and Cable Routing Assemblies.

(1) Other Circuits.

Communications cables and CATV-type coaxial cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly together and with jacketed cables of any of the following:

(1) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with 645.5(E)(2) or Parts I and II of Article 725

(2) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(3) Nonconductive and conductive optical fiber cables in compliance with Parts I and V of Article 770

(4) Communications circuits in compliance with Parts I and IV of Articles 800 and 805

(5) Community antenna television and radio distribution systems in compliance with Parts I and V of Articles 800 and 820

(6) Low-power network-powered broadband communications circuits in compliance with Parts I and V of Articles 800 and 830

(2) Class 2 and Class 3 Circuits.

Class 1 circuits shall not be run in the same cable with communications circuits. Class 2 and Class 3 circuit conductors shall be permitted in the same listed communications cable with communications circuits.

(3) Electric Light, Power, Class 1, Non-Power-Limited Fire Alarm, and Medium-Power Network-Powered Broadband Communications Circuits in Raceways, Compartments, and Boxes.

Communications wires and cables and CATV-type coaxial cables shall not be placed in any raceway, compartment, outlet box, junction box, or similar fitting with conductors of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits.

Exception No. 1: Communications wires and cables and CATV-type coaxial cables shall be permitted to be placed in any raceway, compartment, outlet box, junction box, or other enclosures with conductors of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits where all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are separated from all of the communications wires and cables and CATV-type coaxial cables by a permanent barrier or listed divider.

Exception No. 2: Communications wires and cables and CATV-type coaxial cables shall be permitted to be placed in outlet boxes, junction boxes, or similar fittings or compartments with power conductors where such conductors are introduced solely for power supply to the communications and coaxial cable system distribution equipment. The power circuit conductors shall be routed within the enclosure to maintain a minimum 6 mm (¼ in.) separation from the communications wires and cables and the CATV- type coaxial cables.

Exception No. 3: Separation of circuits shall not be required in elevator traveling cables constructed in accordance with by 620.36.

(B) Other Applications.

Communications wires and cables and CATV-type coaxial cables shall be separated at least 50 mm (2 in.) from conductors of any electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits.

Exception No. 1: Separation shall not be required where either (1) all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are in a raceway or in metal-sheathed, metal-clad, nonmetallic-sheathed, Type AC or Type UF cables, or (2) all of the communications wires and cables and all of the CATV-type coaxial cables are encased in raceway.

Exception No. 2: Separation shall not be required where the communications wires and cables and CATV-type coaxial cables are permanently separated from the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits by a continuous and firmly fixed nonconductor, such as porcelain tubes or flexible tubing, in addition to the insulation on the wire.

(C) Support of Communications Wires and Cables and CATV-Type Coaxial Cables.

Raceways shall be used for their intended purpose. Communications wires and cables and CATV-type coaxial cables shall not be strapped, taped, or attached by any means to the exterior of any raceway as a means of support.

Exception: Overhead (aerial) spans of communications drop wires, communications cables, and CATV-type coaxial cables shall be permitted to be attached to the exterior of a raceway-type mast intended for the attachment and support of such wires and cables.

Statement of Problem and Substantiation for Public Input

Section 800.113 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this PI expands 800.133 to include optical fiber cables.

Submitter Information Verification

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Submittal Date: Thu Jun 22 09:40:24 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7773-NFPA 70-2024
Statement: Section 800.113 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this expands 800.133 to include optical fiber cables. Cross references have been updated to Article 800 accordingly.

Public Input No. 3451-NFPA 70-2023 [Sections 800.133(A), 800.133(B)]

Sections 800.133(A), 800.133(B)

(A) In Raceways, Cable Trays, Boxes, Cables, Enclosures, and Cable Routing Assemblies.

(1) Other Circuits.

Communications cables and CATV-type coaxial cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly together and with jacketed cables of any of the following:

(1) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with 645.5(E)(2) or Parts I and II of Article 725

(2) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(3) Nonconductive and conductive optical fiber cables in compliance with Parts I and V of Article 770

(4) Communications circuits in compliance with Parts I and IV of Articles 800 and 805

(5) Community antenna television and radio distribution systems in compliance with Parts I and V of Articles 800 and 820

(6) Low-power network-powered broadband communications circuits in compliance with Parts I and V of Articles 800 and 830

(2) Class 2 and Class 3 Circuits.

Class 1 circuits shall not be run in the same cable with communications circuits. Class 2 and Class 3 circuit conductors shall be permitted in the same listed communications cable with communications circuits.

(3) Electric Light, Power, Class 1, Non-Power-Limited Fire Alarm, and Medium-Power Network-Powered Broadband Communications Circuits in Raceways, Compartments, and Boxes.

Communications wires and cables and CATV-type coaxial cables shall not be placed in any raceway, compartment, outlet box, junction box, or similar fitting with conductors of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits.

Exception No. 1: *Communications wires and cables and CATV-type coaxial cables shall be permitted to be placed in any raceway, compartment, outlet box, junction box, or other enclosures with conductors of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits where all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are separated from all of the communications wires and cables and CATV-type coaxial cables by a permanent barrier or listed divider.*

Exception No. 2: *Communications wires and cables and CATV-type coaxial cables shall be permitted to be placed in outlet boxes, junction boxes, or similar fittings or compartments with power conductors where such conductors are introduced solely for power supply to the communications and coaxial cable system distribution equipment. The power circuit conductors shall be routed within the enclosure to maintain a minimum 6 mm (1/4 in.) separation from the communications wires and cables and the CATV- type coaxial cables.*

Exception No. 3: *Separation of circuits shall not be required in elevator traveling cables constructed in accordance with by 620.36 .*

~~**(B)** Other Applications.~~

~~Communications wires and cables and CATV-type coaxial cables shall be separated at least 50 mm (2 in.) from conductors of any electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits.~~

~~*Exception No. 1:* Separation shall not be required where either (1) all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are in a raceway or in metal-sheathed, metal-clad, nonmetallic-sheathed, Type AC or Type UF cables, or (2) all of the communications wires and cables and all of the CATV-type coaxial cables are encased in raceway.~~

~~*Exception No. 2:* Separation shall not be required where the communications wires and cables and CATV-type coaxial cables are permanently separated from the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits by a continuous and firmly fixed nonconductor, such as porcelain tubes or flexible tubing, in addition to the insulation on the wire.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_First_Draft_Substantiation.docx	First Draft Substantiation	

Statement of Problem and Substantiation for Public Input

This text is being deleted as part of the reorganization of the limited energy articles. The deleted text is relocated as a general requirement to new Article X00.

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Committee: NEC-P16

Committee Statement

Resolution: Resolve / The text from Article 800 is not relocated but greatly shortened and technically altered in the Section X00.100 of the new proposed Article X00 under PI-3234. There is no technical justification supplied for the technical changes to the text. There are several PIs including PI-1667, PI-2966, PI-3930, Pi-4036, PI-899, PI-4175, PI-1178, PI-1179, Pi-1176, and PI-3670, which have been submitted to modify 800.133 with concerns of updates, word changes, and deletions to the text. Without including such revisions, the result will create conflicts and confusion between the new X00 Article and possible First Draft actions on these PIs.

Substantiation

The NEC Correlating Committee has created several task groups for the 2026 cycle, but specifically, has created one group to look at the long-term enhancement of the National Electrical Code. This group has looked at and determined that the rapidly changing technology landscape requires that the Limited Power Articles of Chapter 7 and the Communication Articles of Chapter 8, be revised to provide greater usability and clarity for today's world.

This Public Input is one of a series of Public Inputs to increase the usability of the existing limited energy requirements.

Nearly 30 industry professionals were split among five different Sub Task Groups. Additional meetings were held among the Sub Task Group Chairs to share ideas, complications, correlation issues and other information. Overall dozens of meetings were held to work on this project.

The Task group members for this work include: Derrick Atkins, Tom Domitrovich, Ernie Gallo, Scott Harding, Mark Hilbert, Chad Jones, Alan Manche, Ken McKinney, Nathan Phillips, Dan Ashton, George Bish, Trevor Bowmer, Shane Clary, Michael Cogbill, Jim Conrad, Adam Corbin, Dale Crawford, Ray Horner, Ryan Jackson, Stan Kaufman, Kyle Krueger, William McCoy, Tim Mikloiche, Samuel Rokowski, Anthony Tassone, Ron Tellas, Keith Waters, John Williams and George Zimmerman.

The task group recommends restructuring of the limited energy articles to include protection, cable installation requirements and equipment, similar in concept to the structure used in other parts of the NEC.

To accomplish this, the following is a suggested course of action:

1. Create a limited power NEC structure where the main focus is not the technology but rather the installation requirements of the cable.
2. Articles that look similar to general requirements, wiring, overcurrent protection and grounding.
3. Restructuring of Articles as follows:
    a. Existing Article 722, will take on the look and theme of 310 and 315 and placed in new Article X22
    b. New grounding and bonding Article X50 will be similar to 250.
    c. New overcurrent protection Article X90 will be similar to current Article 240. New Article X90 was chosen in lieu of X40, since there currently is an Article 840 (in case the new Articles are placed in Article 800)
    d. Existing Articles 724, 725, and 726, will take on the look and theme of branch circuits with the general requirements placed in new Article X00, the installation requirements in X22, the grounding requirements in X50 and the protection requirements X90.

The goal of these Articles both existing and new is to ultimately locate all content into one chapter in 2029.

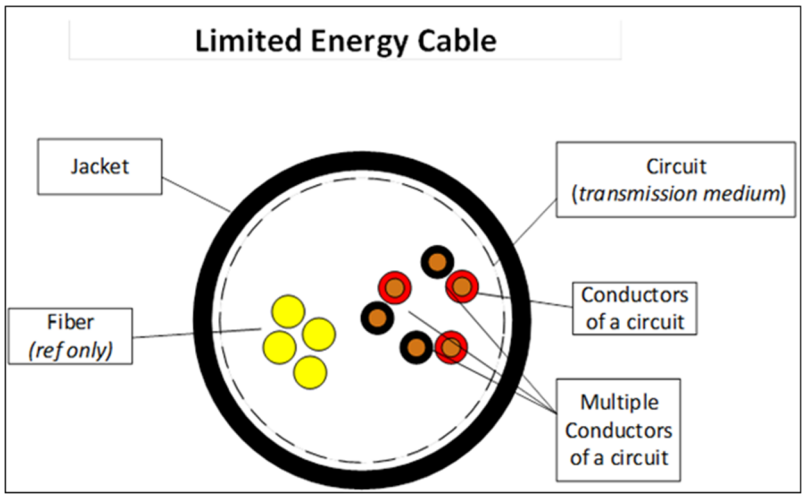
The following information and diagrams are provided to outline the thought process.

Section X00.100 combines the separation requirements from 133, 136 and 139 in 725, 726, 760, 770 along with the separation requirements in 800, 805 and 815.

This was the logic the sub task group used to develop what we are calling the X00.100 separation requirements.

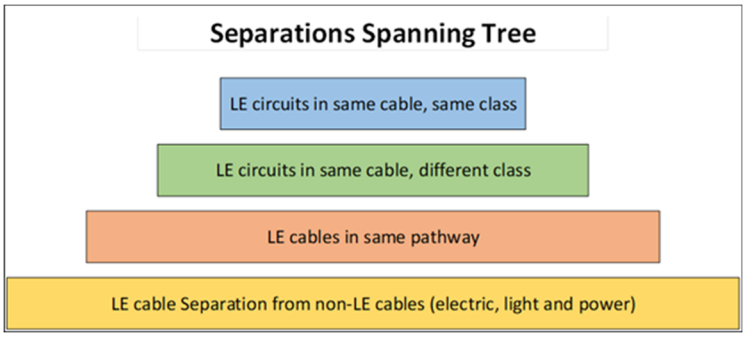
The structure follows this logic:

- The list of all limited energy cables is called for in X22.
- A Limited Energy cable has the following construction when placed in a Limited Energy System.



The structure of X00.100 follows the following hierarchy:

- X00.100 (A) is the blue block
- X00.100 (B) and (C) are the green block
- X00.100 (D) and (E) are the salmon block
- X00.100 (F) (G) (H) (I) are the yellow block



Public Input No. 1667-NFPA 70-2023 [Section No. 800.133(A)(1)]

(1) Other Circuits.

~~Communications cables and~~ Listed communications cables, listed optical fiber cables, and listed CATV-type coaxial cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly together and with ~~jacketed cables of~~ any of the following:

(1) Listed Class 2 and Class 3 remote-control, signaling, and power-limited ~~circuits~~ cables installed in compliance with 645.5(E)(2) or Article 725, Parts I and II ~~of Article 725~~

(2) ~~Power~~ Listed power-limited fire alarm ~~systems~~ cables installed in compliance with Article 760, Parts I and III ~~of Article 760~~

(3) ~~Nonconductive~~ Listed nonconductive and conductive optical fiber cables

(4) Listed communications cables installed in compliance with Article 800, Parts I and ~~V of Article 770~~

(5) ~~Communications circuits in compliance with~~ IV, and Article 805, Parts I and ~~IV of Articles 800 and 805~~

~~Community~~

(6) II

(7) Listed community antenna television and radio distribution ~~systems~~ coaxial cables installed in compliance with Article 800, Parts I and V ~~of Articles 800 and 820~~

~~Low~~

(8) , Article 820. Part I

(9) Listed low-power network-powered broadband communications ~~circuits~~ cables installed in compliance with Article 800, Parts I and V ~~of Articles 800~~ , and Article 830. Parts I and V

Statement of Problem and Substantiation for Public Input

Section 800.113 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this PI expands 800.133(A)(1) to include optical fiber cables.

In order to improve usability, word “listed” is inserted before each cable type to clarify that all the cables that are permitted to be run together are listed cables. This clarification is need to avoid any interpretation that unlisted outside-plant communications and optical fiber cables are permitted to be run with listed communications and optical fiber cables, and Class 2, Class 3 and fire alarm cables, which are always listed.

Minor editorial changes were made clarify that “the installation” needs to be in compliance with the installation rules, not the “circuit”. “Circuits” was changed to “cables” to clarify that this section is about which cables are permitted to be run together in the same pathway.

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Committee: NEC-P16

Committee Statement

Resolution: FR-7768-NFPA 70-2024
Statement: Revision reflects that cables must be listed and other readability improvements and class 4 cables have been added because they are allowed to be routed within the same raceway as the circuits covered within the 800.133.

Public Input No. 2966-NFPA 70-2023 [Section No. 800.133(A)(1)]

(1) Other Circuits.

Communications cables and CATV-type coaxial cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly together and with jacketed cables of any of the following:

(1) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with 645.5(E)(2) or Article 725, Parts I and II ~~of Article 725~~

(2) Power-limited fire alarm systems in compliance with Article 760, Parts I and III ~~of Article 760~~

(3) Nonconductive and conductive optical fiber cables in compliance with Article 770, Parts I and ~~V of Article 770~~ V

(4) Communications circuits in compliance with Articles 800 and 805, Parts I and IV ~~of Articles 800 and 805~~

(5) Community antenna television and radio distribution systems in compliance ~~with~~ with Article 800 and 820, Parts I and V ~~of Articles 800 and 820~~

(6) Low-power network-powered broadband communications circuits in compliance with Article 800 and 830, Parts I and V ~~of Articles 800 and 830~~

Statement of Problem and Substantiation for Public Input

This Public Input is being submitted on behalf of the NEC Correlating Committee Usability Task Group in order to provide correlation throughout the document. The text is revised to to comply with the NEC Style Manual Section 4.1.4, regarding the use of Parts.
4.1.4 References to an Entire Article. References shall not be made to an entire article, except for the Article 100 or where referenced to provide the necessary context. References to specific parts within articles shall be permitted. References to all parts of an article shall not be permitted. The article number shall precede the part number.
The Usability Task Group members are: Derrick Atkins, David Hittinger, Richard Holub, Dean Hunter, Chad Kennedy and David Williams.

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Committee: NEC-P16

Committee Statement

Resolution: The actions taken on 800.133(A)(1) removed the relative language being revised with this PI and is therefore not adopted.

Public Input No. 3930-NFPA 70-2023 [Section No. 800.133(A)(1)]

(1) Other Circuits.

Communications cables and CATV-type coaxial cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly together and with jacketed cables of any of the following:

(1) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with 645.5(E)(2) or Parts I and II of Article 725

(2) Class 4 fault managed power circuits in compliance with 645.5(E)(2) and Parts I and II of Article 726

(3) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(4) Nonconductive and conductive optical fiber cables in compliance with Parts I and V of Article 770

(5) Communications circuits in compliance with Parts I and IV of Articles 800 and 805

(6) Community antenna television and radio distribution systems in compliance with Parts I and V of Articles 800 and 820

(7) Low-power network-powered broadband communications circuits in compliance with Parts I and V of Articles 800 and 830

Statement of Problem and Substantiation for Public Input

Class 4 systems were added in the 2023 code and have equivalent of better than fire and life safety requirements as Class 2 circuits. An effort to analyze all the locations of Class 2 in the code to see if Class 4 was also appropriate in the application. This effort should have happened for the 2023 code and not doing it was an oversight.
Article 722 covers Class 2, Class 3, and Class 4 cables and treats them all the same. Therefore, Class 4 should be added to this list.

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Submittal Date: Wed Sep 06 10:45:13 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7768-NFPA 70-2024
Statement: Revision reflects that cables must be listed and other readability improvements and class 4 cables have been added because they are allowed to be routed within the same raceway as the circuits covered within the 800.133.

Public Input No. 4036-NFPA 70-2023 [Section No. 800.133(A)(1)]

(1) Other Circuits.

Listed Communications cables and listed CATV-type coaxial cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly together and

~~with jacketed cables~~
of any of the following:

(1) Listed Class 2 and Class 3 remote-control, signaling, and power-limited ~~circuits in compliance with 645.5(E)(2) or Parts I and II of Article 725~~

(2) cables

(3) Listed Class 4 cables

(3) Listed Power-limited fire alarm ~~systems in compliance with Parts I and III of Article 760~~
cables

(4) Listed Nonconductive and conductive optical fiber cables ~~in compliance with Parts I and V of Article 770~~

- ~~Communications circuits in compliance with Parts I and IV of Articles 800 and 805~~

(5) Listed Communications cables

(6) Listed Community antenna television and radio distribution ~~systems in compliance with Parts I and V of Articles 800 and 820~~
system coaxial cables

(7) Listed Low-power network-powered broadband communications ~~circuits in compliance with Parts I and V of Articles 800 and 830~~
cables

Statement of Problem and Substantiation for Public Input

- Changes to reflect these are listed cables and other readability improvements (e.g., no need to state in compliance with the installation rules of the Article, as already required for cabling under that Article)

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Committee: NEC-P16

Committee Statement

Resolution: FR-7768-NFPA 70-2024

Statement: Revision reflects that cables must be listed and other readability improvements and class 4 cables have been added because they are allowed to be routed within the same raceway as the circuits covered within the 800.133.

Public Input No. 899-NFPA 70-2023 [Section No. 800.133(A)(1)]

(1) **With** Other ~~Circuits~~ Cables .

~~Communications~~ Listed communications cables and Listed CATV-type coaxial cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly together and with ~~jacketed cables~~ of ~~any of~~ the following:

(1) Listed Class 2 and Class 3 remote-control, signaling, and power-limited ~~circuits~~ cables installed in compliance with 645.5(E)(2); or Article 722, Part I, and Article 725, Parts I and II ~~of Article 725~~

~~Power~~

(2)

(3) Listed Class 4 cables installed in compliance with Article 722, Part I, and Article 726, Parts I and II

(4) Listed power -limited fire alarm systems cables installed in compliance with Article 760, Parts I and III ~~of Article 760~~

(5) ~~Nonconductive~~ Listed nonconductive and conductive optical fiber cables installed in compliance with Article 770, Parts I and V ~~of Article 770~~

~~Communications circuits~~

(6)

(7) Listed communications cables installed in compliance with Article 800, Parts I and IV ~~of Articles 800 and 805~~

~~Community~~

(8)

(9) Listed community antenna television and radio distribution systems coaxial cables installed in compliance with Article 800, Parts I and ~~V of Articles 800 and 820~~

~~Low~~

(10) IV, and Article 820, Parts I and V

(11) Listed low -power network-powered broadband communications ~~circuits~~ cables installed in compliance with Article 800, Parts I and ~~V of Articles 800 and 830~~ IV, and Article 830, Parts I and V

Statement of Problem and Substantiation for Public Input

The primary purpose of this PI is to correlate with 726.139(C) which permits Class 4 cables to be run in the same pathway as the cables in 800.133(A)(1).

In order to improve usability, word “listed” is inserted before each cable type to clarify that all the cables that are permitted to be run together are listed cables. This clarification is need to avoid any interpretation that unlisted outside-plant communications and optical fiber cables are permitted to be run with listed communications and optical fiber cables, and Class 2, Class 3 and Class 4 cables, which are always listed.

Minor editorial changes were made clarify that “the installation” needs to be in compliance with the installation rules, not the “circuit”. “Circuits” was changed to “cables” to clarify that this section is about which cables are permitted to be run together in the same pathway.

The installation rules for communications cables were moved from Article 805 to Article 800 in the 2023

NEC.

The references to other Articles have been revised to comply with the 2023 NEC Style Manual section 4.1.4 which states, “The article number shall precede the part number.”

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 817-NFPA 70-2023 [Section No. 725.139]	Revise separation rules for consistency and to recognize Class 4 cables
Public Input No. 818-NFPA 70-2023 [Section No. 726.139]	Revise separation rules for consistency and to recognize Class 4 cables
Public Input No. 817-NFPA 70-2023 [Section No. 725.139]	
Public Input No. 818-NFPA 70-2023 [Section No. 726.139]	
Public Input No. 895-NFPA 70-2023 [Section No. 760.139]	
Public Input No. 918-NFPA 70-2023 [Section No. 770.133(C)]	

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: FR-7768-NFPA 70-2024
Statement: Revision reflects that cables must be listed and other readability improvements and class 4 cables have been added because they are allowed to be routed within the same raceway as the circuits covered within the 800.133.

Public Input No. 4175-NFPA 70-2023 [Section No. 800.133(A)(2)]

(2) Class 2- ~~and~~ , Class 3- ~~Circuits~~ , and Class 4 Circuits .

Class 1 circuits shall not be run in the same cable with communications circuits. Class 2- ~~and Class 3 circuit~~ , Class3, and Class 4 circuit conductors shall be permitted in the same listed communications cable with communications circuits.

Statement of Problem and Substantiation for Public Input

Adding Class 4 to the list. Class 4 systems were added in the 2023 code and have equivalent or better than fire and life safety requirements as Class 2 circuits. An effort to analyze all the locations of Class 2 in the code to see if Class 4 was also appropriate in the application should have happened for the 2023 code and not doing it was an oversight.

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Committee: NEC-P16

Committee Statement

Resolution: FR-7756-NFPA 70-2024
Statement: This revision permits Class 4 circuits and communications circuits in the same cable only if the cable is dual listed. Class 4 circuits are prohibited from being run in a communications cable because the communications cable is only rated for 300 volts where as Class 4 circuits are permitted up to 450 volts.

Public Input No. 1178-NFPA 70-2023 [Section No. 800.133(A)(3)]

(3) Electric Light, Power, Class 1, Non-Power-Limited Fire Alarm, and Medium-Power Network-Powered Broadband Communications Circuits in Raceways, Compartments, and Boxes.

Communications wires and cables and CATV-type coaxial cables shall not be placed in any raceway, compartment, outlet box, junction box, or similar fitting with conductors of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits.

Exception No. 1: Communications wires and cables, conductive optical fiber cables without an armored or metal-clad-type sheath, and CATV-type coaxial cables shall be permitted to be placed in any raceway, compartment, outlet box, junction box, or other enclosures with conductors of electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits where all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are separated from all of the communications wires and cables and CATV-type coaxial cables by a permanent barrier or listed divider.

Exception No. 2: Communications wires and cables and CATV-type coaxial cables shall be permitted to be placed in outlet boxes, junction boxes, or similar fittings or compartments with power conductors where such conductors are introduced solely for power supply to the communications and coaxial cable system distribution equipment. The power circuit conductors shall be routed within the enclosure to maintain a minimum 6 mm (¼ in.) separation from the communications wires and cables and the CATV- type coaxial cables.~~Exception No~~

Exception No. 3: Conductive optical fiber cables contained in an armored or metal-clad-type sheath and nonconductive optical fiber cables shall be permitted to occupy the same cable tray or raceway with conductors for electric light, power, Class 1, non-power-limited fire alarm, Type ITC, or medium-power network-powered broadband communications circuits operating at 1000 volts or less.

Exception No. 4: Separation of circuits shall not be required in elevator traveling cables constructed in accordance with by 620.36.

Statement of Problem and Substantiation for Public Input

Section 800.113 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this PI expands 800.133 to include optical fiber cables.

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Committee: NEC-P16

Committee Statement

Resolution: FR-7757-NFPA 70-2024

Statement: Section 800.133 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this revision expands 800.133 to include conductive optical fiber cables.

Public Input No. 1179-NFPA 70-2023 [Section No. 800.133(B)]

(B) Other Applications.

Communications wires and cables, conductive optical fiber cables without an armored or metal-clad-type sheath, and CATV-type coaxial cables shall be separated at least 50 mm (2 in.) from conductors of any electric light, power, Class 1, non-power-limited fire alarm, or medium-power network-powered broadband communications circuits.

Exception No. 1: Separation shall not be required ~~where~~ if either (1) all of the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits are in a raceway or in metal-sheathed, metal-clad, nonmetallic-sheathed, Type AC or Type UF cables, or (2) all of the communications wires and cables, and all of the conductive optical fiber cables without an armored or metal-clad-type sheath, and all of the CATV-type coaxial cables are encased in raceway.

Exception No. 2: Separation shall not be required ~~where~~ if the communications wires and cables, conductive optical fiber cables without an armored or metal-clad-type sheath, and CATV-type coaxial cables are permanently separated from the conductors of electric light, power, Class 1, non-power-limited fire alarm, and medium-power network-powered broadband communications circuits by a continuous and firmly fixed nonconductor, such as porcelain tubes or flexible tubing, in addition to the insulation on the wire.

Statement of Problem and Substantiation for Public Input

Section 800.113 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this PI expands 800.133 to include optical fiber cables.

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Committee: NEC-P16

Committee Statement

Resolution: FR-7758-NFPA 70-2024
Statement: Section 800.133 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this revision expands 800.133 to include conductive optical fiber cables.

Public Input No. 1176-NFPA 70-2023 [Section No. 800.133(C)]

(C) Support of Communications Wires and Cables ~~and~~ , Optical Fiber Cables, CATV-Type Coaxial Cables and Network-Powered Broadband Communications Cables .

Raceways shall be used for their intended purpose. Communications wires and cables ~~and~~ , optical fiber cables, CATV-type coaxial cables, and network-powered broadband communications cables, shall not be strapped, taped, or attached by any means to the exterior of any raceway as a means of support.

Exception: Overhead (aerial) spans of communications drop wires, communications cables, ~~and~~ optical fiber cables, CATV-type coaxial cables, and network-powered broadband communications cables, shall be permitted to be attached to the exterior of a raceway-type mast intended for the attachment and support of such wires and cables.

Statement of Problem and Substantiation for Public Input

Section 800.113 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this PI expands 800.133 to include CATV-type coaxial cables, optical fiber cables, and network-powered broadband communications cables.

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Committee: NEC-P16

Committee Statement

Resolution: FR-7760-NFPA 70-2024
Statement: Section 800.133 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this revision expands 800.133 to include CATV-type coaxial cables, optical fiber cables, and network-powered broadband communications cables.

Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]

Installation of communications wires and cables, from the protector to the equipment, or where no protector is required, communications wires and cables attached to the outside or inside of the building, shall comply with 800.133(A) and 800.133(B). Installation of CATV-type coaxial cables, beyond the point of grounding as defined in ~~820~~ 800 .93 (A) , (B)(2) and (C)(2), shall comply with 800.133(A) through (C).

Statement of Problem and Substantiation for Public Input

To increase clarity and help code users by gathering as many common requirements in a single general communications Article 800, a series of revisions have been submitted to consolidate the common "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800 under a new section 800.93.
No technical changes are intended or envisioned by these changes.
This revision to 800.133 is to replace references to the old 820.93 sections with equivalent references to the new 800.93.

Several related and correlated revisions will be required to create the new 800.93 including
1. The creation of a new section (820.90) to accommodate the protector requirements currently in 820.93 into a new section more accurately entitled “protectors” and numbered to be parallel with other related protection sections 805.90, 830.90 and 840.90.
2. A revision to create a new 800.93 section to gather the common requirements for "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800.
3. Delete 820.93 since all the requirements will now be covered in the new 800.93 and the new 820.90
4. Delete 830.93 since all the requirements will now be covered in the new 800.93
5. Revise 840.93 to replace references to the old 805.93 and 820.93 sections with equivalent references to the new 800.93
6. Revise 840.94 to replace references to the old 805.93 sections with equivalent references to the new 800.93
7. Delete 805.93 since all the requirements will now be covered in the new 800.93

This revisions continues the consolidation efforts of last 2-3 code cycles to gather common requirements for communications cables and systems into Article 800.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3645-NFPA 70-2023 [New Part after III.]	
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	
Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]	
Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]	
Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]	
Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]	
Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]	
Public Input No. 3645-NFPA 70-2023 [New Part after III.]	
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	
Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]	
Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]	

Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]
Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]
Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]

Submitter Information Verification

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Submittal Date: Tue Sep 05 13:04:52 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7773-NFPA 70-2024
Statement: Section 800.113 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this expands 800.133 to include optical fiber cables. Cross references have been updated to Article 800 accordingly.

Public Input No. 1169-NFPA 70-2023 [Section No. 800.154]

800.154 Applications of Listed Communications Wires, Cables, and Raceways, and Listed Cable Routing Assemblies.

Permitted and nonpermitted applications of listed communications wires, cables, coaxial cables, network-powered broadband communications system cables and raceways, and listed cable routing assemblies, shall be in accordance with one of the following:

(1) Listed communications wires and cables as indicated in Table 800.154(a)

(2) Listed communications raceways as indicated in Table 800.154(b)

(3) Listed cable routing assemblies as indicated in Table 800.154(c)

The permitted applications shall be subject to the installation requirements of 800.110 and 800.113.

Table 800.154(a) Applications of Listed Communications Wires, Cables, and Network-Powered Broadband Communications System Cables in Buildings

Applications Wire and Cable Type Plenum Riser BMR General-Purpose BM Limited-Use Undercarpet BMU, BLU Hybrid Power and Communications Cables Communications Wires In ducts specifically fabricated for environmental air as described in 300.22(B) In fabricated ducts Y N N N N N N N N N In metal raceway that complies with 300.22(B) Y Y Y Y Y Y N N N Y In other spaces used for environmental air (plenums) as described in 300.22(C) In other spaces used for environmental air Y N N N N N N N N N In metal raceway that complies with 300.22(C) Y Y Y Y Y Y N N N Y In plenum communications raceways Y N N N N N N N N N In plenum cable routing assemblies Y N N N N N N N N N Supported by open metal cable trays Y N N N N N N N N N Supported by solid bottom metal cable trays with solid metal covers Y Y Y Y Y Y N N N N In risers In vertical runs Y Y Y N N N N N N N In metal raceways Y Y Y Y Y Y N N N N In fireproof shafts Y Y Y Y Y Y N N N N In plenum communications raceways Y Y N N N N N N N N In plenum cable routing assemblies Y Y N N N N N N N N In riser communications raceways Y Y N N N N N N N N In riser cable routing assemblies Y Y N N N N N N N N In one- and two-family dwellings Y Y Y Y Y Y N N Y N Within buildings in other than air-handling spaces and risers General Y Y Y Y Y Y N N N N In one- and two-family dwellings Y Y Y Y Y Y Y N Y N In multifamily dwellings Y Y Y Y Y Y Y N N N In nonconcealed spaces Y Y Y Y Y Y N N N Supported by cable trays Y Y Y Y Y N N N N N Under carpet, modular flooring, and planks N N N N N N Y N N N In distributing frames and cross-connect arrays Y Y N Y N N N N N Y In rigid metal conduit (RMC) and intermediate metal conduit (IMC) Y Y Y Y Y Y Y Y Y Y In any raceway recognized in Chapter 3 Y Y Y Y Y Y N N N Y In plenum communications raceways Y Y N Y N N N N N Y In plenum cable routing assemblies Y Y N Y N N N N N Y In riser communications raceways Y Y N Y N N N N N Y In riser cable routing assemblies Y Y N Y N N N N N Y In general-purpose communications raceways Y Y N Y N N N N N Y In general-purpose cable routing assemblies Y Y N Y N N N N N Y

Note: An "N" in the table indicates that the cable type shall not be installed in the application. A "Y" indicates that the cable type shall be permitted to be installed in the application subject to the limitations described in 800.113. The Riser column includes all riser cables except BMR, and the General-Purpose column includes all general-purpose cables except BM.

Informational Note No. 1: Part IV of Article 800 covers installation methods within buildings. This table covers the applications of listed communications wires, cables, and raceways in buildings.

Informational Note No. 2: For information on the restrictions to the installation of communications cables in fabricated ducts, see 800.113(B).

Table 800.154(b) Applications of Listed Communications Raceways in Buildings

Applications Listed Communications Raceway Type Plenum Riser General-Purpose In ducts specifically fabricated for environmental air as described in 300.22(B) In fabricated ducts N N N In metal raceway that complies with 300.22(B) N N N In other spaces used for environmental air (plenums) as described in 300.22(C) In other spaces used for environmental

~~air Y N N In metal raceway that complies with 300.22(C) Y Y Y In plenum cable routing assemblies N N N Supported by open metal cable trays Y N N Supported by solid bottom metal cable trays with solid metal covers Y Y Y In risers In vertical runs Y Y N In metal raceways Y Y Y In fireproof shafts Y Y Y In plenum cable routing assemblies N N N In riser cable routing assemblies N N N In one- and two-family dwellings Y Y Y Within buildings in other than air-handling spaces and risers General Y Y Y In one- and two-family dwellings Y Y Y In multifamily dwellings Y Y Y In nonconcealed spaces Y Y Y Supported by cable trays Y Y Y Under carpet, modular flooring, and planks N N N In distributing frames and cross-connect arrays Y Y Y In any raceway recognized in Chapter 3 Y Y Y In plenum cable routing assemblies N N N In riser cable routing assemblies N N N In general-purpose cable routing assemblies N N N~~

~~Note: An "N" in the table indicates that the communications raceway type shall not be installed in the application. A "Y" indicates that the communications raceway type shall be permitted to be installed in the application, subject to the limitations described in 800.110 and 800.113.~~

~~Table 800.154(c) Applications of Listed Cable Routing Assemblies in Buildings~~

~~Applications Listed Cable Routing Assembly Type Plenum Riser General-Purpose In ducts specifically fabricated for environmental air as described in 300.22(B) In fabricated ducts N N N In metal raceway that complies with 300.22(B) N N N In other spaces used for environmental air (plenums) as described in 300.22(C) In other spaces used for environmental air Y N N In metal raceway that complies with 300.22(C) N N N In plenum communications raceways N N N Supported by open metal cable trays Y N N Supported by solid bottom metal cable trays with solid metal covers N N N In risers In vertical runs Y Y N In metal raceways N N N In fireproof shafts Y Y Y In plenum communications raceways N N N In riser communications raceways N N N In one- and two-family dwellings Y Y Y Within buildings in other than air-handling spaces and risers General Y Y Y In one- and two-family dwellings Y Y Y In multifamily dwellings Y Y Y In nonconcealed spaces Y Y Y Supported by cable trays Y Y Y Under carpet, modular flooring, and planks N N N In distributing frames and cross-connect arrays Y Y Y In any raceway recognized in Chapter 3 N N N In plenum communications raceways N N N In riser communications raceways N N N In general-purpose communications raceways N N N~~

~~Note: An "N" in the table indicates that the cable routing assembly type shall not be installed in the application. A "Y" indicates that the cable routing assembly type shall be permitted to be installed in the application subject to the limitations described in 800.113.~~

REPLACE 800.154 WITH THE TEXT IN THE ATTACHED FILE

Additional Proposed Changes

File Name	Description	Approved
PI_for_800.154_rev_06222023.docx	800.154 revision	

Statement of Problem and Substantiation for Public Input

Section 800.113 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this PI expands the application requirements in 800.154 to include CATV-type coaxial cables, optical fiber cables, and network-powered broadband communications cables. It also moves the cable substitution hierarchies into the general article (Article 800) and establishes analogous cable substitution hierarchies for communications raceways and cable routing assemblies.

The TerraView program could not handle the changed text and figures. All the changes are shown in the attached Word doc.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1174-NFPA 70-2023 [Section No. 805.154]	Deletes the cable substitution requirements from Article.

Public Input No. 1173-NFPA 70-2023 [Sections Part V., 820.154]	Deletes the cable substitution requirements from Article.
Public Input No. 1172-NFPA 70-2023 [Section No. 830.154]	Deletes the cable substitution requirements from Article.
Public Input No. 1172-NFPA 70-2023 [Section No. 830.154]	
Public Input No. 1173-NFPA 70-2023 [Sections Part V., 820.154]	
Public Input No. 1174-NFPA 70-2023 [Section No. 805.154]	

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: FR-7780-NFPA 70-2024

Statement: Section 800.113 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this revision expands the application requirements in 800.154 to include CATV-type coaxial cables, optical fiber cables, and network-powered broadband communications cables. It also moves the cable substitution hierarchies into the general article (Article 800) and establishes analogous cable substitution hierarchies for communications raceways and cable routing assemblies.

800.154 Applications of Listed Communications Wires~~,~~ and Cables, Listed Optical Fiber Cables, Listed CATV-Type Coaxial Cables, Listed Network-Powered Broadband Communications Cables, Listed Communications~~and~~ Raceways, and Listed Cable Routing Assemblies. Permitted and nonpermitted applications of listed communications wires, cables, listed optical fiber cables, listed CATV-type coaxial cables, listed network-powered broadband communications system cables, listed communications ~~and~~ raceways, and listed cable routing assemblies, shall be in accordance with one of the following: (1) Listed communications wires, ~~and~~ cables; listed optical fiber cables; listed CATV-type coaxial cables, and listed network-powered broadband communications cables as indicated in Table 800.154(a) (2) Listed communications raceways as indicated in Table 800.154(b) (3) Listed cable routing assemblies as indicated in Table 800.154(c) The permitted applications shall be subject to the installation requirements of 800.110 and 800.113. The permitted substitutions for listed communications cables, listed optical fiber cables, listed CATV-type coaxial cables, and listed network-powered broadband communications cables shall be in accordance with the following: (1) Listed communications cables as indicated in Table 800.154(d) and Figure 800.154(d) (2) Listed optical fiber cables as indicated in Table 800.154(e) and Figure 800.154(e) (3) Listed CATV-type coaxial cables as indicated in Table 800.154(f) and Figure 800.154(f) (4) Listed network-powered broadband cables as indicated in Table 800.154(g) (5) Listed communications raceways as indicated in Table 800.154(h) and Figure 800.154(h) (6) Listed cable routing assemblies as indicated in Table 800.154(i) and Figure 800.154(i)	
Table 800.154(a) Applications of Listed Communications Wires, Cables, Listed Optical Fiber Cables, Listed CATV-type coaxial cables, and Listed Network-Powered Broadband Communications ~~System~~ Cables in Buildings	

Applications		Wire and Cable Type									
		Plenum	Riser	BMR	General-Purpose	BM	Limited-Use	Undercarpet	BMU, BLU	Hybrid Power and Communications Cables	Communicat Wires
In ducts specifically fabricated for environmental air as described in 300.22(B)	In fabricated ducts	Y	N	N	N	N	N	N	N	N	N
	In metal raceway that complies with 300.22(B)	Y	Y	Y	Y	Y	Y	N	N	N	Y
In other spaces used for environmental air (plenums) as described in 300.22(C)	In other spaces used for environmental air	Y	N	N	N	N	N	N	N	N	N
	In metal raceway that complies with 300.22(C)	Y	Y	Y	Y	Y	Y	N	N	N	Y
	In plenum communications raceways	Y	N	N	N	N	N	N	N	N	N
	In plenum cable routing assemblies	Y	N	N	N	N	N	N	N	N	N
	Supported by open metal cable trays	Y	N	N	N	N	N	N	N	N	N
	Supported by solid bottom metal cable trays with solid metal covers	Y	Y	Y	Y	Y	Y	N	N	N	N
In risers	In vertical runs	Y	Y	Y	N	N	N	N	N	N	N
	In metal raceways	Y	Y	Y	Y	Y	Y	N	N	N	N
	In fireproof shafts	Y	Y	Y	Y	Y	Y	N	N	N	N
	In plenum communications raceways	Y	Y	N	N	N	N	N	N	N	N
	In plenum cable routing assemblies	Y	Y	N	N	N	N	N	N	N	N
	In riser communications raceways	Y	Y	N	N	N	N	N	N	N	N
	In riser cable routing assemblies	Y	Y	N	N	N	N	N	N	N	N
	In one- and two-family dwellings	Y	Y	Y	Y	Y	Y	N	N	Y	N
Within buildings in other than air-handling spaces and risers	General	Y	Y	Y	Y	Y	Y	N	N	N	N
	In one- and two-family dwellings	Y	Y	Y	Y	Y	Y	Y	N	Y	N
	In multifamily dwellings	Y	Y	Y	Y	Y	Y	Y	N	N	N
	In nonconcealed spaces	Y	Y	Y	Y	Y	Y	Y	N	N	N
	Supported by cable trays	Y	Y	Y	Y	Y	N	N	N	N	N
	Under carpet, modular flooring, and planks	N	N	N	N	N	N	Y	N	N	N
	In distributing frames and cross-connect arrays	Y	Y	N	Y	N	N	N	N	N	Y
	In rigid metal conduit (RMC) and intermediate metal conduit (IMC)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	In any raceway recognized in Chapter 3	Y	Y	Y	Y	Y	Y	N	N	N	Y
	In plenum communications raceways	Y	Y	N	Y	N	N	N	N	N	Y
	In plenum cable routing assemblies	Y	Y	N	Y	N	N	N	N	N	Y
	In riser communications raceways	Y	Y	N	Y	N	N	N	N	N	Y
	In riser cable routing assemblies	Y	Y	N	Y	N	N	N	N	N	Y
	In general-purpose communications raceways	Y	Y	N	Y	N	N	N	N	N	Y
	In general-purpose cable routing assemblies	Y	Y	N	Y	N	N	N	N	N	Y

Note: An "N" in the table indicates that the cable type shall not be installed in the application. A "Y" indicates that the cable type shall be permitted to be installed in the application subject to the limitations described in 800.113. The Riser column includes all riser cables except BMR, and the General-Purpose column includes all general-purpose cables except BM.

Informational Note No. 1: Part IV of Article 800 covers installation methods within buildings. This table covers the applications of listed communications wires, cables, and raceways in buildings.

Informational Note No. 2: For information on the restrictions to the installation of communications cables in fabricated ducts, see 800.113(B).

Note- Except for revising the title, Table 800.154(a) is unchanged from the 2023 NEC

Table 800.154(b) Applications of Listed Communications Raceways in Buildings

Applications		Listed Communications Raceway Type		
		Plenum	Riser	General-Purpose
In ducts specifically fabricated for environmental air as described in 300.22(B)	In fabricated ducts	N	N	N
	In metal raceway that complies with 300.22(B)	N	N	N
In other spaces used for environmental air (plenums) as described in 300.22(C)	In other spaces used for environmental air	Y	N	N
	In metal raceway that complies with 300.22(C)	Y	Y	Y
	In plenum cable routing assemblies	N	N	N
	Supported by open metal cable trays	Y	N	N
	Supported by solid bottom metal cable trays with solid metal covers	Y	Y	Y
In risers	In vertical runs	Y	Y	N
	In metal raceways	Y	Y	Y
	In fireproof shafts	Y	Y	Y
	In plenum cable routing assemblies	N	N	N
	In riser cable routing assemblies	N	N	N
	In one- and two-family dwellings	Y	Y	Y
Within buildings in other than air-handling spaces and risers	General	Y	Y	Y
	In one- and two-family dwellings	Y	Y	Y
	In multifamily dwellings	Y	Y	Y
	In nonconcealed spaces	Y	Y	Y
	Supported by cable trays	Y	Y	Y
	Under carpet, modular flooring, and planks	N	N	N
	In distributing frames and cross-connect arrays	Y	Y	Y
	In any raceway recognized in Chapter 3	Y	Y	Y
	In plenum cable routing assemblies	N	N	N
	In riser cable routing assemblies	N	N	N
	In general-purpose cable routing assemblies	N	N	N

Note: An “N” in the table indicates that the communications raceway type shall not be installed in the application. A “Y” indicates that the communications raceway type shall be permitted to be installed in the application, subject to the limitations described in 800.110 and 800.113.

Note- Table 800.154(b) is unchanged from the 2023 NEC

Table 800.154(c) Applications of Listed Cable Routing Assemblies in Buildings

Applications		Listed Cable Routing Assembly Type		
		Plenum	Riser	General-Purpose
In ducts specifically fabricated for environmental air as described in 300.22(B)	In fabricated ducts	N	N	N
	In metal raceway that complies with 300.22(B)	N	N	N
In other spaces used for environmental air (plenums) as described in 300.22(C)	In other spaces used for environmental air	Y	N	N
	In metal raceway that complies with 300.22(C)	N	N	N
	In plenum communications raceways	N	N	N
	Supported by open metal cable trays	Y	N	N
	Supported by solid bottom metal cable trays with solid metal covers	N	N	N
In risers	In vertical runs	Y	Y	N
	In metal raceways	N	N	N
	In fireproof shafts	Y	Y	Y
	In plenum communications raceways	N	N	N
	In riser communications raceways	N	N	N
	In one- and two-family dwellings	Y	Y	Y
Within buildings in other than air-handling spaces and risers	General	Y	Y	Y
	In one- and two-family dwellings	Y	Y	Y
	In multifamily dwellings	Y	Y	Y
	In nonconcealed spaces	Y	Y	Y
	Supported by cable trays	Y	Y	Y
	Under carpet, modular flooring, and planks	N	N	N
	In distributing frames and cross-connect arrays	Y	Y	Y
	In any raceway recognized in Chapter 3	N	N	N
	In plenum communications raceways	N	N	N
	In riser communications raceways	N	N	N
	In general-purpose communications raceways	N	N	N

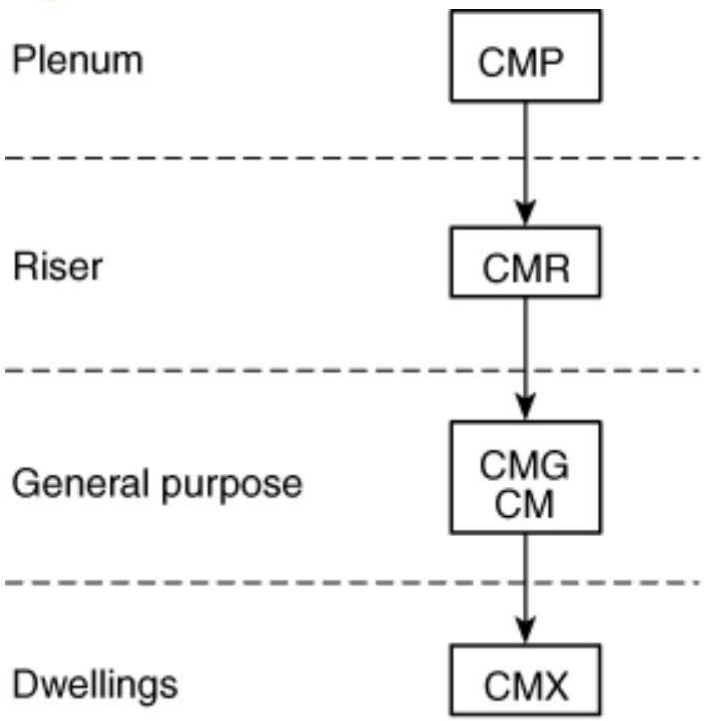
Note: An “N” in the table indicates that the cable routing assembly type shall not be installed in the application. A “Y” indicates that the cable routing assembly type shall be permitted to be installed in the application subject to the limitations described in 800.113.

Note- Table 800.154(c) is unchanged from the 2023 NEC

Table 800.154(d) Communications Cable Substitutions

Note- From 805.154.

Cable Type	Permitted Substitutions	
CMR	CMP	
CMG, CM	CMP, CMR	
CMX	CMP, CMR, CMG, CM	
Figure 800.154(d) Communications Cable Substitution Hierarchy		Note- From 805.154.



Type CM—Communications cables

A → B Cable A shall be permitted to be used in place of cable B.

Table 800.154(e) Optical Fiber Cable Substitutions	Note- From 770.154.

Cable Type	Permitted Substitutions
OFNP	None
OFCP	OFNP
OFNR	OFNP
OFCR	OFNP, OFCP, OFNR
OFNG, OFN	OFNP, OFNR
OFCG, OFC	OFNP, OFCP, OFNR, OFCR, OFNG, OFN

Figure 800.154(e) Optical Fiber Cable Substitution Hierarchy

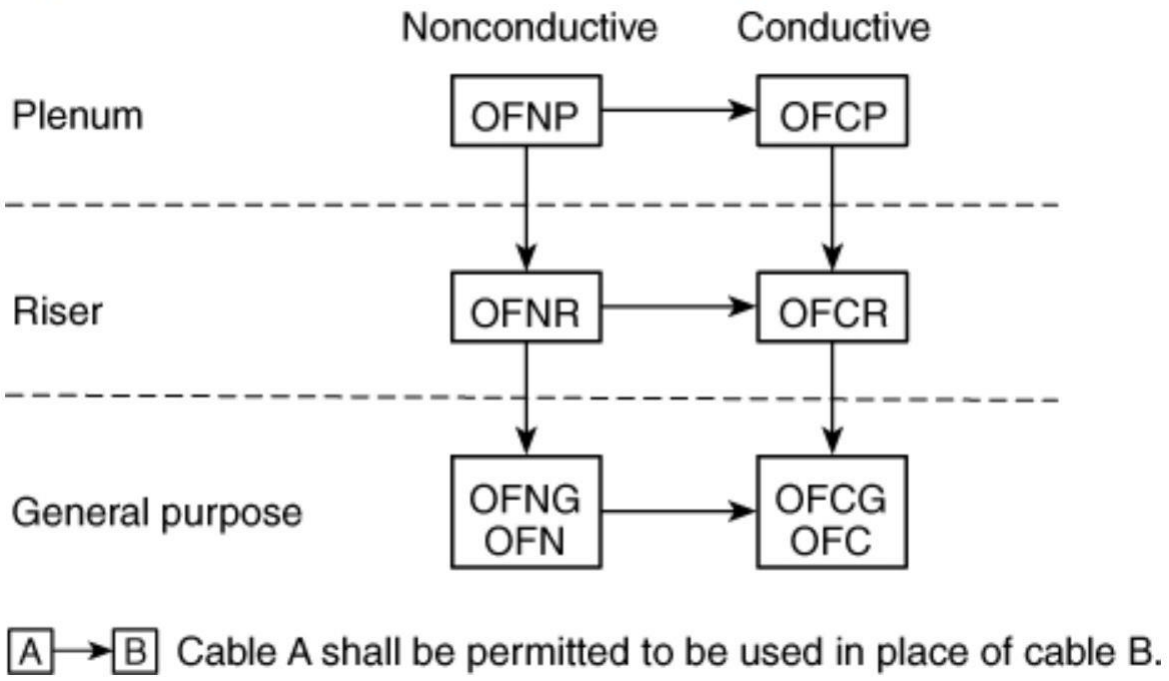


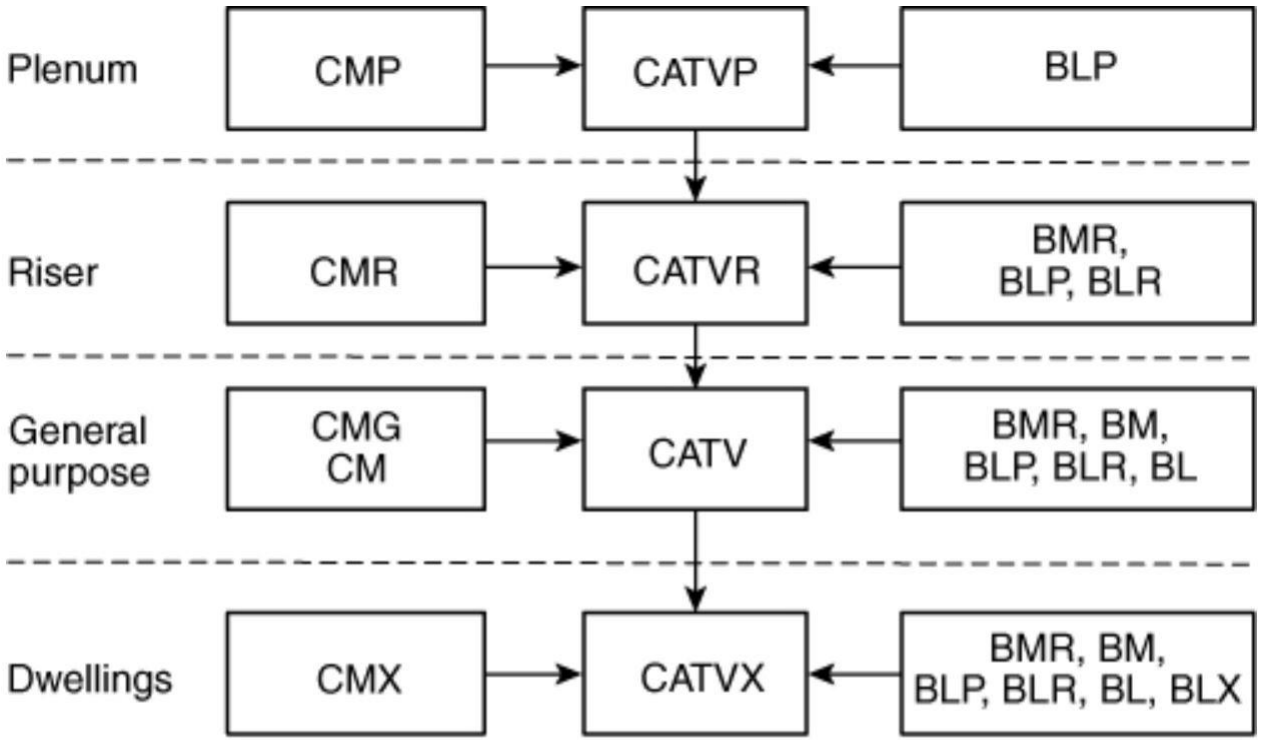
Table 800.154(f) CATV-type Coaxial Cable Substitutions

Cable Type	Permitted Substitutions
CATVP	CMP, BLP
CATVR	CATVP, CMP, CMR, BMR, BLP, BLR
CATV	CATVP, CMP, CATVR, CMR, CMG, CM, BMR, BM, BLP, BLR, BL
CATVX	CATVP, CMP, CATVR, CMR, CATV, CMG, CM, BMR, BM, BLP, BLR, BL, BLX

Note- From 820.154.

Figure 800.154(f) CATV-type Coaxial Cable Substitution Hierarchy

Note- From 820.154.



Type BL—Network-powered broadband communications low-power cables

Type BM—Network-powered broadband communications medium-power cables

Type CATV—Community antenna television cables

Type CM—Communications cables

Table 800.154(g) Network-Powered Broadband Cable Substitutions

Cable Type	Permitted Cable Substitutions
BM	BMR
BLP	CMP, CL3P
BLR	CMP, CL3P, CMR, CL3R, BLP, BMR
BL	CMP, CMR, CM, CMG, CL3P, CL3R, CL3, BMR, BM, BLP, BLR
BLX	CMP, CMR, CM, CMG, CMX, CL3P, CL3R, CL3, CL3X, BMR, BM, BLP, BRP, BL

Note- From 830.154.

Table 800.154(h) Listed Communications Raceways Substitutions

Raceway Type	Permitted Substitutions
Riser Communications Raceway	Plenum Communications Raceway
General-Purpose Communications Raceway	Plenum Communications Raceway, Riser Communications Raceway

Figure 800.154(h) Listed Communications Raceway Substitution Hierarchy

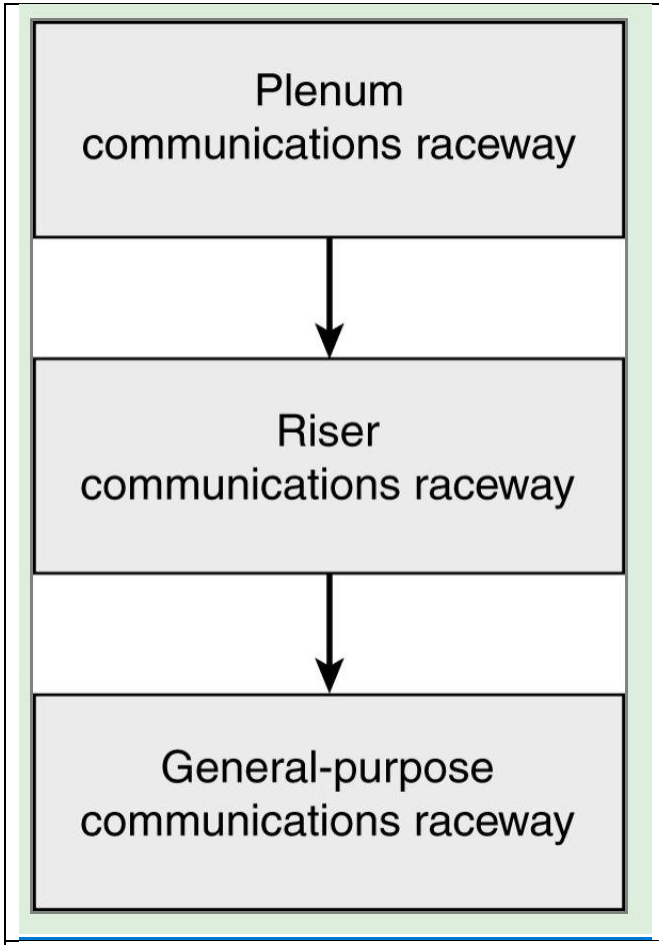
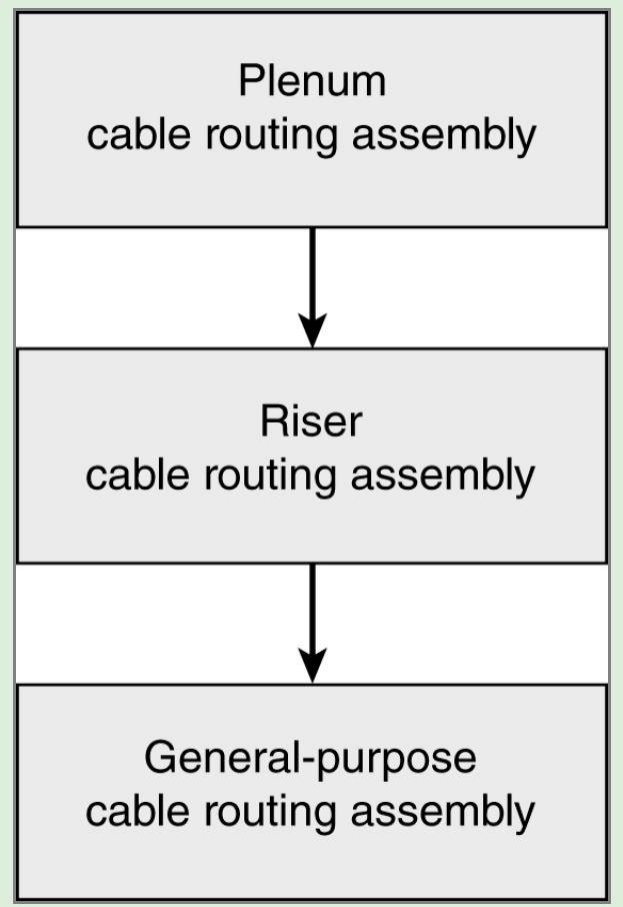


Table 800.154(i) Listed Cable Routing Assembly Substitutions

Raceway Type	Permitted Substitutions
Riser Cable Routing Assembly	Plenum Cable Routing Assembly
General-Purpose Cable Routing Assembly	Plenum Cable Routing Assembly, Riser Cable Routing Assembly

Figure 800.154(i) Listed Cable Routing Assembly Substitution Hierarchy



Public Input No. 2967-NFPA 70-2023 [Section No. 800.154]

800.154 Applications of Listed Communications Wires, Cables, and Raceways, and Listed Cable Routing Assemblies.

Permitted and nonpermitted applications of listed communications wires, cables, coaxial cables, network-powered broadband communications system cables and raceways, and listed cable routing assemblies, shall be in accordance with one of the following:

(1) Listed communications wires and cables as indicated in Table 800.154(a)

(2) Listed communications raceways as indicated in Table 800.154(b)

(3) Listed cable routing assemblies as indicated in Table 800.154(c)

The permitted applications shall be subject to the installation requirements of 800.110 and 800.113.

Table 800.154(a) Applications of Listed Communications Wires, Cables, and Network-Powered Broadband Communications System Cables in Buildings

Applications		Wire and Cable Type							
		Plenum	Riser	BMR	General-Purpose	BM	Limited-Use	Undercarpet	BM BI
In ducts specifically fabricated for environmental air as described in 300.22(B)	In fabricated ducts	Y	N	N	N	N	N	N	N
	In metal raceway that complies with 300.22(B)	Y	Y	Y	Y	Y	Y	N	N
In other spaces used for environmental air (plenums) as described in 300.22(C)	In other spaces used for environmental air	Y	N	N	N	N	N	N	N
	In metal raceway that complies with 300.22(C)	Y	Y	Y	Y	Y	Y	N	N
	In plenum communications raceways	Y	N	N	N	N	N	N	N
	In plenum cable routing assemblies	Y	N	N	N	N	N	N	N
	Supported by open metal cable trays	Y	N	N	N	N	N	N	N
	Supported by solid bottom metal cable trays with solid metal covers	Y	Y	Y	Y	Y	Y	N	N
In risers	In vertical runs	Y	Y	Y	N	N	N	N	N
	In metal raceways	Y	Y	Y	Y	Y	Y	N	N
	In fireproof shafts	Y	Y	Y	Y	Y	Y	N	N
	In plenum communications raceways	Y	Y	N	N	N	N	N	N

Applications		Wire and Cable Type							
		Plenum	Riser	BMR	General-Purpose	BM	Limited-Use	Undercarpet	BM BI
	In plenum cable routing assemblies	Y	Y	N	N	N	N	N	N
	In riser communications raceways	Y	Y	N	N	N	N	N	N
	In riser cable routing assemblies	Y	Y	N	N	N	N	N	N
	In one- and two-family dwellings	Y	Y	Y	Y	Y	Y	N	N
Within buildings in other than air-handling spaces and risers	General	Y	Y	Y	Y	Y	Y	N	N
	In one- and two-family dwellings	Y	Y	Y	Y	Y	Y	Y	N
	In multifamily dwellings	Y	Y	Y	Y	Y	Y	Y	N
	In nonconcealed spaces	Y	Y	Y	Y	Y	Y	Y	N
	Supported by cable trays	Y	Y	Y	Y	Y	N	N	N
	Under carpet, modular flooring, and planks	N	N	N	N	N	N	Y	N
	In distributing frames and cross-connect arrays	Y	Y	N	Y	N	N	N	N
	In rigid metal conduit (RMC) and intermediate metal conduit (IMC)	Y	Y	Y	Y	Y	Y	Y	Y
	In any raceway recognized in Chapter 3	Y	Y	Y	Y	Y	Y	N	N
	In plenum communications raceways	Y	Y	N	Y	N	N	N	N
	In plenum cable routing assemblies	Y	Y	N	Y	N	N	N	N
	In riser communications raceways	Y	Y	N	Y	N	N	N	N

Applications		Wire and Cable Type							
		Plenum	Riser	BMR	General-Purpose	BM	Limited-Use	Undercarpet	BM BI
	In riser cable routing assemblies	Y	Y	N	Y	N	N	N	N
	In general-purpose communications raceways	Y	Y	N	Y	N	N	N	N
	In general-purpose cable routing assemblies	Y	Y	N	Y	N	N	N	N

Note: An “N” in the table indicates that the cable type shall not be installed in the application. A “Y” indicates that the cable type shall be permitted to be installed in the application subject to the limitations described in 800.113. The Riser column includes all riser cables except BMR, and the General-Purpose column includes all general-purpose cables except BM.

Informational Note No. 1: ~~Part IV of~~ Article 800 ~~covers~~ , Part IV covers installation methods within buildings. This table covers the applications of listed communications wires, cables, and raceways in buildings.

Informational Note No. 2: ~~For information on the restrictions~~ See 300.113(B) for restrictions to the installation of communications cables in fabricated ducts~~, see 800 .113(B).~~

Table 800.154(b) Applications of Listed Communications Raceways in Buildings

Applications		Listed Communications Raceway Type		
		Plenum	Riser	General-Purpose
In ducts specifically fabricated for environmental air as described in 300.22(B)	In fabricated ducts	N	N	N
	In metal raceway that complies with 300.22(B)	N	N	N
In other spaces used for environmental air (plenums) as described in 300.22(C)	In other spaces used for environmental air	Y	N	N
	In metal raceway that complies with 300.22(C)	Y	Y	Y
	In plenum cable routing assemblies	N	N	N
	Supported by open metal cable trays	Y	N	N
	Supported by solid bottom metal cable trays with solid metal covers	Y	Y	Y
In risers	In vertical runs	Y	Y	N
	In metal raceways	Y	Y	Y
	In fireproof shafts	Y	Y	Y
	In plenum cable routing assemblies	N	N	N

Applications		Listed Communications Raceway Type		
		Plenum	Riser	General-Purpose
	In riser cable routing assemblies	N	N	N
	In one- and two-family dwellings	Y	Y	Y
Within buildings in other than air-handling spaces and risers	General	Y	Y	Y
	In one- and two-family dwellings	Y	Y	Y
	In multifamily dwellings	Y	Y	Y
	In nonconcealed spaces	Y	Y	Y
	Supported by cable trays	Y	Y	Y
	Under carpet, modular flooring, and planks	N	N	N
	In distributing frames and cross-connect arrays	Y	Y	Y
	In any raceway recognized in Chapter 3	Y	Y	Y
	In plenum cable routing assemblies	N	N	N
	In riser cable routing assemblies	N	N	N
	In general-purpose cable routing assemblies	N	N	N

Note: An “N” in the table indicates that the communications raceway type shall not be installed in the application. A “Y” indicates that the communications raceway type shall be permitted to be installed in the application, subject to the limitations described in 800.110 and 800.113.

Table 800.154(c) Applications of Listed Cable Routing Assemblies in Buildings

Applications		Listed Cable Routing Assembly Type		
		Plenum	Riser	General-Purpose
In ducts specifically fabricated for environmental air as described in 300.22(B)	In fabricated ducts	N	N	N
	In metal raceway that complies with 300.22(B)	N	N	N
In other spaces used for environmental air (plenums) as described in 300.22(C)	In other spaces used for environmental air	Y	N	N
	In metal raceway that complies with 300.22(C)	N	N	N
	In plenum communications raceways	N	N	N
	Supported by open metal cable trays	Y	N	N
	Supported by solid bottom metal cable trays with solid metal covers	N	N	N
In risers	In vertical runs	Y	Y	N

Applications		Listed Cable Routing Assembly Type		
		Plenum	Riser	General-Purpose
	In metal raceways	N	N	N
	In fireproof shafts	Y	Y	Y
	In plenum communications raceways	N	N	N
	In riser communications raceways	N	N	N
	In one- and two-family dwellings	Y	Y	Y
Within buildings in other than air-handling spaces and risers	General	Y	Y	Y
	In one- and two-family dwellings	Y	Y	Y
	In multifamily dwellings	Y	Y	Y
	In nonconcealed spaces	Y	Y	Y
	Supported by cable trays	Y	Y	Y
	Under carpet, modular flooring, and planks	N	N	N
	In distributing frames and cross-connect arrays	Y	Y	Y
	In any raceway recognized in Chapter 3	N	N	N
	In plenum communications raceways	N	N	N
	In riser communications raceways	N	N	N
	In general-purpose communications raceways	N	N	N

Note: An “N” in the table indicates that the cable routing assembly type shall not be installed in the application. A “Y” indicates that the cable routing assembly type shall be permitted to be installed in the application subject to the limitations described in 800.113.

Statement of Problem and Substantiation for Public Input

This Public Input is being submitted on behalf of the NEC Correlating Committee Usability Task Group in order to provide correlation throughout the document. The text is revised to to comply with the NEC Style Manual Section 4.1.4, regarding the use of Parts.
4.1.4 References to an Entire Article. References shall not be made to an entire article, except for the Article 100 or where referenced to provide the necessary context. References to specific parts within articles shall be permitted. References to all parts of an article shall not be permitted. The article number shall precede the part number.
The Usability Task Group members are: Derrick Atkins, David Hittinger, Richard Holub, Dean Hunter, Chad Kennedy and David Williams.
Informational note 2 was revised to comply with the NEC Style Manual Section 2.1.10.3

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: FR-7780-NFPA 70-2024

Statement: Section 800.113 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this revision expands the application requirements in 800.154 to include CATV-type coaxial cables, optical fiber cables, and network-powered broadband communications cables. It also moves the cable substitution hierarchies into the general article (Article 800) and establishes analogous cable substitution hierarchies for communications raceways and cable routing assemblies.

Public Input No. 26-NFPA 70-2023 [Section No. 800.170]

800.170 Plenum Cable Ties.

Cable ties intended for use in other space used for environmental air (plenums) shall be listed as having low smoke and heat release properties.

Informational Note: See NFPA 90A ~~-2018~~ , *Standard for the Installation of Air-Conditioning and Ventilating Systems*, ~~and ANSI/UL 2043-2013~~ 8.5.5.6, and UL 2043 , *Standard for ~~Safety~~ Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces*, for information on listing discrete products as having low smoke and heat release properties.

Statement of Problem and Substantiation for Public Input

The edition date for NFPA 90A and the UL standard have been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

The requirements for discrete products in 4.3.11.2.6.5 in NFPA 90A-2021 has been moved to 8.5.5.6 in the 2024 edition of NFPA 90A.

ANSI was stricken from the title of the UL reference to conform to current practice in references to UL standards.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	Revise NFPA 90A reference
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	Revise NFPA 90A reference
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	Revise NFPA 90A reference
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	Revise NFPA 90A reference
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	Revise NFPA 90A reference
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]	Revise NFPA 90A reference
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]	Revise NFPA 90A reference
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]	
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]	
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]	
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	

Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]
Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: FR-7793-NFPA 70-2024
Statement: Per the NFPA manual of style the revision dates are being updated to the latest revision and the ANSI references are being deleted for consistency with other NFPA documents.

Public Input No. 1142-NFPA 70-2023 [Section No. 800.171]

800.171 Communications Equipment.

Communications equipment shall be listed as being suitable for electrical connection to a communications network.

Informational Note No. 1: See ~~ANSI/~~ UL 60950-1~~-2014, Standard for Safety of~~ , *Information Technology Equipment*, ~~ANSI/~~ UL 1863~~-2012~~ , *Standard for ~~Safety~~ Communications Circuit Accessories*, or ~~ANSI/~~ UL 62368-1-2014 or ~~ANSI/~~ UL 62368~~-1-2018~~ , *Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements*.

Informational Note No. 2: See ANSI/ATIS 0600337~~-2016~~ , *Requirements for Maximum Voltage, Current, and Power Levels Used in Communications Circuits*, for additional information regarding voltages, currents, and power allowed on communications circuits.

Statement of Problem and Substantiation for Public Input

The edition date for the UL standard has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

ANSI was stricken from the title of the UL reference to conform to current practice in references to UL standards.

The title of the UL standard was revised to agree with the list of UL standards in the UL Standards online catalog. The words “Standard for” have been dropped from the titles of UL standards.

Submitter Information Verification

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Submittal Date: Tue Jun 20 08:16:31 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7796-NFPA 70-2024
Statement: Per the NFPA manual of style the revision dates are being updated to the latest revision and the ANSI references are being deleted for consistency with other NFPA documents.

Public Input No. 1157-NFPA 70-2023 [Section No. 800.179]

REPLACE 800.

~~179 Wires and Cables.~~

~~Communications wires and cables, community antenna television cables, and network-powered broadband communications cables shall be listed in accordance with 800.179(A) through (L) and shall have a temperature rating of not less than 60°C (140°F). The temperature rating shall be marked on the jacket of cables that have a temperature rating exceeding 60°C (140°F). Conductors in communications cables, other than in a coaxial cable, shall be copper. Cables shall be permitted to contain optical fibers. Cables containing optical fibers shall be marked with the suffix "-OF."~~

~~Communications wires and cables and network-powered communications cables shall have a voltage rating of not less than 300 volts; the insulation for the individual conductors, other than the outer conductor of a coaxial cable, shall be rated for 300 volts minimum. The cable voltage rating shall not be marked on the cable or on the under-carpet communications wire.~~

~~*Exception:* *Voltage markings shall be permitted where the cable has multiple listings and voltage marking is required for one or more of the listings.*~~

~~Informational Note No. 1: Voltage markings on cables could be misinterpreted to suggest that the cables may be suitable for Class 1, electric light, and power applications.~~

~~Informational Note No. 2: See UL 444-2017, *Standard for Communications Cables* , for information on communications cables.~~

~~Informational Note No. 3: See UL1655-2009, *Standard for Community-Antenna Television Cables* , for information on community-antenna television cables.~~

~~**(A)** Plenum Cables.~~

~~Type CMP communications plenum cables, Type CATVP community antenna television plenum coaxial cables, and Type BLP network-powered broadband communication low-power plenum cables shall be listed as being suitable for use in ducts, plenums, and other spaces used for environmental air and shall also be listed as having adequate fire-resistant and low-smoke-producing characteristics.~~

~~Informational Note: See NFPA 262-2019, *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces* , for one method of defining a cable that is low-smoke-producing cable and fire-resistant cable so that the cable exhibits a maximum peak optical density of 0.50 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.52 m (5 ft).~~

~~**(B)** Riser Cables.~~

~~Type CMR communications riser cables, Type CATVR community antenna television riser coaxial cables, Type BMR network-powered broadband communications medium-power riser cables, and Type BLR network-powered broadband communications low-power riser cables shall be listed as being suitable for use in a vertical run in a shaft or from floor to floor and shall also be listed as having fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.~~

~~Informational Note: See ANSI/UL 1666-2017, *Standard Test for Flame Propagation Height of Electrical and Optical-Fiber Cable Installed Vertically in Shafts* , for one method of defining fire-resistant characteristics of the cable capable of preventing the carrying of fire from floor to floor.~~

~~**(C)** General-Purpose Cables.~~

(1) Type CMG.

Type CMG communications general-purpose cables shall be listed as being suitable for general-purpose use, with the exception of risers and plenums, and shall also be listed as being resistant to the spread of fire.

Informational Note: See CSA Vertical Flame Test — Cables in Cable Trays as described in CSA C22.2 No. 0.3-09 (R2019), *Test Methods for Electrical Wires and Cables*, for one method of defining resistance to the spread of fire where the damage (char length) of the cable does not exceed 1.5 m (4 ft 11 in.) or FT4 Flame Test in ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*. The smoke measurements in the test methods are not applicable.

(2) Types CM, CATV, BM, and BL.

Type CM communications general-purpose cables, Type CATV community antenna television coaxial general-purpose cables, Type BM network-powered broadband communications medium-power general-purpose cables, and Type BL network-powered broadband communications low-power general-purpose cables shall be listed as being suitable for general-purpose use, with the exception of risers and plenums, and shall also be listed as being resistant to the spread of fire.

Informational Note: See UL Flame Exposure in ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables,* for one method of defining *resistance to the spread of fire* where the damage (char length) of the cable does not to exceed 244 cm (8 ft 0 in.). The smoke measurements in the test method are not applicable.

(D) Limited-Use Cables.

Type CMX limited-use communications cables, Type CATVX limited-use community antenna television coaxial cables, and Type BLX limited-use network-powered broadband low-power cables shall be listed as being suitable for use in dwellings and for use in raceway and shall also be listed as being resistant to flame spread.

Informational Note: See ANSI/UL 2556, *Standard for Wire and Cable Test Method*, for one method of determining that cable is resistant to flame spread is by testing the cable to the FV-2/VW-1 flame test.

(E) Circuit Integrity (CI) Cable, Fire-Resistive Cable System, or Electrical Circuit Protective System.

Cables that are used for survivability of critical circuits under fire conditions shall be listed and meet either 800.179(E)(1), (E)(2), or (E)(3).

(1) CI Cables.

Cables specified in 800.179(A) through (C) and used for survivability of critical circuits shall be marked with the additional classification using the suffix "CI." In order to maintain its listed fire rating, CI cable shall only be installed in free air in accordance with 800.24. CI cables shall only be permitted to be installed in a raceway where specifically listed and marked as part of a fire-resistive cable system as covered in 800.179(E)(2).

Informational Note: See UL 2196, *Standard for Fire Test for Circuit Integrity of Fire-Resistant Power, Instrumentation, Control, and Data Cables*, for one method of defining CI cable by establishing a minimum 2-hour fire resistance rating for the cable as specified in UL 444, *Standard for Safety Communications Cables*.

(2) Fire-Resistive Cable Systems.

Cables specified in 800.179(A) through (C) and 800.179(E)(1) that are part of an electrical circuit protective system shall be fire-resistive cable identified with the protective system number on the product, or on the smallest unit container in which the product is packaged, and shall be installed in accordance with the listing of the protective system.

Informational Note No. 1: See UL 2196, *Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, for one method of defining an electrical circuit protective system rating for the system. UL *Guide Information for Electrical Circuit Integrity Systems (FHIT)* contains information to identify the system and its installation limitations to maintain a minimum fire-resistive rating.

Informational Note No. 2: The listing organization provides information for electrical circuit protective systems (FHIT), including installation requirements for maintaining the fire rating.

(3) Electrical Circuit Protective System.

Protectants for cables specified in 800.179(A) through (E), which are part of an electrical circuit protective system, shall be identified with the protective system identifier and hourly rating marked on the protectant or the smallest unit container and installed in accordance with the listing of the system.

Informational Note: See UL 1724, *Fire Tests for Electrical Circuit Protective Systems*, for one method of defining an electrical circuit protective system. UL *Guide Information for Electrical Circuit Integrity Systems (FHIT)* contains information to identify the system and its installation limitations to maintain the fire-resistive rating.

(F) Types CMP-LP, CMR-LP, CMG-LP, and CM-LP Limited Power (LP) Cables.

Types CMP-LP, CMR-LP, CMG-LP, and CM-LP communications limited power cables shall be listed as suitable for carrying power and data up to a specified current limit for each conductor without exceeding the temperature rating of the cable where the cable is installed in cable bundles in free air or installed within a raceway, cable tray, or cable routing assembly. The cables shall be marked with the suffix "-LP(XXA)," where XX designates the current limit in amperes per conductor.

Informational Note: An example of the marking on a communications cable with an LP rating is "CMP-LP (0.6A)(75°C) 23 AWG 4 pair," which indicates that it is a 4-pair plenum cable with 23 AWG conductors, a temperature rating of 75°C, and a current limit of 0.6 amperes.

(G) Type CMUC Undercarpet Wires and Cables.

Type CMUC undercarpet communications wires and cables shall be listed as being suitable for undercarpet use and shall also be listed as being resistant to flame spread.

Informational Note: See ANSI/UL 2556, *Standard for Wire and Cable Test Methods*, for one method of determining that cable is resistant to flame spread in accordance with the FV-2/VW-1 flame test.

(H) Communications Wires.

Communications wires, such as distributing frame wire and jumper wire, shall be listed as being resistant to the spread of fire.

Informational Note No. 1: See UL Flame Exposure, Vertical Flame Tray Test in ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*, for one method of defining *cable flame resistance to the spread of fire* where the cables do not spread fire to the top of the tray. The smoke measurements in the test method are not applicable.

Informational Note No. 2: See CSA Vertical Flame Test — Cables in Cable Trays, as described in CSA C22.2 No. 0.3-09 (R2019), *Test Methods for Electrical Wires and Cables*, for another method of defining *resistance to the spread of fire* is for the damage (char length) of the cable to not exceed 1.5 m (4 ft 11 in.).

~~(I) Optional Markings.~~

~~Cables shall be permitted to be surface marked to indicate special characteristics of the cable materials.~~

~~Informational Note: These markings can include, but are not limited to, markings for limited-smoke, halogen-free, low-smoke halogen-free, and sunlight resistance.~~

~~179 WITH THE TEXT AND FIGURES SHOWN IN THE ATTACHED FILE~~

Additional Proposed Changes

File Name	Description	Approved
800.179_revisions.docx	800.179 revisions	

Statement of Problem and Substantiation for Public Input

Section 800.113 covers installation requirements for cables used for communications circuits. Table 800.113 is a list of those cables. In order to coordinate with Table 800.113, this PI expands the listing requirements in 800.179 to include optical fiber cables.

The TerraView program could not handle the changed text and figures. All the changes are shown in the attached Word doc.

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Submittal Date: Wed Jun 21 07:10:47 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7841-NFPA 70-2024
Statement: 800.179 (A)-(I) has been revised to align with optical fiber cable type requirements that have been included in Article 800. Listed cables must be marked, so the requirements and tables which identify the marking of cables have not been included. Revision dates for referenced standards have been updated per the NFPA manual of style.

800.179(A) Plenum Cables. Type CMP communications plenum cables, Types OFNP and OFCP nonconductive and conductive optical fiber plenum cables, Type CATVP community antenna television plenum coaxial cables, and Type BLP network-powered broadband communication low-power plenum cables shall be listed as being suitable for use in ducts, plenums, and other spaces used for environmental air and shall also be listed as having adequate fire-resistant and low-smoke-producing characteristics.

Informational Note: See NFPA 262 ~~2019~~, *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces*, for one method of defining a cable that is low-smoke-producing cable and fire-resistant cable so that the cable exhibits a maximum peak optical density of 0.50 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.52 m (5 ft).

800.179(B) Riser Cables. Type CMR communications riser cables, Types OFNR and OFCR nonconductive and conductive optical fiber riser cables, Type CATVR community antenna television riser coaxial cables, Type BMR network-powered broadband communications medium-power riser cables, and Type BLR network-powered broadband communications low-power riser cables shall be listed as being suitable for use in a vertical run in a shaft or from floor to floor and shall also be listed as having fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

Informational Note: See ~~ANSI/~~UL 1666 ~~2017~~, *Standard Test for Flame Propagation Height of Electrical and Optical-Fiber Cable Installed Vertically in Shafts*, for one method of defining fire-resistant characteristics of the cable capable of preventing the carrying of fire from floor to floor.

800.179(C) General-Purpose Cables.

800.179(C)(1) Types CMG, OFNG and OFCG. Type CMG communications general-purpose cables and Types OFNG and OFCG nonconductive and conductive general-purpose optical fiber cables, shall be listed as being suitable for general-purpose use, with the exception of risers and plenums, and shall also be listed as being resistant to the spread of fire.

Informational Note: See CSA Vertical Flame Test — Cables in Cable Trays as described in CSA C22.2 No. 0.3-09 (R2019), *Test Methods for Electrical Wires and Cables*, for one method of defining resistance to the spread of fire where the damage (char length) of the cable does not exceed 1.5 m (4 ft

11 in.) or FT4 Flame Test in ~~ANSI/~~UL 1685~~-2015~~, *Standard for ~~Safety for~~ Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*. The smoke measurements in the test methods are not applicable.
800.179(C)(2) Types CM, OFN, OFC, CATV, BM, and BL. Type CM communications general-purpose cables, Types OFN and OFC nonconductive and conductive general-purpose optical fiber cables, Type CATV community antenna television coaxial general-purpose cables, Type BM network-powered broadband communications medium-power general-purpose cables, and Type BL network-powered broadband communications low-power general-purpose cables shall be listed as being suitable for general-purpose use, with the exception of risers and plenums, and shall also be listed as being resistant to the spread of fire. Informational Note: See UL Flame Exposure in ~~ANSI/~~UL 1685~~-2015~~, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables,* for one method of defining *resistance to the spread of fire* where the damage (char length) of the cable does not to exceed 244 cm (8 ft 0 in.). The smoke measurements in the test method are not applicable.
800.179(D) Limited-Use Cables. Type CMX limited-use communications cables, Type CATVX limited-use community antenna television coaxial cables, and Type BLX limited-use network-powered broadband low-power cables shall be listed as being suitable for use in dwellings and for use in raceway and shall also be listed as being resistant to flame spread. Informational Note: See ~~ANSI~~/UL 2556, ~~*Standard for*~~ *Wire and Cable Test Method~~s~~*, for one method of determining that cable is resistant to flame spread is by testing the cable to the FV-2/VW-1 flame test.
800.179(E) Circuit Integrity (CI) Cable, Fire-Resistive Cable System, or Electrical Circuit Protective System. Cables that are used for survivability of critical circuits under fire conditions shall be listed and meet either 800.179(E)(1), (E)(2), or (E)(3).
800.179(E)(1) CI Cables. Cables specified in 800.179(A) through (C) and used for survivability of critical circuits shall be marked with the additional classification using the suffix "CI." In order to maintain its listed fire rating, CI cable shall only be installed in free air in accordance with 800.24. CI cables shall only be permitted to be installed in a raceway where specifically listed and marked as part of a fire-resistive cable system as covered in 800.179(E)(2). Informational Note: See UL 2196, *Standard for Fire Test for Circuit Integrity of Fire-Resistant Power, Instrumentation, Control, and Data Cables*, for one method of defining CI cable by establishing a

minimum 2-hour fire resistance rating for the cable as specified in UL 444, ~~*Standard for Safety*~~ *Communications Cables.*
800.179(E)(2) Fire-Resistive Cable Systems. Cables specified in 800.179(A) through (C) and 800.179(E)(1) that are part of an electrical circuit protective system shall be fire-resistive cable identified with the protective system number on the product, or on the smallest unit container in which the product is packaged, and shall be installed in accordance with the listing of the protective system. Informational Note No. 1: See UL 2196, *Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables,* for one method of defining an electrical circuit protective system rating for the system. UL *Guide Information for Electrical Circuit Integrity Systems (FHIT)* contains information to identify the system and its installation limitations to maintain a minimum fire-resistive rating. Informational Note No. 2: The listing organization provides information for electrical circuit protective systems (FHIT), including installation requirements for maintaining the fire rating.
800.179(E)(3) Electrical Circuit Protective System. Protectants for cables specified in 800.179(A) through (E), which are part of an electrical circuit protective system, shall be identified with the protective system identifier and hourly rating marked on the protectant or the smallest unit container and installed in accordance with the listing of the system. Informational Note: See UL 1724, *Fire Tests for Electrical Circuit Protective Systems,* for one method of defining an electrical circuit protective system. UL *Guide Information for Electrical Circuit Integrity Systems (FHIT)* contains information to identify the system and its installation limitations to maintain the fire-resistive rating.
800.179(F) Types CMP-LP, CMR-LP, CMG-LP, and CM-LP Limited Power (LP) Cables. Types CMP-LP, CMR-LP, CMG-LP, and CM-LP communications limited power cables shall be listed as suitable for carrying power and data up to a specified current limit for each conductor without exceeding the temperature rating of the cable where the cable is installed in cable bundles in free air or installed within a raceway, cable tray, or cable routing assembly. The cables shall be marked with the suffix "-LP(XXA)," where XX designates the current limit in amperes per conductor. Informational Note: An example of the marking on a communications cable with an LP rating is "CMP-LP (0.6A)(75°C) 23 AWG 4 pair," which indicates that it is a 4-pair plenum cable with 23 AWG conductors, a

temperature rating of 75°C, and a current limit of 0.6 amperes.

800.179(G) Field-Assembled Optical Fiber Cables. Field-assembled optical fiber cable shall comply with the following:

(1) The specific combination of jacket and optical fibers intended to be installed as a field-assembled optical fiber cable shall be one of the optical fiber cable types in 800.179(A), (B), or (D) and shall be marked in accordance with Table 800.179(I)(3).

(2) The jacket of a field-assembled optical fiber cable shall have a surface marking indicating the specific optical fibers with which it is identified for use.

(3) The optical fibers shall have a permanent marking, such as a marker tape, indicating the jacket with which they are identified for use.

(4) The jacket without fibers shall meet the listing requirements for communications raceways in 800.182(A), (B), or (C) in accordance with the cable marking.

800.179(~~G~~H) Type CMUC Undercarpet Wires and Cables. Type CMUC undercarpet communications wires and cables shall be listed as being suitable for undercarpet use and shall also be listed as being resistant to flame spread.

Informational Note: See ~~ANSI/~~UL 2556, ~~*Standard for*~~ *Wire and Cable Test Methods*, for one method of determining that cable is resistant to flame spread in accordance with the FV-2/VW-1 flame test.

800.179(~~H~~I) Communications Wires. Communications wires, such as distributing frame wire and jumper wire, shall be listed as being resistant to the spread of fire.

Informational Note No. 1: See UL Flame Exposure, Vertical Flame Tray Test in ~~ANSI/~~UL 1685~~-2015,~~ *Standard for* ~~*Safety for*~~ *Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*, for one method of defining *cable flame resistance to the spread of fire* where the cables do not spread fire to the top of the tray. The smoke measurements in the test method are not applicable.

Informational Note No. 2: See CSA Vertical Flame Test — Cables in Cable Trays, as described in CSA C22.2 No. 0.3-09 (R2019), *Test Methods for Electrical Wires and Cables*, for another method of defining *resistance to the spread of fire* is for the damage (char length) of the cable to not exceed 1.5 m (4 ft 11 in.).

800.179(J) Cable Marking.

800.179(J)(1). Communications cables shall be marked in accordance with Table 800.179(I)(1).

Table 800.179(I)(1) Communications Cable Marking

Cable Marking	Type
CMP	Communications plenum cable
CMR	Communications riser cable
CMG	Communications general-purpose cable
CM	Communications general-purpose cable
CMX	Communications cable, limited use
CMUC	Under-carpet communications wire and cable

Informational Note: Cable types are listed in descending order of fire performance.

800.179(J)(2). CATV-type coaxial cables shall be marked in accordance with Table 800.179(I)(2).

Table 800.179(I)(2) CATV-type Coaxial Cable Marking

Cable Marking	Type
CATVP	CATV plenum cable
CATVR	CATV riser cable
CATV	CATV cable
CATVX	CATV cable, limited use

).

800.179(J)(3). Optical fiber cables shall be marked in accordance with Table 800.179(I)(3).

Table 800.179(I)(3) Optical Fiber Cable Marking

Cable Marking	Type
OFNP	Nonconductive optical fiber plenum cable
OFCP	Conductive optical fiber plenum cable
OFNR	Nonconductive optical fiber riser cable
OFCR	Conductive optical fiber riser cable
OFNG	Nonconductive optical fiber general-purpose cable
OFCG	Conductive optical fiber general-purpose cable
OFN	Nonconductive optical fiber general-purpose cable
OFC	Conductive optical fiber general-purpose cable

800.179(JI)(4) Optional Markings. Cables shall be permitted to be surface marked to indicate special characteristics of the cable materials.

Informational Note: These markings can include, but are not limited to, markings for limited-smoke, halogen-free, low-smoke halogen-free, and sunlight resistance.

800.182(C) General-Purpose Cable Routing Assemblies and General-Purpose Communications Raceways. General-purpose cable routing assemblies and general-purpose communications raceways shall be listed as being resistant to the spread of fire.

Informational Note: See ANSI/UL 1685-2015, *Standard for Safety for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*, for one method of defining resistance to the spread of fire where the cable routing assemblies and communications raceways do not spread fire to the top of the tray.

Public Input No. 906-NFPA 70-2023 [Section No. 800.179(A)]

(A) Plenum Cables.

Type CMP communications plenum cables, Type CATVP community antenna television plenum coaxial cables, and Type BLP network-powered broadband communication low-power plenum cables shall be listed as being suitable for use in ducts, plenums, and other spaces used for environmental air and shall also be listed as having adequate fire-resistant and low-smoke-producing characteristics.

Informational Note: See NFPA 262~~-2019~~ , *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces*, for one method of defining a cable that is low-smoke-producing cable and fire-resistant cable so that the cable exhibits a maximum peak optical density of 0.50 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.52 m (5 ft).

Statement of Problem and Substantiation for Public Input

The edition date for the NFPA standard has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

Submitter Information Verification

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Submittal Date: Mon May 29 15:07:40 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7841-NFPA 70-2024
Statement: 800.179 (A)-(I) has been revised to align with optical fiber cable type requirements that have been included in Article 800. Listed cables must be marked, so the requirements and tables which identify the marking of cables have not been included. Revision dates for referenced standards have been updated per the NFPA manual of style.

Public Input No. 905-NFPA 70-2023 [Section No. 800.179 [Excluding any Sub-Sections]]

Communications wires and cables, community antenna television cables, and network-powered broadband communications cables shall be listed in accordance with 800.179(A) through (L) and shall have a temperature rating of not less than 60°C (140°F). The temperature rating shall be marked on the jacket of cables that have a temperature rating exceeding 60°C (140°F). Conductors in communications cables, other than in a coaxial cable, shall be copper. Cables shall be permitted to contain optical fibers. Cables containing optical fibers shall be marked with the suffix "-OF."

Communications wires and cables and network-powered communications cables shall have a voltage rating of not less than 300 volts; the insulation for the individual conductors, other than the outer conductor of a coaxial cable, shall be rated for 300 volts minimum. The cable voltage rating shall not be marked on the cable or on the under-carpet communications wire.

Exception: Voltage markings shall be permitted where the cable has multiple listings and voltage marking is required for one or more of the listings.

Informational Note No. 1: Voltage markings on cables could be misinterpreted to suggest that the cables may be suitable for Class 1, electric light, and power applications.

Informational Note No. 2: See UL 444 ~~-2017,~~ ~~*Standard for*~~ *Communications Cables*, for information on communications cables.

Informational Note No. 3: See UL1655 ~~-2009,~~ ~~*Standard for*~~ *Community-Antenna Television Cables*, for information on community-antenna television cables.

Statement of Problem and Substantiation for Public Input

The edition date for the UL standard has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states "Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard."

ANSI was stricken from the title of the UL reference to conform to current practice in references to UL standards.

The title of the UL standard was revised to agree with the list of UL standards in the UL Standards online catalog. The words "Standard for" have been dropped from the titles of UL standards.

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Committee: NEC-P16

Committee Statement

Resolution: FR-7800-NFPA 70-2024

Statement: Per the NFPA manual of style the revision dates are being updated to the latest revision and revised UL titles for consistency with other NFPA documents.

Public Input No. 201-NFPA 70-2023 [Section No. 800.180]

~~**800.180** Grounding Devices.~~

~~Where bonding or grounding is required, devices used to connect a shield, a sheath, or non-current-carrying metallic members of a cable to a bonding conductor or grounding electrode conductor shall be listed or be part of listed equipment.~~

Statement of Problem and Substantiation for Public Input

Section 800.180 Grounding Devices in Part V Listing Requirements, requires that the grounding device be a listed device or be part of listed equipment. This requirement is not actually a listing requirement but an installation requirement that belongs in Part III, Ground Methods.

We have submitted two PIs to improve the usability of the code by moving the text of 800.180 to (new) 800.100(E). Two PIs are needed, one the delete 800.180 and another to create 800.100(E).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 193-NFPA 70-2023 [New Section after 770.100(D)]	creates new section 770.100(E)
Public Input No. 194-NFPA 70-2023 [Section No. 770.180]	deletes 770.180
Public Input No. 200-NFPA 70-2023 [New Section after 800.100(D)]	creates new section 800.100(E)
Public Input No. 200-NFPA 70-2023 [New Section after 800.100(D)]	

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Submittal Date: Fri Jan 20 06:50:18 EST 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7712-NFPA 70-2024

Statement: Section 800.180 for Grounding Devices in Part V Listing requirements, requires that the grounding device be a listed device or be part of listed equipment. This requirement is not a listing requirement, but an installation requirement and has therefore been moved to Part III, Grounding Methods.

Public Input No. 3342-NFPA 70-2023 [Section No. 800.180]

~~**800.180** Grounding Devices.~~

~~Where bonding or grounding is required, devices used to connect a shield, a sheath, or non-current-carrying metallic members of a cable to a bonding conductor or grounding electrode conductor shall be listed or be part of listed equipment.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3341-NFPA 70-2023 [Sections 800.100, 800.106]	

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Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use and avoiding confusion it is more appropriate to have as many requirements as practical for communications systems explicitly in one article such as 800. The relocated text in the proposed Articles X00 and X50 does not address the proposed revisions of PI-200 and PI-201 to 800.180.

Public Input No. 1354-NFPA 70-2023 [Section No. 800.182(A)]

(A) Plenum Cable Routing Assemblies and Plenum Communications Raceways.

Plenum cable routing assemblies and plenum communications raceways shall be listed as having adequate fire-resistant and low-smoke-producing characteristics.

Informational Note No. 1: See ASTM E84-~~19B~~ 23a , *Standard Test Method for Surface Burning Characteristics of Building Materials*, or ANSI/UL 723-2018, *Standard Test Method for Surface Burning Characteristics of Building Materials*, for one method of defining cable routing assemblies and communications raceways that have adequate fire-resistant and low-smoke-producing characteristics and exhibit a maximum flame spread index of 25 and a maximum smoke developed index of 50.

Informational Note No. 2: See NFPA 262-2019, *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces*, for another method of defining communications raceways that have adequate fire-resistant and low-smoke-producing characteristics and exhibit a maximum peak optical density of 0.50 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.52 m (5 ft) or less.

Informational Note No. 3: See 4.3.11.2.6 or 4.3.11.5.5 of NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, for information on materials exposed to the airflow in ceiling cavity and raised floor plenums.

Statement of Problem and Substantiation for Public Input

It is important to reference the latest edition of ASTM E84, since this is a critical standard and many changes have been introduced that affect test results.

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Committee: NEC-P16

Committee Statement

Resolution: FR-7802-NFPA 70-2024
Statement: Per the NFPA manual of style the revision dates are being updated to the latest revisions.

Public Input No. 27-NFPA 70-2023 [Section No. 800.182(A)]

(A) Plenum Cable Routing Assemblies and Plenum Communications Raceways.

Plenum cable routing assemblies and plenum communications raceways shall be listed as having adequate fire-resistant and low-smoke-producing characteristics.

Informational Note No. 1: See ASTM E84~~-19B~~ , *Standard Test Method for Surface Burning Characteristics of Building Materials*, or ~~ANSI/~~ UL 723~~-2018~~ , ~~*Standard*~~ *Test Method for Surface Burning Characteristics of Building Materials*, for one method of defining cable routing assemblies and communications raceways that have adequate fire-resistant and low-smoke-producing characteristics and exhibit a maximum flame spread index of 25 and a maximum smoke developed index of 50.

Informational Note No. 2: See NFPA 262~~-2019~~ , *Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces*, for another method of defining communications raceways that have adequate fire-resistant and low-smoke-producing characteristics and exhibit a maximum peak optical density of 0.50 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 1.52 m (5 ft) or less.

Informational Note No. 3: See ~~4.3.11.2.6 or 4.3.11.5.5 of~~ NFPA 90A~~-2021~~ , *Standard for the Installation of Air-Conditioning and Ventilating Systems*, Chapter 10, Electrical and Optical Fiber Wiring and Equipment in Plenums and Ducts for information on materials exposed to the airflow in ceiling cavity and raised floor plenums.

Statement of Problem and Substantiation for Public Input

The edition dates the standards have been deleted because They are not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

The current edition of NFPA 90A, the 2024 edition, has been significantly reorganized. In previous editions, electrical requirements for installation in ducts and plenums were in Chapter 4, HVAC Systems. The 2024 edition has a new Chapter 10, Electrical and Optical Fiber Wiring and Equipment in Plenums and Ducts. Consequently, Informational Notes referencing electrical requirements in NFPA 90A need to be revised.

ANSI was stricken from the title of the UL reference to conform to current practice in references to UL standards.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	Revise NFPA 90A reference
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	Revise NFPA 90A reference
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	Revise NFPA 90A reference
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	Revise NFPA 90A reference
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	Revise NFPA 90A reference
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]	Revise NFPA 90A reference

Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	Revise NFPA 90A reference
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]	Revise NFPA 90A reference
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]	Revise NFPA 90A reference
Public Input No. 14-NFPA 70-2023 [Section No. 640.3(B)]	
Public Input No. 15-NFPA 70-2023 [Section No. 110.12(C)]	
Public Input No. 17-NFPA 70-2023 [Section No. 722.24(A)]	
Public Input No. 18-NFPA 70-2023 [Section No. 722.135(B)]	
Public Input No. 19-NFPA 70-2023 [Section No. 770.24(A)]	
Public Input No. 20-NFPA 70-2023 [Section No. 770.113(B)(2)]	
Public Input No. 21-NFPA 70-2023 [Section No. 770.113(C)(2)]	
Public Input No. 22-NFPA 70-2023 [Section No. 800.24(A)]	
Public Input No. 24-NFPA 70-2023 [Section No. 800.113(B)(2)]	
Public Input No. 25-NFPA 70-2023 [Section No. 800.113(C)(2)]	
Public Input No. 26-NFPA 70-2023 [Section No. 800.170]	

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Committee: NEC-P16

Committee Statement

Resolution: FR-7802-NFPA 70-2024
Statement: Per the NFPA manual of style the revision dates are being updated to the latest revisions.

Public Input No. 1139-NFPA 70-2023 [Section No. 800.182(B)]

(B) Riser Cable Routing Assemblies and Riser Communications Raceways.

Riser cable routing assemblies and riser communications raceways shall be listed as having adequate fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

Informational Note: See ~~ANSI/~~ UL 1666 ~~-2017,~~ ~~*Standard*~~ *Test for Flame Propagation Height of Electrical and Optical-Fiber Cable Installed Vertically in Shafts*, for one method of defining fire-resistant characteristics capable of preventing the carrying of fire from floor to floor of the cable routing assemblies and communications raceways.

Statement of Problem and Substantiation for Public Input

The edition date for the UL standard has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

ANSI was stricken from the title of the UL reference to conform to current practice in references to UL standards.

The title of the UL standard was revised to agree with the list of UL standards in the UL Standards online catalog. The words “Standard for” have been dropped from the titles of UL standards.

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: FR-7802-NFPA 70-2024
Statement: Per the NFPA manual of style the revision dates are being updated to the latest revisions.

Public Input No. 1138-NFPA 70-2023 [Section No. 800.182(C)]

(C) General-Purpose Cable Routing Assemblies and General-Purpose Communications Raceways.

General-purpose cable routing assemblies and general-purpose communications raceways shall be listed as being resistant to the spread of fire.

Informational Note: See ~~ANSI/~~ UL 1685~~-2015~~ , ~~*Standard for Safety for*~~ *Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables*, for one method of defining resistance to the spread of fire where the cable routing assemblies and communications raceways do not spread fire to the top of the tray.

Statement of Problem and Substantiation for Public Input

The edition date for the UL standard has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

ANSI was stricken from the title of the UL reference to conform to current practice in references to UL standards.

The title of the UL standard was revised to agree with the list of UL standards in the UL Standards online catalog. The words “Standard for” have been dropped from the titles of UL standards.

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Committee: NEC-P16

Committee Statement

Resolution: FR-7802-NFPA 70-2024
Statement: Per the NFPA manual of style the revision dates are being updated to the latest revisions.

Public Input No. 1140-NFPA 70-2023 [Section No. 800.182 [Excluding any Sub-Sections]]

Cable routing assemblies and communications raceways shall be listed in accordance with 800.182(A) through (C). Cable routing assemblies shall be marked in accordance with Table 800.182(a). Communications raceways shall be marked in accordance with Table 800.182(b).

Informational Note: See ~~ANSI/~~ UL 2024~~-5-2015~~ , *Cable Routing Assemblies and Communications Raceways*, for information on listing requirements for both communications raceways and cable routing assemblies.

Table 800.182(a) Cable Routing Assembly Markings

Type	Marking
Plenum Cable Routing Assembly	Plenum Cable Routing Assembly
Riser Cable Routing Assembly	Riser Cable Routing Assembly
General-Purpose Cable Routing Assembly	General-Purpose Cable Routing Assembly

Table 800.182(b) Communications Raceway Markings

Type	Marking
Plenum Communications Raceway	Plenum Communications Raceway
Riser Communications Raceway	Riser Communications Raceway
General-Purpose Communications Raceway	General-Purpose Communications Raceway

Statement of Problem and Substantiation for Public Input

The edition date for the UL standard has been deleted because it is not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered as the latest edition of the standard.”

ANSI was stricken from the title of the UL reference to conform to current practice in references to UL standards.

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Committee: NEC-P16

Committee Statement

Resolution: FR-7802-NFPA 70-2024

Statement: Per the NFPA manual of style the revision dates are being updated to the latest revisions.

Public Input No. 1183-NFPA 70-2023 [Section No. 805.18]

~~**805.18** Installation of Equipment.~~

~~Equipment electrically connected to a communications network shall be listed in accordance with 800.171 .~~

~~*Exception: This listing requirement shall not apply to test equipment that is intended for temporary connection to a telecommunications network by qualified persons during the course of installation, maintenance, or repair of telecommunications equipment or systems.*~~

Statement of Problem and Substantiation for Public Input

The requirement to use listed equipment is a general requirement and should be in the general Article (Article 800).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1182-NFPA 70-2023 [New Section after 800.3]	Moves 805.18 to Article 800
Public Input No. 1182-NFPA 70-2023 [New Section after 800.3]	

Submitter Information Verification

Submitter Full Name: Leslie Jutte
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Submittal Date: Thu Jun 22 12:01:55 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7552-NFPA 70-2024
Statement: The requirement to use listed equipment is a general requirement and has been moved to Section 800.2. This aligns with the NFPA manual of style.

Public Input No. 3344-NFPA 70-2023 [Section No. 805.50(C)(3)]

(3) Service Head.

Raceways shall be equipped with an approved service head. More than one communications wire and cable shall be permitted to enter through a single raceway or bushing. ~~Conduits or other metal raceways located ahead of the primary protector shall be grounded.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3340-NFPA 70-2023 [Section No. 800.49]	

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Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use, and avoiding confusion it is more appropriate to have as many requirements as practical for communications systems explicitly in one article such as 805 rather to separate these two related rules and sentences into different articles (805 and X050).

Public Input No. 3345-NFPA 70-2023 [Sections 805.90, 805.93]

~~**Sections 805.90, 805.93**~~

~~**805.90** Protective Devices.~~

~~**(A)** Application.~~

~~A listed primary protector shall be provided on each circuit run partly or entirely in aerial wire or aerial cable not confined within a block. Also, a listed primary protector shall be provided on each circuit, aerial or underground, located within the block containing the building served so as to be exposed to accidental contact with electric light or power conductors operating at over 300 volts to ground. In addition, where there exists a lightning exposure, each interbuilding circuit on a premises shall be protected by a listed primary protector at each end of the interbuilding circuit. Installation of primary protectors shall also comply with 110.3(B) .~~

~~Informational Note No. 1: On a circuit not exposed to accidental contact with power conductors, providing a listed primary protector in accordance with this article helps protect against other hazards, such as lightning and above-normal voltages induced by fault currents on power circuits in proximity to the communications circuit.~~

~~Informational Note No. 2: Interbuilding circuits are considered to have a lightning exposure unless one or more of the following conditions exist:~~

(1) ~~Circuits in large metropolitan areas where buildings are close together and sufficiently high to intercept lightning.~~

(2) ~~Interbuilding cable runs of 42 m (140 ft) or less, directly buried or in underground conduit, where a continuous metallic cable shield or a continuous metal conduit containing the cable is connected to each building grounding electrode system.~~

(3) ~~Areas having an average of five or fewer thunderstorm days per year and earth resistivity of less than 100 ohm-meters. Such areas are found along the Pacific coast.~~

~~Informational Note No. 3: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems,* for information on lightning protection systems.~~

(1) Fuseless Primary Protectors.

Fuseless-type primary protectors shall be permitted under any of the following conditions:

(1) Where conductors enter a building through a cable with grounded metallic sheath member(s) and where the conductors in the cable safely fuse on all currents greater than the current-carrying capacity of the primary protector and of the primary protector bonding conductor or grounding electrode conductor

(2) Where insulated conductors in accordance with 805.50(A) are used to extend circuits to a building from a cable with an effectively grounded metallic sheath member(s) and where the conductors in the cable or cable stub, or the connections between the insulated conductors and the plant exposed to accidental contact with electric light or power conductors operating at greater than 300 volts to ground, safely fuse on all currents greater than the current-carrying capacity of the primary protector, or the associated insulated conductors and of the primary protector bonding conductor or grounding electrode conductor

(3) Where insulated conductors in accordance with 805.50(A) or (B) are used to extend circuits to a building from other than a cable with metallic sheath member(s), where (a) the primary protector is listed as being suitable for this purpose for application with circuits extending from other than a cable with metallic sheath members and (b) the connections of the insulated conductors to the plant exposed to accidental contact with electric light or power conductors operating at greater than 300 volts to ground or the conductors of the plant exposed to accidental contact with electric light or power conductors operating at greater than 300 volts to ground safely fuse on all currents greater than the current-carrying capacity of the primary protector, or associated insulated conductors and of the primary protector bonding conductor or grounding electrode conductor

(4) Where insulated conductors in accordance with 805.50(A) are used to extend circuits aerially to a building from a buried or underground circuit that is unexposed to accidental contact with electric light or power conductors operating at greater than 300 volts to ground

(5) Where insulated conductors in accordance with 805.50(A) are used to extend circuits to a building from cable with an effectively grounded metallic sheath member(s), and where (a) the combination of the primary protector and insulated conductors is listed as being suitable for this purpose for application with circuits extending from a cable with an effectively grounded metallic sheath member(s) and (b) the insulated conductors safely fuse on all currents greater than the current-carrying capacity of the primary protector and of the primary protector bonding conductor or grounding electrode conductor

Informational Note: See ANSI/IEEE C2-2017, *National Electrical Safety Code* , Section 9, for examples of methods of protective grounding that can achieve effective grounding of communications cable sheaths for cables from which communications circuits are extended.

(2) Fused Primary Protectors.

Where the requirements listed under 805.90(A)(1) (a) through (A)(1)(e) are not met, fused-type primary protectors shall be used. Fused-type primary protectors shall consist of an arrester connected between each line conductor and ground, a fuse in series with each line conductor, and an appropriate mounting arrangement. Primary protector terminals shall be marked to indicate line, instrument, and ground, as applicable.

~~**(B)** Location.~~

~~The primary protector shall be located in, on, or immediately adjacent to the structure or building served and as close as practicable to the point of entrance.~~

~~For purposes of this section, primary protectors located at mobile home service equipment within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means connected to an electrode by a grounding electrode conductor in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.~~

> ~~Informational Note: Selecting a primary protector location to achieve the shortest practicable primary protector bonding conductor or grounding electrode conductor helps limit potential differences between communications circuits and other metallic systems.~~

~~**(C)** Hazardous (Classified) Locations.~~

~~The primary protector shall not be located in any hazardous (classified) locations, as defined in 500.5 and 505.5 , or in the vicinity of easily ignitible material.~~

~~*Exception: As permitted in 501.150 , 502.150 , and 503.150 .*~~

~~**(D)** Secondary Protectors.~~

~~Where a secondary protector is installed in series with the indoor communications wire and cable between the primary protector and the equipment, it shall be listed for the purpose in accordance with 805.170(B) .~~

> ~~Informational Note: Secondary protectors on circuits exposed to accidental contact with electric light or power conductors operating at greater than 300 volts to ground are not intended for use without primary protectors.~~

~~**805.93** Grounding, Bonding, or Interruption of Non-Current-Carrying Metallic Sheath Members of Communications Cables.~~

~~Communications cables entering the building or terminating on the outside of the building shall comply with 805.93(A) or (B).~~

~~**(A)** Entering Buildings.~~

~~In installations where the communications cable enters a building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of entrance.~~

~~**(B)** Terminating on the Outside of Buildings.~~

~~In installations where the communications cable is terminated on the outside of the building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of termination of the cable.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Submitter Information Verification

Submitter Full Name: Derrick Atkins

Organization: Minneapolis Electrical JATC
Street Address:
City:
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Zip:
Submittal Date: Fri Sep 01 14:08:37 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use, and usability it is more appropriate to have as many requirements as practical for communications systems explicitly in one article such as 800. The relocated text in the proposed X50 and X90 does not address the proposed revisions of several PIs including PI-3645, PI-3650, Pi-3654, Pi-3660, PI-3661, PI-3663, PI-3666, and Pi-3670, that have been submitted to consolidate the common requirements of the various 8xx.93 sections into a single new 800.93

Public Input No. 1188-NFPA 70-2023 [Section No. 805.93]

~~**805.93** Grounding, Bonding, or Interruption of Non–Current-Carrying Metallic Sheath Members of Communications Cables.~~

~~Communications cables entering the building or terminating on the outside of the building shall comply with 805.93(A) or (B).~~

~~**(A)** Entering Buildings.~~

~~In installations where the communications cable enters a building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of entrance.~~

~~**(B)** Terminating on the Outside of Buildings.~~

~~In installations where the communications cable is terminated on the outside of the building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of termination of the cable.~~

Statement of Problem and Substantiation for Public Input

These requirements are moved to the general Article by PI 1187

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1187-NFPA 70-2023 [New Section after 800.53]	Consolidates grounding, bonding requirements in Article 800
Public Input No. 1187-NFPA 70-2023 [New Section after 800.53]	

Submitter Information Verification

Submitter Full Name: Leslie Jutte
Organization: Plastics Industry Association
Affiliation: Plastics Industry Association (PLASTICS)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 22 13:56:21 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7770-NFPA 70-2024
Statement: The committee has created new section 800.93 which consolidates the common requirements for grounding, bonding, and interruption. This revision removes this section

to align with this consolidation effort.

Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]

~~**805.93** Grounding, Bonding, or Interruption of Non–Current-Carrying Metallic Sheath Members of Communications Cables.~~

~~Communications cables entering the building or terminating on the outside of the building shall comply with 805.93(A) or (B).~~

~~**(A)** Entering Buildings.~~

~~In installations where the communications cable enters a building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of entrance.~~

~~**(B)** Terminating on the Outside of Buildings.~~

~~In installations where the communications cable is terminated on the outside of the building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device. The grounding, bonding, or interruption shall be as close as practicable to the point of termination of the cable.~~

Statement of Problem and Substantiation for Public Input

To increase clarity and help code users by gathering as many common requirements in a single general communications Article 800, a series of revisions have been submitted to consolidate the common "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800 under a new section 800.93.
No technical changes are intended or envisioned by these changes.
This revision will delete 805.93 since all the requirements will now be covered in the new 800.93.

Several related and correlated revisions will be required to create the new 800.93 including
1. The creation of a new section (820.90) to accommodate the protector requirements currently in 820.93 into a new section more accurately entitled “protectors” and numbered to be parallel with other related protection sections 805.90, 830.90 and 840.90.
2. A revision to create a new 800.93 section to gather the common requirements for "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800.
3. Delete 820.93 since all the requirements will now be covered in the new 800.93 and the new 820.90
4. Delete 830.93 since all the requirements will now be covered in the new 800.93
5. Revise 840.93 to replace references to the old 805.93 and 820.93 sections with equivalent references to the new 800.93
6. Revise 840.94 to replace references to the old 805.93 sections with equivalent references to the new 800.93
7. Revise 800.133 to replace references to the old 820.93 sections with equivalent references to the new 800.93.

This revisions continues the consolidation efforts of last 2-3 code cycles to gather common requirements for communications cables and systems into Article 800.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3645-NFPA 70-2023 [New Part after III.]	
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	

Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]

Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]

Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]

Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]

Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]

Public Input No. 3645-NFPA 70-2023 [New Part after III.]

Public Input No. 3650-NFPA 70-2023 [New Part after III.]

Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]

Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]

Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]

Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]

Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]

Submitter Information Verification

Submitter Full Name: Trevor Bowmer
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Submittal Date: Tue Sep 05 12:29:51 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7770-NFPA 70-2024

Statement: The committee has created new section 800.93 which consolidates the common requirements for grounding, bonding, and interruption. This revision removes this section to align with this consolidation effort.

Public Input No. 1174-NFPA 70-2023 [Section No. 805.154]

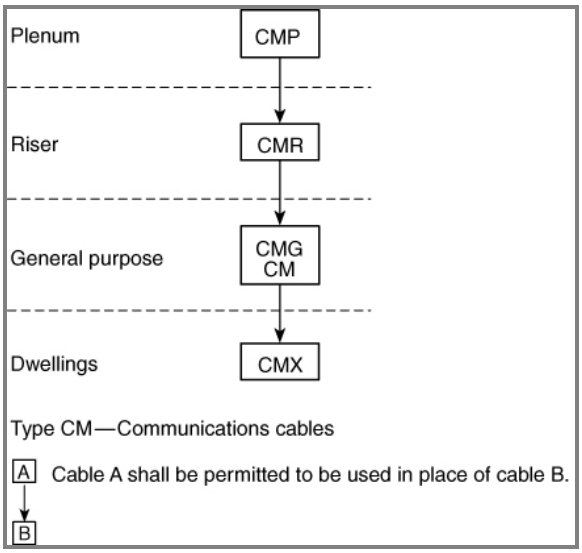
~~**805.154** Substitutions for Listed Communications Cables.~~

~~The substitutions for communications cables listed in Table 805.154 and illustrated in Figure 805.154 shall be permitted.~~

~~Table 805.154 Cable Substitutions~~

~~Cable Type Permitted Substitutions CMR CMP CMG, CM CMP, CMR CMX CMP, CMR, CMG, CM~~

~~**Figure 805.154 Cable Substitution Hierarchy.**~~



8

Statement of Problem and Substantiation for Public Input

PI 1169 moves the cable substitution hierarchies into the general article (Article 800). This PI coordinates with PI 1169 by deleting the cable substitution requirements from this Article.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1169-NFPA 70-2023 [Section No. 800.154]	Moves cable substitutions into 800.154
Public Input No. 1169-NFPA 70-2023 [Section No. 800.154]	

Submitter Information Verification

Submitter Full Name: Leslie Jutte
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Submittal Date: Thu Jun 22 05:07:42 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7782-NFPA 70-2024
Statement: The cable substitution hierarchies have been incorporated into the general article, Article 800. This revision coordinates with action taken on 800.154 by deleting the cable substitution requirements from this Article

Public Input No. 3346-NFPA 70-2023 [Section No. 805.170]

~~**805.170** Protectors.~~

~~Protectors shall be listed in accordance with 805.170(A) or 805.170(B) .~~

~~**(A)** Primary Protectors.~~

~~The primary protector shall be listed and consist of an arrester connected between each line conductor and ground in an appropriate mounting. Primary protector terminals shall be marked to indicate line and ground as applicable.~~

~~Informational Note: See ANSI/UL 497-2017, *Standard for Protectors for Paired Conductor Communications Circuits* , to determine applicable requirements for a listed primary protector.~~

~~**(B)** Secondary Protectors.~~

~~The secondary protector shall be listed as suitable to provide means to safely limit currents to less than the current-carrying capacity of listed indoor communications wire and cable, listed telephone set line cords, and listed communications terminal equipment having ports for external wire line communications circuits. Any overvoltage protection, arresters, or grounding connection shall be connected on the equipment terminals side of the secondary protector current-limiting means.~~

~~Informational Note: See ANSI/UL 497A-2019, *Standard for Secondary Protectors for Communications Circuits* , to determine applicable requirements for a listed secondary protector.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3340-NFPA 70-2023 [Section No. 800.49]	

Submitter Information Verification

Submitter Full Name: Derrick Atkins
Organization: Minneapolis Electrical JATC
Street Address:
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Submittal Date: Fri Sep 01 14:10:01 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use, and avoiding confusion it is more appropriate to have as many requirements as practical for communications systems explicitly in one article such as 805 for communications circuits.

Public Input No. 2968-NFPA 70-2023 [Section No. 810.3]

810.3 Other Articles.

Wiring from the source of power to and between devices connected to the interior wiring system shall comply with the following:

(1) Chapters 1 through 4 other than as modified by Article 640, Parts I and II ~~of Article 640~~ .

(2) Coaxial cables that connect antennas to equipment shall comply with the appropriate article of Chapter 8.

(3) Wiring and equipment installed in hazardous (classified) locations shall comply with the appropriate requirements in Chapter 5.

Statement of Problem and Substantiation for Public Input

This Public Input is being submitted on behalf of the NEC Correlating Committee Usability Task Group in order to provide correlation throughout the document. The text is revised to to comply with the NEC Style Manual Section 4.1.4, regarding the use of Parts.
4.1.4 References to an Entire Article. References shall not be made to an entire article, except for the Article 100 or where referenced to provide the necessary context. References to specific parts within articles shall be permitted. References to all parts of an article shall not be permitted. The article number shall precede the part number.
The Usability Task Group members are: Derrick Atkins, David Hittinger, Richard Holub, Dean Hunter, Chad Kennedy and David Williams.

Submitter Information Verification

Submitter Full Name: David Williams
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Submittal Date: Mon Aug 28 13:32:31 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7586-NFPA 70-2024
Statement: The text has been edited to comply with 4.1.4 of the NEC Style Manual.

Public Input No. 4001-NFPA 70-2023 [Section No. 810.3]

810.3 Other Articles.

Wiring from the source of power to and between devices connected to the interior wiring system shall comply with the following:

(1) Chapters 1 through 4 other than as modified by Parts I and II of Article 640.

(2) Coaxial cables that connect antennas to equipment shall comply with the appropriate article of Chapter 8.

(3) Wiring and equipment installed in hazardous (classified) locations shall comply with the appropriate requirements in ~~Chapter 5~~ I DON'T KNOW WHAT TO PUT HERE .

Statement of Problem and Substantiation for Public Input

"the appropriate requirements of Chapter 5" violates the style guide restriction of calling out whole articles. A chapter is a collection of articles, therefore it must be disallowed. I don't know the appropriate replacement text. I'm hoping the panel can reach out to the appropriate CMP (14?) and get the correct answer.

Submitter Information Verification

Submitter Full Name: Chad Jones
Organization: Cisco Systems
Street Address:
City:
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Submittal Date: Wed Sep 06 13:22:13 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The submitter of the proposal has not provided a technical change, as required by the 4.3.4.1 of the Regulations.

Public Input No. 701-NFPA 70-2023 [Section No. 810.3]

810. 2 Definitions. The definitions in Article 100 shall apply.

810. 3 Other Articles.

Wiring from the source of power to and between devices connected to the interior wiring system shall comply with the following:

(1) Chapters 1 through 4 other than as modified by Parts I and II of Article 640.

(2) Coaxial cables that connect antennas to equipment shall comply with the appropriate article of Chapter 8.

(3) Wiring and equipment installed in hazardous (classified) locations shall comply with the appropriate requirements in Chapter 5.

Statement of Problem and Substantiation for Public Input

According to 800.1, Article 800 applies to Articles 805, 820, 830, and 840. Due to this, there needs to be a reference in Article 810 that points to Article 100, otherwise it does not apply due to 90.3.

Submitter Information Verification

Submitter Full Name: Ryan Jackson
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Submittal Date: Thu Apr 20 16:05:37 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The definitions in Article 100 apply throughout the NEC unless otherwise noted.

Public Input No. 3629-NFPA 70-2023 [Section No. 810.6]

810.6 Antenna Lead-In Protectors.

If an antenna lead-in surge protector is installed, it shall be

(A) listed as being suitable for limiting surges on the cable that connects the antenna to the receiver/transmitter electronics ~~and shall be~~ , and

(B) connected between the conductors and the grounded shield or other ground connection. ~~The antenna lead-in protector shall be grounded~~ , and

(C) grounded using a bonding conductor or grounding electrode conductor installed in accordance with 810.21(F).

Informational Note: See UL 497E, *Outline of Investigation for Protectors for Antenna Lead-In Conductors*, for information concerning protectors for antenna lead-in conductors.

Statement of Problem and Substantiation for Public Input

There are three very different requirements within this one paragraph. The three requirements cover Listing, Location and Grounding. For clarity and easy reference they should be split out as separate numbered items.
This revision places them in three distinct numbered subsections - (A) requirement is about protector device Listing, item (B) is about the protector Location in the lead-in connection , and item (C) is a Grounding requirement criteria.

Submitter Information Verification

Submitter Full Name: Trevor Bowmer
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Street Address:
City:
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Zip:
Submittal Date: Tue Sep 05 10:40:50 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7587-NFPA 70-2024
Statement: The text has been modified for clarity and the UL standard date has been added.

Public Input No. 3347-NFPA 70-2023 [Sections 810.6, 810.7]

~~**Sections 810.6, 810.7**~~

~~**810.6** Antenna Lead-In Protectors.~~

~~If an antenna lead-in surge protector is installed, it shall be listed as being suitable for limiting surges on the cable that connects the antenna to the receiver/transmitter electronics and shall be connected between the conductors and the grounded shield or other ground connection. The antenna lead-in protector shall be grounded using a bonding conductor or grounding electrode conductor installed in accordance with 810.21(F) .~~

~~Informational Note: See UL 497E, *Outline of Investigation for Protectors for Antenna Lead-In Conductors* , for information concerning protectors for antenna lead-in conductors.~~

~~**810.7** Grounding Devices.~~

~~If bonding or grounding is required, devices used to connect a shield, a sheath, non-current-carrying metal members of a cable, or metal parts of equipment or antennas to a bonding conductor or grounding electrode conductor shall be listed or be part of listed equipment.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Submitter Information Verification

Submitter Full Name: Derrick Atkins
Organization: Minneapolis Electrical JATC
Street Address:
City:
State:
Zip:
Submittal Date: Fri Sep 01 14:11:48 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The text from 810.6 is not just relocated but revised significantly in the new Article X50 under PI-3333 (Section 50.2). There is no technical justification supplied for the revision of the requirement. The revisions proposed under PI-3629 were not included in Article X50.

Public Input No. 556-NFPA 70-2023 [Section No. 810.13]

810.13 Avoidance of Contacts with Conductors of Other Systems.

Outdoor antennas and lead-in conductors from an antenna to a building shall not cross over open conductors of electric light or power circuits and shall be ~~kept well away~~ not less than 600 mm (2 ft.) from all such circuits~~ so as to avoid the possibility of accidental contact~~ .~~ Where proximity to open electric light or power service conductors of less than 250 volts between conductors cannot be avoided, the installation shall be such as to provide a clearance of at least 600 mm (2 ft).~~

Where practicable, antenna conductors shall be installed so as not to cross under open electric light or power conductors.

Statement of Problem and Substantiation for Public Input

The term "well away" is about as unenforceable as it gets. This PI condenses the language by moving the existing the 2' requirement up and deleting the rest of the language. There is no reason to specify a 2' clearance for circuits of LESS THAN 250V if we have no requirements for higher voltages.

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Self-employed
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City:
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Submittal Date: Mon Apr 10 13:07:12 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7591-NFPA 70-2024
Statement: The text has been modified for clarity. By clarifying the separation, the final sentence of the paragraph is no longer needed and has been removed.

Public Input No. 3348-NFPA 70-2023 [Section No. 810.15]

~~**810.15** Grounding or Bonding.~~

~~Masts and metal structures supporting antennas shall be grounded or bonded in accordance with 810.21 , unless the antenna and its related supporting mast or structure are within a zone of protection defined by a 46 m (150 ft) radius rolling sphere.~~

~~Informational Note: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems* , 4.7.3.1, for the application of the term *rolling sphere* .~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Submitter Information Verification

Submitter Full Name: Derrick Atkins
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City:
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Zip:
Submittal Date: Fri Sep 01 14:13:07 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use and useability it is more appropriate to have as many requirements as practical for antenna systems explicitly in one article such as 810 rather than in X50.60B

Public Input No. 3349-NFPA 70-2023 [Sections 810.20, 810.21]

~~**Sections 810.20, 810.21**~~

~~**810.20** Antenna Discharge Units — Receiving Stations.~~

~~**(A)** General Requirement.~~

~~Each lead-in conductor from an outdoor antenna shall be provided with a listed antenna discharge unit.~~

~~*Exception:* A separate antenna discharge unit is not required if the lead-in conductors are enclosed in a continuous metal shield that complies with one of the following:~~

~~*(1) Is grounded or bonded with a conductor in accordance with 810.21*~~

~~*(2) Is protected by an antenna discharge unit*~~

~~**(B)** Location.~~

~~Antenna discharge units shall be located outside the building or inside the building between the point of entrance of the lead-in and the radio set or transformers and as near as practicable to the entrance of the conductors to the building. The antenna discharge unit shall not be located near combustible material or in a hazardous (classified) location as defined in accordance with 500.5 and 505.5 .~~

~~**(C)** Grounding or Bonding.~~

~~The antenna discharge unit shall be grounded or bonded in accordance with 810.21 .~~

~~**810.21** Bonding Conductors and Grounding Electrode Conductors — Receiving Stations.~~

~~Bonding conductors and grounding electrode conductors shall comply with 810.21(A) through 810.21(K) .~~

~~**(A)** Material.~~

~~The bonding conductor or grounding electrode conductor shall be of copper, aluminum, copper-clad steel, copper-clad aluminum, bronze, or similar corrosion-resistant material. Aluminum or copper-clad aluminum bonding conductors or grounding electrode conductors shall not be used if subject to corrosive conditions or in direct contact with masonry or the earth or where subject to corrosive conditions. If used outside, aluminum or copper-clad aluminum conductors shall not be installed within 450 mm (18 in.) of the earth.~~

~~**(B)** Insulation.~~

~~Insulation on bonding conductors or grounding electrode conductors shall not be required.~~

~~**(C)** Supports.~~

~~The bonding conductor or grounding electrode conductor shall be securely fastened in place and shall be permitted to be directly attached to the surface wired over without the use of insulating supports.~~

~~*Exception:* Where proper support cannot be provided, the size of the bonding conductors or grounding electrode conductors shall be increased proportionately.~~

~~**(D)** Physical Protection.~~

~~Bonding conductors and grounding electrode conductors shall be protected where exposed to physical damage. Where the bonding conductor or grounding electrode conductor is installed in a metal raceway, both ends of the raceway shall be bonded to the contained conductor or to the same terminal or electrode to which the bonding conductor or grounding electrode conductor is connected.~~

(E) Run in Straight Line.

The bonding conductor or grounding electrode conductor for an antenna mast or antenna discharge unit shall be run in as straight a line as practicable.

(F) Electrode.

The bonding conductor or grounding electrode conductor shall be connected as required in 810.21(F)(1) through 810.21(F)(3) .

(1) In Buildings or Structures with an Intersystem Bonding Termination.

If the building or structure served has an intersystem bonding termination as required by 250.94 , the bonding conductor shall be connected to the intersystem bonding termination.

(2) In Buildings or Structures with Grounding Means.

If the building or structure served has no intersystem bonding termination, the bonding conductor or grounding electrode conductor shall be connected to the nearest accessible location on one of the following:

(1) The building or structure grounding electrode system as covered in 250.50

(2) The power service accessible means external to the building, as covered in 250.94

(3) The nonflexible metal power service raceway

(4) The service equipment enclosure

(5) The grounding electrode conductor or the grounding electrode conductor metal enclosures of the power service

(6) The grounded interior metal water piping systems, within 1.52 m (5 ft) from its point of entrance to the building, as covered in 250.52

A bonding device intended to provide a termination point for the bonding conductor (intersystem bonding) shall not interfere with the opening of an equipment enclosure. A bonding device shall be mounted on nonremovable parts. A bonding device shall not be mounted on a door or cover even if the door or cover is nonremovable.

(3) In Buildings or Structures Without an Intersystem Bonding Termination or Grounding Means.

If the building or structure served has no intersystem bonding termination or grounding means as described in 810.21(F)(2) , the grounding electrode conductor shall be connected to a grounding electrode as described in 250.52 .

(G) Inside or Outside Building.

The bonding conductor or grounding electrode conductor shall be permitted to be run either inside or outside the building.

(H) Size.

The bonding conductor or grounding electrode conductor shall not be smaller than 10 AWG copper, 8 AWG aluminum, or 17 AWG copper-clad steel or bronze.

(I) Common Ground.

A single bonding conductor or grounding electrode conductor shall be permitted for both protective and operating purposes.

(J) Bonding of Electrodes.

A bonding jumper not smaller than 6 AWG copper or equivalent shall be connected between the radio and television equipment grounding electrode and the power grounding electrode system at the building or structure served if separate electrodes are used.

(K) Electrode Connection.

Connections to grounding electrodes shall comply with 250.70 .

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Submitter Information Verification

Submitter Full Name: Derrick Atkins
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Submittal Date: Fri Sep 01 14:15:04 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The text from 810.20 and 810.21 is not just relocated but revised significantly in the new Article X50 under PI-3333 (Section X50.60, X50.66 and X50.68). There is no technical justification supplied for the revisions of the requirement. There are several PIs including PI-3636, PI-1240 and PI-3638 that were submitted to revise the text of current 810.21 that were not considered and coordinated with any action on this X50. For clarity, ease-of-use and usability it is more appropriate to have as many requirements as practical for antenna systems explicitly in one article such as 810 rather than in X50.

Public Input No. 3636-NFPA 70-2023 [Section No. 810.21(A)]

(A) Material.

The bonding conductor or grounding electrode conductor shall be of copper, aluminum, copper-clad steel, copper-clad aluminum, bronze, or similar corrosion-resistant material. Aluminum or copper-clad aluminum bonding conductors or grounding electrode conductors shall not be used if subject to corrosive conditions or in direct contact with masonry or the earth ~~or where subject to corrosive conditions~~ . If used outside, aluminum or copper-clad aluminum conductors shall not be installed within 450 mm (18 in.) of the earth.

Statement of Problem and Substantiation for Public Input

The phrase "or where subject to corrosive conditions." is superfluous given the phrase "..if subject to corrosive conditions… " is already used earlier in the sentence and covers the condition.

Submitter Information Verification

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Submittal Date: Tue Sep 05 10:53:50 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7595-NFPA 70-2024
Statement: The phrase "or where subject to corrosive conditions" is not needed since the phrase "..if subject to corrosive conditions… " is already used earlier in the sentence and covers the condition.

Public Input No. 1240-NFPA 70-2023 [Section No. 810.21(C)]

(C) Supports.

The bonding conductor or grounding electrode conductor shall be securely fastened in place ~~and shall be permitted to be directly attached to the surface wired over without the use of insulating supports~~ .

~~*Exception: Where proper support cannot be provided, the size of the bonding conductors or grounding electrode conductors shall be increased proportionately.*~~

Statement of Problem and Substantiation for Public Input

The existing language does not make sense. What does "attached to the surface wired over" mean? And what type of support is "proper support"? And when we increase proportionaly, what is it supposed to be in proportion to?

Submitter Information Verification

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Submittal Date: Thu Jun 29 13:02:27 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7596-NFPA 70-2024
Statement: The previous language was unenforceable and has been revised to be more clear for the user. The language in the exception was not explicitly clear in its use of the word “proportionately” and created confusion on when the user must securely fasten a conductor.

Public Input No. 3638-NFPA 70-2023 [Section No. 810.21(C)]

(C) Supports.

The bonding conductor or grounding electrode conductor shall be securely fastened in place and shall be permitted to be directly attached to the surface wired over without the use of insulating supports.

Exception: ~~Where~~ If proper support cannot be provided, the size of the bonding conductors or grounding electrode conductors shall be increased proportionately.

Statement of Problem and Substantiation for Public Input

The term “Where” should be changed to “If” in the exception to reflect that this is a condition and not a specific location. In addition, it Is not practical to have a different larger conductor gauge only where support cannot be provided with a splice to lesser gauge where support could be provided.

Submitter Information Verification

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Submittal Date: Tue Sep 05 10:57:30 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The text that is recommended to be edited has been deleted with committee panel action on 810.21(C).

Public Input No. 3351-NFPA 70-2023 [Sections 810.57, 810.58]

~~**Sections 810.57, 810.58**~~

~~**810.57** Antenna Discharge Units — Transmitting Stations.~~

~~Each lead-in conductor for outdoor antennas shall be provided with an antenna discharge unit or other suitable means that drain static charges from the antenna system.~~

~~*Exception No. 1: If the lead-in conductor is protected by a continuous metal shield that is grounded with a conductor in accordance with 810.58 , an antenna discharge unit or other suitable means shall not be required for the lead-in conductor.*~~

~~*Exception No. 2: If the antenna is grounded or bonded with a conductor in accordance with 810.58 , an antenna discharge unit or other suitable means shall not be required.*~~

~~**810.58** Bonding Conductors and Grounding Electrode Conductors — Amateur and Citizen Band Transmitting and Receiving Stations.~~

~~Bonding conductors and grounding electrode conductors shall comply with 810.58(A) through 810.58(C) .~~

~~**(A)** Other Sections.~~

~~All bonding conductors and grounding electrode conductors for amateur and citizen band transmitting and receiving stations shall comply with 810.21(A) through 810.21(C) .~~

~~**(B)** Size of Protective Bonding Conductor or Grounding Electrode Conductor.~~

~~The protective bonding conductor or grounding electrode conductor for transmitting stations shall be as large as the lead-in but not smaller than 10 AWG copper, bronze, or copper-clad steel.~~

~~**(C)** Size of Operating Bonding Conductor or Grounding Electrode Conductor.~~

~~The operating bonding conductor or grounding electrode conductor for transmitting stations shall not be less than 14 AWG copper or its equivalent.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Submitter Information Verification

Submitter Full Name: Derrick Atkins
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Submittal Date: Fri Sep 01 14:16:52 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use and useability it is more appropriate to have as many requirements as practical for antenna systems explicitly in one article such as 810 rather than in X50, and 800 and 810

Public Input No. 2969-NFPA 70-2023 [Section No. 810.70]

810.70 Separation from Other Conductors.

All conductors inside the building shall be separated at least 100 mm (4 in.) from the conductors of any electric light, power, or signaling circuit unless one of the following conditions applies:

(1) The conductors of a permanent audio system are installed in compliance with Article 640, Parts I and II- ~~of Article 640~~ .

(2) The conductors of portable and temporary audio systems are installed in compliance with Article 640, Parts I and III- ~~of Article 640~~ .

(3) The conductors are separated from such other conductors by a continuous and firmly fixed nonconductor.

Statement of Problem and Substantiation for Public Input

This Public Input is being submitted on behalf of the NEC Correlating Committee Usability Task Group in order to provide correlation throughout the document. The text is revised to to comply with the NEC Style Manual Section 4.1.4, regarding the use of Parts.
4.1.4 References to an Entire Article. References shall not be made to an entire article, except for the Article 100 or where referenced to provide the necessary context. References to specific parts within articles shall be permitted. References to all parts of an article shall not be permitted. The article number shall precede the part number.
The Usability Task Group members are: Derrick Atkins, David Hittinger, Richard Holub, Dean Hunter, Chad Kennedy and David Williams.

Submitter Information Verification

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Submittal Date: Mon Aug 28 13:33:20 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7863-NFPA 70-2024
Statement: Revised to align with the NEC style manual.

Public Input No. 3452-NFPA 70-2023 [Section No. 810.70]

~~**810.70** Separation from Other Conductors.~~

~~All conductors inside the building shall be separated at least 100 mm (4 in.) from the conductors of any electric light, power, or signaling circuit unless one of the following conditions applies:~~

(1) ~~The conductors of a permanent audio system are installed in compliance with Parts I and II of Article 640 .~~

(2) ~~The conductors of portable and temporary audio systems are installed in compliance with Parts I and III of Article 640 .~~

(3) ~~The conductors are separated from such other conductors by a continuous and firmly fixed nonconductor.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_First_Draft_Substantiation.docx	First Draft Substantiation	

Statement of Problem and Substantiation for Public Input

This text is being deleted as part of the reorganization of the limited energy articles. The deleted text is relocated as a general requirement to new Article X00.

Submitter Information Verification

Submitter Full Name: Mark Hilbert
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Submittal Date: Sun Sep 03 06:27:31 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use, and useability it is more appropriate to have as many requirements as practical for antenna systems explicitly in one article such as 810 rather than in X50.68, X50.70, 810 and 800. There are PI-2969, and PI-3452 that were submitted to revise the text of current 810.70 that were not considered and coordinated with any action on this X50

Public Input No. 3354-NFPA 70-2023 [Sections 810.71(A), 810.71(B)]

~~**Sections 810.71(A), 810.71(B)**~~

~~**(A)** Enclosing.~~

~~The transmitter shall be enclosed in a metal frame or grille or separated from the operating space by a barrier or other equivalent means, all metallic parts of which are effectively connected to a bonding conductor or grounding electrode conductor.~~

~~**(B)** Grounding of Controls.~~

~~All external metal handles and controls accessible to the operating personnel shall be effectively connected to an equipment grounding conductor if the transmitter is powered by the premises wiring system or grounded with a conductor in accordance with~~ ~~810.21~~ ~~.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Submitter Information Verification

Submitter Full Name: Derrick Atkins
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Submittal Date: Fri Sep 01 14:22:36 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use, and useability it is more appropriate to have as many requirements as practical for antenna systems explicitly in one article such as 810 rather than in X50, 810 and 800.

Public Input No. 555-NFPA 70-2023 [Article 820]

Article 820 Community Antenna Television and Radio Distribution Systems

Part I. General

820.1 Scope.

This article covers coaxial cable distribution of radio frequency signals typically employed in community antenna television (CATV) systems.

820.3 Other Articles.

The wiring methods of Article 830 shall be permitted to substitute for the wiring methods of Article 820.

Informational Note: Use of Article 830 wiring methods will facilitate the upgrading of Article 820 installations to network-powered broadband applications.

820.15 Power Limitations.

Coaxial cable shall be permitted to deliver power to equipment that is directly associated with the radio frequency distribution system if the voltage is not over 60 volts and if the current is supplied by a transformer or other device that has power-limiting characteristics.

Power shall be blocked from premises devices on the network that are not intended to be powered via the coaxial cable.

Part ~~III~~ II . Protection

820.93 Grounding of the Outer Conductive Shield of Coaxial Cables.

Coaxial cables entering buildings or attached to buildings shall comply with 820.93(A) or (B). Where the outer conductive shield of a coaxial cable is grounded, no other protective devices shall be required. For purposes of this section, grounding located at mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.

Informational Note: Selecting a grounding block location to achieve the shortest practicable bonding conductor or grounding electrode conductor helps limit potential differences between CATV and other metallic systems.

(A) Entering Buildings.

In installations where the coaxial cable enters the building, the outer conductive shield shall be grounded in accordance with 820.100. The grounding shall be as close as practicable to the point of entrance.

(B) Terminating Outside of the Building.

In installations where the coaxial cable is terminated outside of the building, the outer conductive shield shall be grounded in accordance with 820.100. The grounding shall be as close as practicable to the point of attachment or termination.

(C) Location.

Where installed, a listed primary protector shall be applied on each community antenna and radio distribution (CATV) cable external to the premises. The listed primary protector shall be located as close as practicable to the entrance point of the cable on either side or integral to the ground block.

(D) Hazardous (Classified) Locations.

If a primary protector or equipment providing the primary protection function is used, it shall not be located in any hazardous (classified) location as defined in 500.5 and 505.5 or in the vicinity of easily ignitible material.

Exception: Primary protection equipment shall be used only if permitted by 501.150, 502.150, and 503.150.

Part ~~IV~~ III . Grounding Methods

820.100 Cable Bonding and Grounding.

The shield of the coaxial cable shall be bonded or grounded as specified in 820.100(A) and (B).

Exception: For communications systems using coaxial cable completely contained within the building (i.e., they do not exit the building) or the exterior zone of protection defined by a 46 m (150 ft) radius rolling sphere and isolated from outside cable plant, the shield shall be permitted to be grounded by a connection to an equipment grounding conductor as described in 250.118. Connecting to an equipment grounding conductor through a grounded receptacle using a dedicated bonding jumper and a permanently connected listed device shall be permitted. Use of a cord and plug for the connection to an equipment grounding conductor shall not be permitted.

Informational Note: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems,* 4.7.3.1, for the application of the term *rolling sphere*.

(A) General Requirements.

The installation shall be in accordance with 800.100.

(B) Shield Protection Devices.

Grounding of a coaxial drop cable shield by means of a protective device that does not interrupt the grounding system within the premises shall be permitted.

820.103 Equipment Grounding.

Unpowered equipment and enclosures or equipment powered by the coaxial cable shall be considered grounded where connected to the metallic cable shield.

Part ~~V~~ IV . Installation Methods Within Buildings

820.154 Substitutions of Listed CATV Cables.

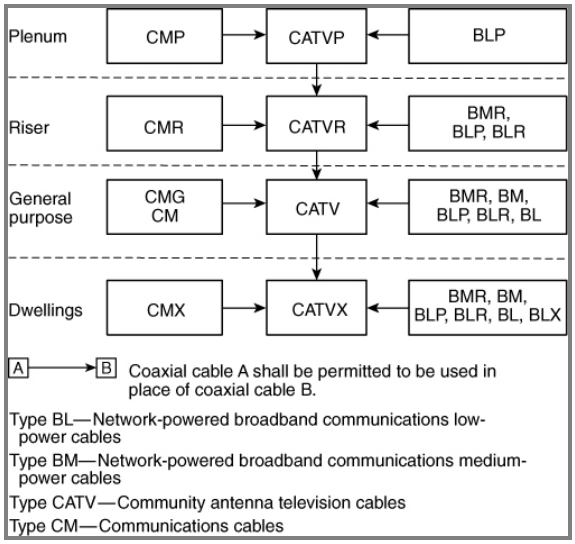
The substitutions for coaxial cables in Table 820.154 and illustrated in Figure 820.154 shall be permitted.

Informational Note: The substitute cables in Table 820.154 and Figure 820.154 are only coaxial-type cables.

Table 820.154 Coaxial Cable Uses and Permitted Substitutions

Cable Type	Permitted Substitutions
CATVP	CMP, BLP
CATVR	CATVP, CMP, CMR, BMR, BLP, BLR
CATV	CATVP, CMP, CATVR, CMR, CMG, CM, BMR, BM, BLP, BLR, BL
CATVX	CATVP, CMP, CATVR, CMR, CATV, CMG, CM, BMR, BM, BLP, BLR, BL, BLX

Figure 820.154 Coaxial Cable Substitution Hierarchy.



Statement of Problem and Substantiation for Public Input

This PI simply renumbers the Article Parts, as the deletion of Part II was overlooked in the 2023 printing.

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: FR-7725-NFPA 70-2024
Statement: Per 2.1.5.4 of the Style manual Parts in Article 820 have been numbered sequentially.

Public Input No. 3617-NFPA 70-2023 [Section No. 820.3]

820.3 Other Articles.

The wiring methods of Article 830 shall be permitted to substitute for the wiring methods of ~~Article~~ ~~820~~ this article .

Informational Note: Use of Article 830 wiring methods will facilitate the upgrading ~~of Article~~ ~~820~~ ~~installations~~ of installations covered by this article to network-powered broadband applications.

Statement of Problem and Substantiation for Public Input

Section 4.1.4 of the NEC(r) Style Manual prohibits referencing an entire article except Article 100 or where required for context. As such, it is recommended that we change the two locations in this text where we reference Article 820 to "this article" but leave the Article 830 references "for context".

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: FR-7604-NFPA 70-2024
Statement: Section 820.3 was renumbered to 820.4 to comply with NEC Style Manual section 2.2. References to an entire article were eliminated in order to comply with the NEC Style Manual.

Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]

~~**820.93** Grounding of the Outer Conductive Shield of Coaxial Cables.~~

~~Coaxial cables entering buildings or attached to buildings shall comply with 820.93(A) or (B). Where the outer conductive shield of a coaxial cable is grounded, no other protective devices shall be required. For purposes of this section, grounding located at mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.~~

> ~~Informational Note: Selecting a grounding block location to achieve the shortest practicable bonding conductor or grounding electrode conductor helps limit potential differences between CATV and other metallic systems.~~

~~**(A)** Entering Buildings.~~

~~In installations where the coaxial cable enters the building, the outer conductive shield shall be grounded in accordance with 820.100. The grounding shall be as close as practicable to the point of entrance.~~

~~**(B)** Terminating Outside of the Building.~~

~~In installations where the coaxial cable is terminated outside of the building, the outer conductive shield shall be grounded in accordance with 820.100. The grounding shall be as close as practicable to the point of attachment or termination.~~

~~**(C)** Location.~~

~~Where installed, a listed primary protector shall be applied on each community antenna and radio distribution (CATV) cable external to the premises. The listed primary protector shall be located as close as practicable to the entrance point of the cable on either side or integral to the ground block.~~

~~**(D)** Hazardous (Classified) Locations.~~

~~If a primary protector or equipment providing the primary protection function is used, it shall not be located in any hazardous (classified) location as defined in 500.5 and 505.5 or in the vicinity of easily ignitible material.~~

~~*Exception: Primary protection equipment shall be used only if permitted by 501.150; 502.150; and 503.150.*~~

Statement of Problem and Substantiation for Public Input

To increase clarity and help code users by gathering as many common requirements in a single general communications Article 800, a series of revisions have been submitted to consolidate the common "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800 under a new section 800.93.
This revision will delete 820.93 since all the requirements will now be covered in the new proposed 800.93 and the new proposed 820.90 sections.
No technical changes are intended or envisioned by these changes.

Several related and correlated revisions will be required to create the new 800.93 including
1. The creation of a new section (820.90) to accommodate the protector requirements currently in 820.93 into a new section more accurately entitled “protectors” and numbered to be parallel with other related protection sections 805.90, 830.90 and 840.90.
2. Delete 805.93 since all the requirements will now be covered in the new 800.93

3. Creation of a new 800.93 in the general communications Article 800, that includes the common "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93.
4. Delete 830.93 since all the requirements will now be covered in the new 800.93
5. Revise 840.93 to replace references to the old 805.93 and 820.93 sections with equivalent references to the new 800.93
6. Revise 840.94 to replace references to the old 805.93 sections with equivalent references to the new 800.93
7. Revise 800.133 to replace references to the old 820.93 sections with equivalent references to the new 800.93.

This revisions continues the consolidation efforts of last 2-3 code cycles to gather common requirements for communications cables and systems into Article 800.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3645-NFPA 70-2023 [New Part after III.]	
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	
Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]	
Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]	
Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]	
Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]	
Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]	
Public Input No. 3645-NFPA 70-2023 [New Part after III.]	
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	
Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]	
Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]	
Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]	
Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]	
Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]	

Submitter Information Verification

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Submittal Date: Tue Sep 05 12:22:57 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7729-NFPA 70-2024
Statement: The committee has created new section 800.93 and 820.90 which consolidates common requirements for grounding, bonding, and interruption. This revision removes 820.93 which has been incorporated into 800.93 and 820.90 and aligns with this consolidation effort.

Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]

~~**830.93** Grounding or Interruption of Metallic Members of Network-Powered Broadband Communications Cables.~~

~~Network-powered communications cables entering buildings or attaching to buildings shall comply with 830.93(A) or (B).~~

~~For purposes of this section, grounding located at mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.~~

> ~~Informational Note: Selecting a grounding location to achieve the shortest practicable bonding conductor or grounding electrode conductor helps limit potential differences between the network-powered broadband communications circuits and other metallic systems.~~

~~**(A)** Entering Buildings.~~

~~In installations where the network-powered communications cable enters the building, the shield shall be grounded in accordance with 800.100 , and metallic members of the cable not used for communications or powering shall be grounded in accordance with 800.100 or interrupted by an insulating joint or equivalent device. The grounding or interruption shall be as close as practicable to the point of entrance.~~

~~**(B)** Terminating Outside of the Building.~~

~~In installations where the network-powered communications cable is terminated outside of the building, the shield shall be grounded in accordance with 800.100 , and metallic members of the cable not used for communications or powering shall be grounded in accordance with 800.100 or interrupted by an insulating joint or equivalent device. The grounding or interruption shall be as close as practicable to the point of attachment of the NIU.~~

Statement of Problem and Substantiation for Public Input

To increase clarity and help code users by gathering as many common requirements in a single general communications Article 800, a series of revisions have been submitted to consolidate the common "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800 under a new section 800.93.
This revision will delete 830.93 since all the requirements of that section will now be covered in the new 800.93
No technical changes are intended or envisioned by these changes.

Several related and correlated revisions will be required to create the new 800.93 including
1. The creation of a new section (820.90) to accommodate the protector requirements currently in 820.93 into a new section more accurately entitled “protectors” and numbered to be parallel with other related protection sections 805.90, 830.90 and 840.90.
2. Delete 805.93 since all the requirements will now be covered in the new 800.93.
3. Delete 820.93 since all the requirements will now be covered in the new 800.93 and the new 820.90
4. A revision to create a new 800.93 section to gather the common requirements for "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800.
5. Revise 840.93 to replace references to the old 805.93 and 820.93 sections with equivalent references to the new 800.93
6. Revise 840.94 to replace references to the old 805.93 sections with equivalent references to the new 800.93
7. Revise 800.133 to replace references to the old 820.93 sections with equivalent references to the

new 800.93.

This revisions continues the consolidation efforts of last 2-3 code cycles to gather common requirements for communications cables and systems into Article 800.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]	
Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]	
Public Input No. 3645-NFPA 70-2023 [New Part after III.]	
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	
Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]	
Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]	
Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]	
Public Input No. 3645-NFPA 70-2023 [New Part after III.]	
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	
Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]	
Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]	
Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]	
Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]	
Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]	

Submitter Information Verification

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Submittal Date: Tue Sep 05 12:35:54 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7772-NFPA 70-2024
Statement: The committee has created new section 800.93 which consolidates the common requirements for grounding, bonding, and interruption. This revision removes Part IV to align with this consolidation effort.

Public Input No. 3453-NFPA 70-2023 [Section No. 830.133(A)]

~~(A) Separation of Conductors.~~

~~**(1)** In Raceways, Cable Trays, Boxes, Enclosures, and Cable Routing Assemblies.~~

(a) *Low- and Medium-Power Network-Powered Broadband Communications Circuit Cables.* Low- and medium-power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly.

(b) *Low-Power Network-Powered Broadband Communications Circuit Cables with Other Circuits.* Low-power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with jacketed cables of any of the following circuits:

(3) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with Parts I and II of Article 725

(4) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(5) Communications circuits in compliance with Parts I and IV of Article 805

(6) Nonconductive and conductive optical fiber cables in compliance with Parts I and V of Article 770

(7) Community antenna television and radio distribution systems in compliance with Parts I and V of Article 820

(h) *Medium-Power Network-Powered Broadband Communications Circuit Cables with Optical Fiber Cables and Other Communications Cables* . Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with conductors of any of the following circuits:

(9) Communications circuits in compliance with Parts I and IV of Article 805

(10) Conductive optical fiber cables in compliance with Parts I and V of Article 770

(11) Community antenna television and radio distribution systems in compliance with Parts I and V of Article 820

(l) *Medium-Power Network-Powered Broadband Communications Circuit Cables with Other Circuits* . Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with conductors of any of the following circuits:

(13) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with Parts I and II of Article 725

(14) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(o) *Electric Light, Power, Class 1, Nonpowered Broadband Communications Circuit Cables.* Network-powered broadband communications cable shall not be placed in any raceway, cable tray, compartment, outlet box, junction box, or similar fittings with conductors of electric light, power, Class 1, or non-power-limited fire alarm circuit cables.

Exception No. 1: Network-powered broadband communications cable shall be permitted to be placed in a raceway, cable tray, compartment, outlet box, junction box, or similar fittings with conductors of electric light, power, Class 1, or non-power-limited fire alarm circuit cables where all of the conductors of electric light, power, Class 1, non-power-limited fire alarm circuits are separated from all of the network-powered broadband communications cables by a permanent barrier or listed divider.

Exception No. 2: Where power circuit conductors in outlet boxes, junction boxes, or similar fittings or compartments where such conductors are introduced solely for power supply to the network-powered broadband communications system distribution equipment, the power circuit conductors shall be routed within the enclosure to maintain a minimum 6 mm (1/4 in.) separation from network-powered broadband communications cables.

(2) Other Applications.

Network-powered broadband communications cable shall be separated at least 50 mm (2 in.) from conductors of any electric light, power, Class 1, and non-power-limited fire alarm circuits.

Exception No. 1: Separation shall not be required where: (1) all of the conductors of electric light, power, Class 1, and non-power-limited fire alarm circuits are in a raceway or in metal-sheathed, metal-clad, nonmetallic-sheathed, Type AC, or Type UF cables, or (2) all of the network-powered broadband communications cables are encased in a raceway.

Exception No. 2: Separation shall not be required where the network-powered broadband communications cables are permanently separated from the conductors of electric light, power, Class 1, and non-power-limited fire alarm circuits by a continuous and firmly fixed nonconductor, such as porcelain tubes or flexible tubing, in addition to the insulation on the wire.

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_First_Draft_Substantiation.docx	First Draft Substantiation	

Statement of Problem and Substantiation for Public Input

This text is being deleted as part of the reorganization of the limited energy articles. The deleted text is relocated as a general requirement to new Article X00.

Submitter Information Verification

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Organization: MR Hilbert Insp. & Training

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Submittal Date: Sun Sep 03 06:30:47 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: The text from Article 830 is not relocated but greatly shortened and technically altered in the Section X00.100 of the new proposed Article X00 under PI 3234. There is no technical justification supplied for the technical changes to the text. There are several PIs including PI-1667, PI-2966, PI-3930, PI-4036, PI-899, PI-4175, PI-1178, PI-1179, PI-1176, and PI-3670 have been submitted to modify 800.133 with concerns of updates, word changes and deletions to the text. Without including such revisions, the result will introduce conflicts and confusion between the new X00 Article and possible First Draft actions on these PIs.

Public Input No. 2970-NFPA 70-2023 [Section No. 830.133(A)(1)]

(1) In Raceways, Cable Trays, Boxes, Enclosures, and Cable Routing Assemblies.

(a) *Low- and Medium-Power Network-Powered Broadband Communications Circuit Cables.* Low- and medium-power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly.

(b) *Low-Power Network-Powered Broadband Communications Circuit Cables with Other Circuits.* Low-power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with jacketed cables of any of the following circuits:

(3) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with Article 725, Parts I and II

~~of Article 725~~

(1)

(2) Power-limited fire alarm systems in compliance with Article 760, Parts I and III

~~of Article 760~~

(1)

(2) Communications circuits in compliance with Article 805, Parts I and IV

~~of Article 805~~

(1)

(2) Nonconductive and conductive optical fiber cables in compliance with Article 770, Parts I and V

~~of Article 770~~

(1)

(2) Community antenna television and radio distribution systems in compliance with Article 820, Parts I and V

~~of Article 820~~

(1)

(d) *Medium-Power Network-Powered Broadband Communications Circuit Cables with Optical Fiber Cables and Other Communications Cables*. Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with conductors of any of the following circuits:

(5) Communications circuits in compliance with Article 805, Parts I and IV

~~of Article 805~~

(1)

(2) Conductive optical fiber cables in compliance with Article 770, Parts I and V

~~of Article 770~~

(1)

(2) Community antenna television and radio distribution systems in compliance with Article 820, Parts I and V

~~of Article 820~~

(1)

(f) *Medium-Power Network-Powered Broadband Communications Circuit Cables with Other Circuits*. Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with conductors of any of the following circuits:

(7) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with Article 725, Parts I and II

~~of Article 725~~

(1)

(2) Power-limited fire alarm systems in compliance with Article 760, Parts I and III

~~of Article 760~~

(1)

(h) *Electric Light, Power, Class 1, Nonpowered Broadband Communications Circuit Cables.* Network-powered broadband communications cable shall not be placed in any raceway, cable tray, compartment, outlet box, junction box, or similar fittings with conductors of electric light, power, Class 1, or non-power-limited fire alarm circuit cables.

Exception No. 1: Network-powered broadband communications cable shall be permitted to be placed in a raceway, cable tray, compartment, outlet box, junction box, or similar fittings with conductors of electric light, power, Class 1, or non-power-limited fire alarm circuit cables where all of the conductors of electric light, power, Class 1, non-power-limited fire alarm circuits are separated from all of the network-powered broadband communications cables by a permanent barrier or listed divider.

Exception No. 2: Where power circuit conductors in outlet boxes, junction boxes, or similar fittings or compartments where such conductors are introduced solely for power supply to the network-powered broadband communications system distribution equipment, the power circuit conductors shall be routed within the enclosure to maintain a minimum 6 mm (¼ in.) separation from network-powered broadband communications cables.

Statement of Problem and Substantiation for Public Input

This Public Input is being submitted on behalf of the NEC Correlating Committee Usability Task Group in order to provide correlation throughout the document. The text is revised to to comply with the NEC Style Manual Section 4.1.4, regarding the use of Parts.
4.1.4 References to an Entire Article. References shall not be made to an entire article, except for the Article 100 or where referenced to provide the necessary context. References to specific parts within articles shall be permitted. References to all parts of an article shall not be permitted. The article number shall precede the part number.
The Usability Task Group members are: Derrick Atkins, David Hittinger, Richard Holub, Dean Hunter, Chad Kennedy and David Williams.

Submitter Information Verification

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Submittal Date: Mon Aug 28 13:34:32 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-8102-NFPA 70-2024

Statement: The primary purpose of this PI is to correlate with 726.139(C) which permits Class 4 cables to be run in the same pathway as the cables in 800.133(A)(1).

In order to improve usability, word “listed” is inserted before each cable type to clarify that all the cables that are permitted to be run together are listed cables. This clarification is need to avoid any interpretation that unlisted outside-plant communications and optical fiber cables are permitted to be run with listed communications and optical fiber cables, and Class 2, Class 3 and Class 4 cables, which are always listed.

Minor editorial changes were made clarify that “the installation” needs to be in compliance with the installation rules, not the “circuit”. Other editorial changes were made to correct typographical errors in 800.133(A)(1)(e).

The references to other Articles have been revised to comply with the 2023 NEC Style Manual section 4.1.4 which states, “The article number shall precede the part number.” Some of the references were revised because of changes made in the 2023 NEC.

Public Input No. 3935-NFPA 70-2023 [Section No. 830.133(A)(1)]

(1) In Raceways, Cable Trays, Boxes, Enclosures, and Cable Routing Assemblies.

(a) *Low- and Medium-Power Network-Powered Broadband Communications Circuit Cables.* Low- and medium-power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly.

(b) *Low-Power Network-Powered Broadband Communications Circuit Cables with Other Circuits.* Low-power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with jacketed cables of any of the following circuits:

(3) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with Parts I and II of Article 725

(4) Class 4 fault managed power circuits in compliance with Parts I and II of Article 726

(5) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(6) Communications circuits in compliance with Parts I and IV of Article 805

(7) Nonconductive and conductive optical fiber cables in compliance with Parts I and V of Article 770

(8) Community antenna television and radio distribution systems in compliance with Parts I and V of Article 820

(i) *Medium-Power Network-Powered Broadband Communications Circuit Cables with Optical Fiber Cables and Other Communications Cables.* Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with conductors of any of the following circuits:

(10) Communications circuits in compliance with Parts I and IV of Article 805

(11) Conductive optical fiber cables in compliance with Parts I and V of Article 770

(12) Community antenna television and radio distribution systems in compliance with Parts I and V of Article 820

(m) *Medium-Power Network-Powered Broadband Communications Circuit Cables with Other Circuits*. Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with conductors of any of the following circuits:

(14) Class 2 and Class 3 remote-control, signaling, and power-limited circuits in compliance with Parts I and II of Article 725

(15) Class 4 fault managed power circuits in compliance with Parts I and II of Article 726

(16) Power-limited fire alarm systems in compliance with Parts I and III of Article 760

(q) *Electric Light, Power, Class 1, Nonpowered Broadband Communications Circuit Cables.* Network-powered broadband communications cable shall not be placed in any raceway, cable tray, compartment, outlet box, junction box, or similar fittings with conductors of electric light, power, Class 1, or non-power-limited fire alarm circuit cables.

Exception No. 1: Network-powered broadband communications cable shall be permitted to be placed in a raceway, cable tray, compartment, outlet box, junction box, or similar fittings with conductors of electric light, power, Class 1, or non-power-limited fire alarm circuit cables where all of the conductors of electric light, power, Class 1, non-power-limited fire alarm circuits are separated from all of the network-powered broadband communications cables by a permanent barrier or listed divider.

Exception No. 2: Where power circuit conductors in outlet boxes, junction boxes, or similar fittings or compartments where such conductors are introduced solely for power supply to the network-powered broadband communications system distribution equipment, the power circuit conductors shall be routed within the enclosure to maintain a minimum 6 mm (¼ in.) separation from network-powered broadband communications cables.

Statement of Problem and Substantiation for Public Input

Class 4 systems were added in the 2023 code and have equivalent of better than fire and life safety requirements as Class 2 circuits. An effort to analyze all the locations of Class 2 in the code to see if Class 4 was also appropriate in the application. This effort should have happened for the 2023 code and not doing it was an oversight.
Article 722 covers Class 2, Class 3, and Class 4 cables and treats them all the same. Therefore, Class 4 should be added to this list.

Submitter Information Verification

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Submittal Date: Wed Sep 06 10:48:52 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-8102-NFPA 70-2024
Statement: The primary purpose of this PI is to correlate with 726.139(C) which permits Class 4 cables to be run in the same pathway as the cables in 800.133(A)(1).

In order to improve usability, word “listed” is inserted before each cable type to clarify that all the cables that are permitted to be run together are listed cables. This clarification is need to avoid any interpretation that unlisted outside-plant communications and optical fiber cables are permitted to be run with listed communications and optical fiber cables, and Class 2, Class 3 and Class 4 cables, which are always listed.

Minor editorial changes were made clarify that “the installation” needs to be in compliance with the installation rules, not the “circuit”. Other editorial changes were made to correct typographical errors in 800.133(A)(1)(e).

The references to other Articles have been revised to comply with the 2023 NEC Style Manual section 4.1.4 which states, “The article number shall precede the part number.” Some of the references were revised because of changes made in the 2023 NEC.

Public Input No. 4038-NFPA 70-2023 [Section No. 830.133(A)(1)]

(1) In Raceways, Cable Trays, Boxes, Enclosures, and Cable Routing Assemblies.

(a) *Low- and Medium-Power Network-Powered Broadband Communications Circuit Cables.* Low- and medium-power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly.

(b) *Low-Power Network-Powered Broadband Communications Circuit Cables with Other Circuits.* ~~Low~~ Listed low -power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with ~~jacketed cables of~~ any of the following ~~circuits~~ :

(1) Listed Class 2 and Class 3 remote-control, signaling, and power-limited ~~circuits in compliance with Parts I and II of Article 725Power~~ cables

(2) Listed Class 4 cables

(3) Listed power -limited fire alarm ~~systems in compliance with Parts I and III of Article 760~~

(3) ~~Communications circuits in compliance with Parts I and IV of Article 805~~ ~~Nonconductive~~ cables

(4) Listed communications cables

(5) Listed nonconductive and conductive optical fiber cables ~~in compliance with Parts I and V of Article 770Community~~

(6) Listed community antenna television and radio distribution ~~systems in compliance with Parts I and V of Article 820~~ system coaxial cables

(d) *Medium-Power Network-Powered Broadband Communications Circuit Cables with Optical Fiber Cables and Other Communications Cables.*

Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with conductors of any of the following ~~circuits:~~

(5) ~~Communications circuits in compliance with Parts I and IV of Article 805~~

(6) ~~Conductive optical fiber cables in compliance with Parts I and V of Article 770~~ ~~Community~~ :

(1) Listed communications cables

(2) Listed conductive optical fiber cables

(3) Listed community antenna television and radio distribution ~~systems in compliance with Parts I and V of Article 820~~ system coaxial cables

(7) *Medium-Power Network-Powered Broadband Communications Circuit Cables with Other Circuits.* Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with conductors of any of the following ~~circuits~~

:

(1) Listed Class 2 and Class 3 remote-control, signaling, and power-limited ~~circuits in compliance with Parts I and II of Article 725~~ cables

(2) Listed Power-limited fire alarm ~~systems in compliance with Parts I and III of Article 760~~ cables

(8) *Electric Light, Power, Class 1, Nonpowered Broadband Communications Circuit Cables.* Network-powered broadband communications cable shall not be placed in any raceway, cable tray, compartment, outlet box, junction box, or similar fittings with conductors of electric light, power, Class 1, or non-power-limited fire alarm circuit cables.

Exception No. 1: Network-powered broadband communications cable shall be permitted to be placed in a raceway, cable tray, compartment, outlet box, junction box, or similar fittings with conductors of electric light, power, Class 1, or non-power-limited fire alarm circuit cables where all of the conductors of electric light, power, Class 1, non-power-limited fire alarm circuits are separated from all of the network-powered broadband communications cables by a permanent barrier or listed divider.

Exception No. 2: Where power circuit conductors in outlet boxes, junction boxes, or similar fittings or compartments where such conductors are introduced solely for power supply to the network-powered broadband communications system distribution equipment, the power circuit conductors shall be routed within the enclosure to maintain a minimum 6 mm (¼ in.) separation from network-powered broadband communications cables.

Statement of Problem and Substantiation for Public Input

- Section 725.139(C) permits Class 4 cables in the same pathway as Class 2 & Class 3, power-limited fire alarm, optical fiber, CATV and low-power network-powered broadband cables. Reciprocal permission is needed in this Article.
- Changes to reflect these are listed cables and other readability improvements (e.g., no need to state in compliance with the installation rules of the Article, as already required for cabling under that Article)

Submitter Information Verification

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Zip:
Submittal Date: Wed Sep 06 14:42:07 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-8102-NFPA 70-2024

Statement: The primary purpose of this PI is to correlate with 726.139(C) which permits Class 4 cables to be run in the same pathway as the cables in 800.133(A)(1).

In order to improve usability, word “listed” is inserted before each cable type to clarify that all the cables that are permitted to be run together are listed cables. This clarification is

need to avoid any interpretation that unlisted outside-plant communications and optical fiber cables are permitted to be run with listed communications and optical fiber cables, and Class 2, Class 3 and Class 4 cables, which are always listed.

Minor editorial changes were made clarify that “the installation” needs to be in compliance with the installation rules, not the “circuit”. Other editorial changes were made to correct typographical errors in 800.133(A)(1)(e).

The references to other Articles have been revised to comply with the 2023 NEC Style Manual section 4.1.4 which states, “The article number shall precede the part number.” Some of the references were revised because of changes made in the 2023 NEC.

Public Input No. 826-NFPA 70-2023 [Section No. 830.133(A)(1)]

(1) In Raceways, Cable Trays, Boxes, Enclosures, and Cable Routing Assemblies.

(a) *Low- and Medium-Power Network-Powered Broadband Communications ~~Circuit~~ Cables.* ~~Low~~ Listed low - and medium-power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly.

(b) *Low-Power Network-Powered Broadband Communications ~~Circuit~~ Cables with Other ~~Circuits~~ Cables* .- ~~Low~~ Listed low -power network-powered broadband communications cables shall be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with ~~jacketed cables of any of~~ the following- ~~circuits~~ :

(3) Listed Class 2 and Class 3 remote-control, signaling, and power-limited

~~circuits~~

(1) cables installed in compliance with 645.5(E)(2); or Article 722, Part I and Article 725, Parts I and II

~~of Article 725Power~~

(1)

(2) Listed Class 4 cables installed in compliance with Article 722, Part I and Article 726, Parts I and II

(3) Listed power -limited fire alarm

~~systems~~

(1) cables installed in compliance with Article 760, Parts I and III

~~of Article 760Communications circuits~~

(1)

(2) Listed communications cables installed in compliance with Article 800, Parts I and IV

~~of Article 805~~

(1)

~~Nonconductive~~

(1) Listed nonconductive and conductive optical fiber cables installed in compliance with Article 770, Parts I and V

~~of Article 770~~

(1)

~~Community~~

(1) Listed community antenna television and radio distribution systems coaxial cables installed in compliance with Article 800, Parts I and

~~V of~~

(1) IV, and Article 820 , Parts I and V

(d) *Medium-Power Network-Powered Broadband Communications ~~Circuit~~ Cables with Optical Fiber Cables and Other Communications Cables*. Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with ~~conductors of~~ any of the following- ~~circuits~~ :

(5) ~~Communications circuits in compliance with Parts I and IV of Article 805~~
~~Conductive~~

(1) Listed communications cables

(2) Listed conductive optical fiber cables

~~in compliance with Parts I and V of Article 770Community~~

(1)

(2) Listed community antenna television and radio distribution systems

~~in compliance with Parts I and V of Article 820~~

(1) coaxial cables

(f) *Medium-Power Network-Powered Broadband Communications ~~Circuit~~ Cables with Other ~~Circuits~~ Cables* . Medium-power network-powered broadband communications cables shall not be permitted in the same raceway, cable tray, box, enclosure, or cable routing assembly with ~~conductors~~ of any of the following ~~circuits~~ :

(7) Listed Class 2 and Class 3 remote-control, signaling, and power-limited

~~circuits in compliance with Parts I and II of Article 725Power~~

(1) cables

(2) Listed power -limited fire alarm

~~systems in compliance with Parts I and III of Article 760~~

(1) cables

(h) *Electric Light, Power, Class 1, ~~Nonpowered~~ Non-Power-Limited Fire Alarm and Network-Powered Broadband Communications ~~Circuit~~ Cables.* ~~Network~~ Listed network -powered broadband communications ~~cable~~ cables shall not be placed in any raceway, cable tray, compartment, outlet box, junction box, or similar fittings with cables or conductors of electric light, power, Class 1, or non-power-limited fire alarm ~~circuit cables~~ circuits .

Exception No. 1: ~~Network~~ Listed network -powered broadband communications ~~cable~~ cables shall be permitted to be placed in a raceway, cable tray, compartment, outlet box, junction box, or similar fittings with cables or conductors of electric light, power, Class 1, or non-power-limited fire alarm ~~circuit cables~~ circuits where all of the cables or conductors of electric light, power, Class 1, non-power-limited fire alarm circuits are separated from all of the network-powered broadband communications cables by a permanent barrier or listed divider.

Exception No. 2: Where power circuit conductors in outlet boxes, junction boxes, or similar fittings or compartments where such conductors are introduced solely for power supply to the network-powered broadband communications system distribution equipment, the power circuit conductors shall be routed within the enclosure to maintain a minimum 6 mm (¼ in.) separation from network-powered broadband communications cables.

Statement of Problem and Substantiation for Public Input

The primary purpose of this PI is to correlate with 726.139(C) which permits Class 4 cables to be run in the same pathway as the cables in 800.133(A)(1).

In order to improve usability, word “listed” is inserted before each cable type to clarify that all the cables that are permitted to be run together are listed cables. This clarification is need to avoid any interpretation that unlisted outside-plant communications and optical fiber cables are permitted to be run with listed communications and optical fiber cables, and Class 2, Class 3 and Class 4 cables, which are always listed.

Minor editorial changes were made clarify that “the installation” needs to be in compliance with the installation rules, not the “circuit”. Other editorial changes were made to correct typographical errors in 800.133(A)(1)(e).

The references to other Articles have been revised to comply with the 2023 NEC Style Manual section 4.1.4 which states, “The article number shall precede the part number.” Some of the references were revised because of changes made in the 2023 NEC.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 817-NFPA 70-2023 [Section No. 725.139]	
Public Input No. 818-NFPA 70-2023 [Section No. 726.139]	
Public Input No. 895-NFPA 70-2023 [Section No. 760.139]	
Public Input No. 918-NFPA 70-2023 [Section No. 770.133(C)]	

Submitter Information Verification

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Submittal Date: Mon May 15 07:37:36 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-8102-NFPA 70-2024

Statement: The primary purpose of this PI is to correlate with 726.139(C) which permits Class 4 cables to be run in the same pathway as the cables in 800.133(A)(1).

In order to improve usability, word “listed” is inserted before each cable type to clarify that all the cables that are permitted to be run together are listed cables. This clarification is need to avoid any interpretation that unlisted outside-plant communications and optical fiber cables are permitted to be run with listed communications and optical fiber cables, and Class 2, Class 3 and Class 4 cables, which are always listed.

Minor editorial changes were made clarify that “the installation” needs to be in compliance with the installation rules, not the “circuit”. Other editorial changes were made to correct typographical errors in 800.133(A)(1)(e).

The references to other Articles have been revised to comply with the 2023 NEC Style Manual section 4.1.4 which states, “The article number shall precede the part number.” Some of the references were revised because of changes made in the 2023 NEC.

Public Input No. 1119-NFPA 70-2023 [Section No. 830.154]

830.154 Substitutions of Network-Powered Broadband Communications System Cables.

The substitutions for network-powered broadband system cables listed in Table 830.154 shall be permitted.

Table 830.154 Cable Substitutions

Cable Type	Permitted Cable Substitutions
BM	BMR
BLP	CMP, CL3P
BLR	CMP, CL3P, CMR, CL3R, BLP, BMR
BL	CMP, CMR, CM, CMG, CL3P, CL3R, CL3, BMR, BM, BLP, BLR
BLX	CMP, CMR, CM, CMG, CMX, CL3P, CL3R, CL3, CL3X, BMR, BM, BLP, ~~BRP~~ BLR , BL

Statement of Problem and Substantiation for Public Input

This PI fixes a typo in the table. BRP cable does not exist.

Submitter Information Verification

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Submittal Date: Sun Jun 18 02:42:45 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7789-NFPA 70-2024

Statement: The cable substitution hierarchies have been incorporated into the general article, Article 800. This revision coordinates with action taken on 800.154 by deleting the cable substitution requirements from this Article. With the deletion of this section, the revision to correct a typo is not needed.

Public Input No. 1172-NFPA 70-2023 [Section No. 830.154]

~~**830.154** Substitutions of Network-Powered Broadband Communications System Cables.~~

~~The substitutions for network-powered broadband system cables listed in Table 830.154 shall be permitted.~~

~~Table 830.154 Cable Substitutions~~

~~Cable Type Permitted Cable Substitutions BM BMR BLP CMP, CL3P BLR CMP, CL3P, CMR, CL3R, BLP, BMR BL CMP, CMR, CM, CMG, CL3P, CL3R, CL3, BMR, BM, BLP, BLR BLX CMP, CMR, CM, CMG, CMX, CL3P, CL3R, CL3, CL3X, BMR, BM, BLP, BRP, BL~~

Statement of Problem and Substantiation for Public Input

PI 1169 moves the cable substitution hierarchies into the general article (Article 800). This PI coordinates with PI 1169 by deleting the cable substitution requirements from this Article.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1169-NFPA 70-2023 [Section No. 800.154]	Moves cable substitutions into 800.154
Public Input No. 1169-NFPA 70-2023 [Section No. 800.154]	

Submitter Information Verification

Submitter Full Name: Leslie Jutte
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Submittal Date: Thu Jun 22 04:45:24 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7789-NFPA 70-2024

Statement: The cable substitution hierarchies have been incorporated into the general article, Article 800. This revision coordinates with action taken on 800.154 by deleting the cable substitution requirements from this Article. With the deletion of this section, the revision to correct a typo is not needed.

Public Input No. 1199-NFPA 70-2023 [Section No. 830.179]

830.179 Network-Powered Broadband Communications Equipment and Cables.

Network-powered broadband communications equipment and cables shall be listed and marked in accordance with 830.179(A) ~~through~~ and (~~C~~ B).

~~*Exception No. 1:*~~ *Exception This listing requirement shall not apply to community antenna television and radio distribution system coaxial cables that were installed prior to January 1, 2000, in accordance with Article 820 and are used for low-power network-powered broadband communications circuits.*

~~*Exception No. 2: Substitute cables for network-powered broadband communications cables shall be permitted as shown in Table 830.154 .*~~

~~(B)~~

(A)

~~General Requirements.~~

~~The general requirements in 800.179 shall apply.~~

~~**Network-Powered Broadband Communications Medium-Power Cables.**~~

~~Network-powered broadband communications medium-power cables shall be factory-assembled cables consisting of a jacketed coaxial cable, a jacketed combination of coaxial cable and multiple individual conductors, or a jacketed combination of an optical fiber cable and multiple individual conductors. The insulation for the individual conductors shall be rated for 300 volts minimum. Cables intended for outdoor use shall be listed as suitable for the application. Cables shall be marked in accordance with 310.8 . Type BMU cables shall be jacketed and listed as being suitable for outdoor underground use.~~

~~(~~

~~C~~

~~**B)** Network-Powered Broadband Communication Low-Power Cables.~~

~~Network-powered broadband communications low-power cables shall be factory-assembled cables consisting of a jacketed coaxial cable, a jacketed combination of coaxial cable and multiple individual conductors, or a jacketed combination of an optical fiber cable and multiple individual conductors. The insulation for the individual conductors shall be rated for 300 volts minimum. Cables intended for outdoor use shall be listed as suitable for the application. Cables shall be marked in accordance with 310.8 . Type BLU cables shall be jacketed and listed as being suitable for outdoor underground use.~~

Additional Proposed Changes

File Name	Description	Approved
PI_1199_text.docx	PI 1999 is MS Word format	

Statement of Problem and Substantiation for Public Input

Reference to 800.179 is redundant. The recommended text deletes 830.170(A)

The substitutes for network-powered broadband cables has been moved to Article 800 30.179, Exception No. 2 is no longer correct. It's deleted.

See the attached MS Word file for easy-to -read text

Submitter Information Verification

Submitter Full Name: Leslie Jutte
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Submittal Date: Sat Jun 24 09:24:54 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7803-NFPA 70-2024
Statement: This revision deletes the redundant general requirement that is already located in Article 800.179. The revised cross-reference to Table 830.154 reflects the action which incorporated the table into Article 800.

Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]

840.93 Grounding or Interruption.

Non-current-carrying metallic members of optical fiber cables, communications cables, or coaxial cables entering buildings or attaching to buildings shall comply with 840.93(A), (B), or (C), respectively.

(A) Non-Current-Carrying Metallic Members of Optical Fiber Cables.

Non-current-carrying metallic members of optical fiber cables entering a building or terminating on the outside of a building shall comply with 770.93(A) or (B).

(B) Communications Cables.

The grounding or interruption of the metallic sheath of communications cable shall comply with ~~805~~ 800 .93 (A), 800 .93(B)(1) and 800.93(C)(1).

(C) Coaxial Cables.

Where the network terminal is installed inside or outside of the building, with coaxial cables terminating at the network terminal, and is either entering, exiting, or attached to the outside of the building, ~~820.93 shall~~ 800.93(A), 800.93(B)(2) and 800.93(C)(2) shall apply.

Statement of Problem and Substantiation for Public Input

To increase clarity and help code users by gathering as many common requirements in a single general communications Article 800, a series of revisions have been submitted to consolidate the common "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800 under a new section 800.93.
No technical changes are intended or envisioned by these changes.
This revision to 840.93 is to replace references to the old 805.93 and 820.93 sections with equivalent references to the new proposed 800.93.

Several related and correlated revisions will be required to create the new 800.93 including
1. The creation of a new section (820.90) to accommodate the protector requirements currently in 820.93 into a new section more accurately entitled “protectors” and numbered to be parallel with other related protection sections 805.90, 830.90 and 840.90.
2. A revision to create a new 800.93 section to gather the common requirements for "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800.
3. Delete 820.93 since all the requirements will now be covered in the new 800.93 and the new 820.90
4. Delete 830.93 since all the requirements will now be covered in the new 800.93
5. Delete 805.93 since all the requirements will now be covered in the new 800.93.
6. Revise 840.94 to replace references to the old 805.93 sections with equivalent references to the new 800.93
7. Revise 800.133 to replace references to the old 820.93 sections with equivalent references to the new 800.93.

This revisions continues the consolidation efforts of last 2-3 code cycles to gather common requirements for communications cables and systems into Article 800.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3645-NFPA 70-2023 [New Part after III.]	
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	

Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]

Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]

Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]

Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]

Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]

Public Input No. 3645-NFPA 70-2023 [New Part after III.]

Public Input No. 3650-NFPA 70-2023 [New Part after III.]

Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]

Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]

Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]

Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]

Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]

Submitter Information Verification

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Submittal Date: Tue Sep 05 12:44:54 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: FR-7706-NFPA 70-2024

Statement: The cross references have been updated due to the consolidation efforts to incorporate 805.93 and 820.93 into 800.93.

Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]

840.94 Premises Circuits Leaving the Building.

Where circuits leave the building to power equipment remote to the building or outside the exterior zone of protection defined by a 46 m (150 ft) radius rolling sphere, 805.90~~ and 805.93 shall~~ , 800.93(A), 800.93(B)(1), and 800.93(C)(1) shall apply.

Informational Note: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems*, for the theory of the term *rolling sphere*.

Statement of Problem and Substantiation for Public Input

To increase clarity and help code users by gathering as many common requirements in a single general communications Article 800, a series of revisions have been submitted to consolidate the common "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800 under a new section 800.93.
No technical changes are intended or envisioned by these changes.
This revision updates the 805.93 references in the current 840.94 to the equivalent references in the new 800.93.

Several related and correlated revisions will be required to create the new 800.93 including
1. The creation of a new section (820.90) to accommodate the protector requirements currently in 820.93 into a new section more accurately entitled “protectors” and numbered to be parallel with other related protection sections 805.90, 830.90 and 840.90.
2. A revision to create a new 800.93 section to gather the common requirements for "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800.
3. Delete 820.93 since all the requirements will now be covered in the new 800.93 and the new 820.90
4. Delete 830.93 since all the requirements will now be covered in the new 800.93
5. Revise 840.93 to replace references to the old 805.93 and 820.93 sections with equivalent references to the new 800.93
6. Delete 805.93 since all the requirements will now be covered in the new 800.93
7. Revise 800.133 to replace references to the old 820.93 sections with equivalent references to the new 800.93.

This revisions continues the consolidation efforts of last 2-3 code cycles to gather common requirements for communications cables and systems into Article 800.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3645-NFPA 70-2023 [New Part after III.]	
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	
Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]	
Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]	
Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]	
Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]	
Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]	
Public Input No. 3645-NFPA 70-2023 [New Part after III.]	
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	
Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]	

Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]

Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]

Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]

Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]

Submitter Information Verification

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Committee: NEC-P16

Committee Statement

Resolution: FR-7785-NFPA 70-2024

Statement: The cross-references in this section have been revised due to the actions taken to consolidate common requirements into a single general communications Article 800.

Public Input No. 1198-NFPA 70-2023 [Section No. 840.170]

840.170 Equipment~~- and Cables~~ .

Premises-powered broadband communications systems equipment ~~and cables~~ shall comply with 840.170(A) through (~~D~~ C).

(A) Network Terminal.

The network terminal and applicable grounding means shall be listed for application with premises-powered broadband communications systems.

Informational Note No. 1: See ~~ANSI/~~ UL 60950~~-1-2014~~ , ~~*Standard for Safety of Information Technology Equipment*~~; ~~ANSI/~~ UL 498A~~-2015~~ , *Current Taps and Adapters*; ~~ANSI/~~ UL 467~~-2013~~ , *Grounding and Bonding Equipment;* or ~~ANSI~~ /UL 62368-1~~-2014~~ ,, *Audio/Video, Information and Communication Technology Equipment – Part 1: Safety Requirements*.

Informational Note No. 2: There are no requirements on the network terminal and its grounding methodologies except for those covered by the listing of the product.

~~(C)~~

(B)

~~Premises Communications Wires and Cables.~~

~~Communications wires and cables shall be listed and marked in accordance with 800.179 .~~

~~**Power Source.**~~

~~The power source for circuits intended to provide power over communications cables to remote equipment shall be limited in accordance with Table 11(B) in Chapter 9 for voltage sources up to 60 volts dc and be listed as specified in either of the following:~~

(1) ~~A power source shall be listed as specified in 725.60(A)(1) , (A)(2), (A)(3), or (A)(4). The power sources shall not have the output connections paralleled or otherwise interconnected unless listed for such interconnection.~~

(2) ~~A power source shall be listed as communications equipment for limited-power circuits.~~

~~Informational Note: See~~

~~ANSI/UL 60950~~

~~UL ,60950 -1~~

~~-2014, Standard for Safety of~~

~~, *Information Technology Equipment-Safety — Part 1* , or~~

~~ANSI/~~

~~UL 62368-1~~

~~-2014~~

~~, *Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements* . Typically, such circuits are used to interconnect equipment for the purpose of exchanging information (data).~~

~~(~~

~~D~~

~~C) Accessory Equipment.~~

~~Communications accessory equipment and/or assemblies shall be listed for application with premises-powered communications systems.~~

~~Informational Note: See~~

~~ANSI/~~

~~UL 1863~~

~~-2004~~

~~, *Communications-Circuit Accessories* .~~

Additional Proposed Changes

File Name	Description	Approved
PI_1198_text.docx	PI 1198 text in MS Word format	

Statement of Problem and Substantiation for Public Input

Reference to 800.179 is redundant. The recommended text deletes 840.170(B)

The edition dates for the UL standards were deleted because they are not needed. Section 90.5(C) in the 2023 NEC states “Unless the standard reference includes a date, the reference is to be considered

as the latest edition of the standard."

ANSI was stricken from the title of the UL references to conform to current practice in references to UL standards.

The titles of the UL standards were revised to agree with the list of UL standards in the UL Standards online catalog. The words "Standard for" have been dropped from the titles of UL standards.

See the attached word doc for easy-to-read text.

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Committee: NEC-P16

Committee Statement

Resolution: FR-8106-NFPA 70-2024
Statement: This revision deletes the redundant general requirement that is already located in Article 800.179.

Public Input No. 3645-NFPA 70-2023 [New Part after III.]

800.93 Grounding, Bonding or Interruption of Metallic Members of Cables

Non-current carrying metallic members of communications cables, coaxial cables, or optical fiber cables entering buildings or attaching to buildings shall comply with 800.93(A), (B), and (C).

For purposes of this section, grounding located at mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.

(A) Location

The grounding, bonding, or interruption shall be as close as practicable to the point of entrance.

(B) Entering Buildings.

(1) In installations where the communications cable enters a building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device.

(2) In installations where the coaxial cable enters the building, the outer conductive shield shall be grounded in accordance with 820.100.

(3) In installations where the network-powered communications cable enters the building, the shield shall be grounded in accordance with 800.100, and metallic members of the cable not used for communications or powering shall be grounded in accordance with 800.100 or interrupted by an insulating joint or equivalent device.

(4) Non-current-carrying metallic members of optical fiber cables entering a building or terminating on the outside of a building shall comply with 770.93(A) or (B).

(C) Terminating on the Outside of Buildings.

(1) In installations where the communications cable is terminated on the outside of the building, the metallic sheath members of the cable shall be grounded or bonded as specified in 800.100 or interrupted by an insulating joint or equivalent device.

(2) In installations where the coaxial cable is terminated outside of the building, the outer conductive shield shall be grounded in accordance with 820.100.

(3) In installations where the network-powered communications cable is terminated outside of the building, the shield shall be grounded in accordance with 800.100, and metallic members of the cable not used for communications or powering shall be grounded in accordance with 800.100 or interrupted by an insulating joint or equivalent device.

The grounding or interruption shall be as close as practicable to the point of attachment of the NIU.

Informational Note: Selecting a grounding location to achieve the shortest practicable bonding conductor or grounding electrode conductor helps limit potential differences between the network-powered broadband communications circuits and other metallic systems.

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Statement of Problem and Substantiation for Public Input

To increase clarity and help code users by gathering as many common requirements in a single general communications Article 800, this revision will consolidate the common "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800 under a new section 800.93.
No technical changes are intended or envisioned by these changes.

Several related and correlated revisions will be required to create the new 800.93 including
1. The creation of a new section (820.90) to accommodate the protector requirements currently in 820.93 into a new section more accurately entitled "protectors" and numbered to be parallel with other related protection sections 805.90, 830.90 and 840.90.
2. Delete 805.93 since all the requirements will now be covered in the new 800.93
3. Delete 820.93 since all the requirements will now be covered in the new 800.93 and the new 820.90
4. Delete 830.93 since all the requirements will now be covered in the new 800.93
5. Revise 840.93 to replace references to the old 805.93 and 820.93 sections with equivalent references to the new 800.93
6. Revise 840.94 to replace references to the old 805.93 sections with equivalent references to the new 800.93
7. Revise 800.133 to replace references to the old 820.93 sections with equivalent references to the new 800.93.

This revisions continues the consolidation efforts of last 2-3 code cycles to gather common requirements for communications cables and systems into Article 800.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	
Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]	
Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]	
Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]	
Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]	
Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]	
Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]	
Public Input No. 3650-NFPA 70-2023 [New Part after III.]	
Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]	
Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]	
Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]	
Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]	
Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]	
Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]	

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Committee: NEC-P16

Committee Statement

Resolution: FR-7700-NFPA 70-2024
Statement: This revision establishes a new Section 800.93 Grounding, Bonding or Interruption of Metallic Members of Cables and incorporates the common requirements of 805.93, 820.93, and 830.93.

Public Input No. 3650-NFPA 70-2023 [New Part after III.]

820.90 Protection of Coaxial cables entering or attached to buildings

(A) Outer Conductor . If the outer conductive shield of a coaxial cable is grounded, no other protective devices shall be required (see 800.93)

(B) Primary Protector . If installed, a primary protector shall be applied on each community antenna and radio distribution (CATV) cable external to the premises.

(C) Listing and Location of Primary Protector –-If present, the primary protector shall be

(1) listed for the purpose, and

(2) located as close as practicable to the entrance point of the cable on either side or integral to the ground block.

(D) Hazardous (Classified) Locations . If a primary protector or equipment providing the primary protection function is used, it shall not be located in hazardous (classified) location as defined in 500.5 and 505.5 or in the vicinity of easily ignitible material.

Exception: Primary protection equipment shall be used only if permitted by 501.150, 502.150, and 503.150.

Statement of Problem and Substantiation for Public Input

To increase clarity and help code users by gathering as many common requirements in a single general communications Article 800, a series of related PIs has been submitted to consolidate the common "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800 under a new section 800.93.
This revision creates a new section (820.90) to accommodate the protector requirements currently in 820.93 into a new section more accurately entitled “protectors” and numbered to be parallel with other related protection sections 805.90, 830.90 and 840.90.
No technical changes are intended or envisioned by these changes.
Several related and correlated revisions will be required to create the new 800.93 including
1. The creation of a new section (800.93) for the general communications Article 800 to consolidate the common "Grounding, Bonding and Interruption" criteria of 805.93, 820.93, 830.93 and 840.93 into the General Article 800 under a new section 800.93.
2. Delete 805.93 since all the requirements will now be covered in the new 800.93
3. Delete 820.93 since all the requirements will now be covered in the new 800.93 and the new 820.90
4. Delete 830.93 since all the requirements will now be covered in the new 800.93
5. Revise 840.93 to replace references to the old 805.93 and 820.93 sections with equivalent references to the new 800.93
6. Revise 840.94 to replace references to the old 805.93 sections with equivalent references to the new 800.93
7. Revise 800.133 to replace references to the old 820.93 sections with equivalent references to the new 800.93.

This revisions continues the consolidation efforts of last 2-3 code cycles to gather common requirements for communications cables and systems into Article 800.

Related Public Inputs for This Document

Related Input	Relationship

Public Input No. 3645-NFPA 70-2023 [New Part after III.]
Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]
Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]
Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]
Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]
Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]
Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]
Public Input No. 3645-NFPA 70-2023 [New Part after III.]
Public Input No. 3654-NFPA 70-2023 [Section No. 820.93]
Public Input No. 3660-NFPA 70-2023 [Section No. 805.93]
Public Input No. 3661-NFPA 70-2023 [Section No. 830.93]
Public Input No. 3663-NFPA 70-2023 [Section No. 840.93]
Public Input No. 3666-NFPA 70-2023 [Section No. 840.94]
Public Input No. 3670-NFPA 70-2023 [Section No. 800.133 [Excluding any Sub-Sections]]

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Committee: NEC-P16

Committee Statement

Resolution: FR-7989-NFPA 70-2024
Statement: This revision creates a new section that incorporates the protector requirements currently in 820.93 The section numbering parallels other related protection sections, see 805.90, 830.90, and 840.90.

Public Input No. 439-NFPA 70-2023 [Part III.]

Part ~~III~~ II . Protection

Statement of Problem and Substantiation for Public Input

This public input is purely editorial in nature. The roman numerals for Parts III - V of Article 820 should be re-numbered to be Parts II - IV.

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Committee: NEC-P16

Committee Statement

Resolution: FR-7725-NFPA 70-2024
Statement: Per 2.1.5.4 of the Style manual Parts in Article 820 have been numbered sequentially.

Public Input No. 3355-NFPA 70-2023 [Sections Part III., 820.93, Part IV., 820.100, 820.103]

~~**Sections Part III., 820.93, Part IV., 820.100, 820.103**~~

~~**Part III.** Protection~~

~~**820.93** Grounding of the Outer Conductive Shield of Coaxial Cables.~~

~~Coaxial cables entering buildings or attached to buildings shall comply with 820.93(A) or (B). Where the outer conductive shield of a coaxial cable is grounded, no other protective devices shall be required. For purposes of this section, grounding located at mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.~~

> ~~Informational Note: Selecting a grounding block location to achieve the shortest practicable bonding conductor or grounding electrode conductor helps limit potential differences between CATV and other metallic systems.~~

~~**(A)** Entering Buildings.~~

~~In installations where the coaxial cable enters the building, the outer conductive shield shall be grounded in accordance with 820.100 . The grounding shall be as close as practicable to the point of entrance.~~

~~**(B)** Terminating Outside of the Building.~~

~~In installations where the coaxial cable is terminated outside of the building, the outer conductive shield shall be grounded in accordance with 820.100 . The grounding shall be as close as practicable to the point of attachment or termination.~~

~~**(C)** Location.~~

~~Where installed, a listed primary protector shall be applied on each community antenna and radio distribution (CATV) cable external to the premises. The listed primary protector shall be located as close as practicable to the entrance point of the cable on either side or integral to the ground block.~~

~~**(D)** Hazardous (Classified) Locations.~~

~~If a primary protector or equipment providing the primary protection function is used, it shall not be located in any hazardous (classified) location as defined in 500.5 and 505.5 or in the vicinity of easily ignitible material.~~

~~*Exception: Primary protection equipment shall be used only if permitted by 501.150 ; 502.150 , and 503.150 .*~~

~~**Part IV.** Grounding Methods~~

~~**820.100** Cable Bonding and Grounding.~~

~~The shield of the coaxial cable shall be bonded or grounded as specified in 820.100(A) and (B).~~

~~*Exception: For communications systems using coaxial cable completely contained within the building (i.e., they do not exit the building) or the exterior zone of protection defined by a 46 m (150 ft) radius rolling sphere and isolated from outside cable plant, the shield shall be permitted to be grounded by a connection to an equipment grounding conductor as described in 250.118 . Connecting to an equipment grounding conductor through a grounded receptacle using a dedicated bonding jumper and a permanently connected listed device shall be permitted. Use of a cord and plug for the connection to an equipment grounding conductor shall not be permitted.*~~

~~Informational Note: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems,* 4.7.3.1, for the application of the term *rolling sphere* .~~

~~**(A)** General Requirements.~~

~~The installation shall be in accordance with 800.100 .~~

~~**(B)** Shield Protection Devices.~~

~~Grounding of a coaxial drop cable shield by means of a protective device that does not interrupt the grounding system within the premises shall be permitted.~~

~~**820.103** Equipment Grounding.~~

~~Unpowered equipment and enclosures or equipment powered by the coaxial cable shall be considered grounded where connected to the metallic cable shield.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Submitter Information Verification

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Submittal Date: Fri Sep 01 14:24:14 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use, and useability it is more appropriate to have as many requirements as practical for CATV systems explicitly in one article such as 820 rather than X00, X50, X22, X90, 800 and 820. The relocated text in the proposed X50 and X90 does not address the proposed revisions of several PIs including PI-3645, PI-3650, PI-3654, PI-3660, PI-3661, PI-3663, PI-3666, and PI-3670, that have been submitted to consolidate the common requirements of the various 8xx.93 sections into a single new 800.93.

Public Input No. 3356-NFPA 70-2023 [Sections Part III., 830.90, Part IV., 830.93]

Sections Part III., 830.90, Part IV., 830.93

Part III. Protection

830.90 Primary Electrical Protection.

(A) Application.

Primary electrical protection shall be provided on all network-powered broadband communications conductors that are neither grounded nor interrupted and are run partly or entirely in aerial cable not confined within a block. Also, primary electrical protection shall be provided on all aerial or underground network-powered broadband communications conductors that are neither grounded nor interrupted and are located within the block containing the building served so as to be exposed to lightning or accidental contact with electric light or power conductors operating at over 300 volts to ground.

Exception: Primary electrical protection shall not be required on the network-powered broadband communications conductors where electrical protection is provided on the derived circuit(s) (output side of the NIU) in accordance with 830.90(B)(3) .

Informational Note No. 1: On network-powered broadband communications conductors not exposed to lightning or accidental contact with power conductors, providing primary electrical protection in accordance with this article helps protect against other hazards, such as ground potential rise caused by power fault currents, and above-normal voltages induced by fault currents on power circuits in proximity to the network-powered broadband communications conductors.

Informational Note No. 2: Network-powered broadband communications circuits are considered to have a lightning exposure unless one or more of the following conditions exist:

(1) Circuits in large metropolitan areas where buildings are close together and sufficiently high to intercept lightning.

(2) Areas having an average of five or fewer thunderstorm days each year and earth resistivity of less than 100 ohm-meters. Such areas are found along the Pacific coast.

Informational Note No. 3: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems* , for information on lightning protection systems.

(1) Fuseless Primary Protectors.

Fuseless-type primary protectors shall be permitted where power fault currents on all protected conductors in the cable are safely limited to a value no greater than the current-carrying capacity of the primary protector and of the primary protector bonding conductor or grounding electrode conductor.

(2) Fused Primary Protectors.

Where the requirements listed in 830.90(A)(1) are not met, fused-type primary protectors shall be used. Fused-type primary protectors shall consist of an arrester connected between each conductor to be protected and ground, a fuse in series with each conductor to be protected, and an appropriate mounting arrangement. Fused primary protector terminals shall be marked to indicate line, instrument, and ground, as applicable.

(B) Location.

The location of the primary protector, where required, shall comply with the following:

(1) A listed primary protector shall be applied on each network-powered broadband communications cable external to and on the network side of the network interface unit.

(2) The primary protector function shall be an integral part of and contained in the network interface unit. The network interface unit shall be listed as being suitable for application with network-powered broadband communications systems and shall have an external marking indicating that it contains primary electrical protection.

(3) The primary protector(s) shall be provided on the derived circuit(s) (output side of the NIU), and the combination of the NIU and the protector(s) shall be listed as being suitable for application with network-powered broadband communications systems.

A primary protector, whether provided integrally or external to the network interface unit, shall be located as close as practicable to the point of entrance.

For purposes of this section, a network interface unit and any externally provided primary protectors located at mobile home service equipment located in sight from and not more than 9.0 m (30 ft) from the exterior wall of the mobile home it serves, or at a mobile home disconnecting means grounded in accordance with 250.32 and located in sight from and not more than 9.0 m (30 ft) from the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.

Informational Note: Selecting a network interface unit and primary protector location to achieve the shortest practicable primary protector bonding conductor or grounding electrode conductor helps limit potential differences between communications circuits and other metallic systems.

(C) Hazardous (Classified) Locations.

The primary protector or equipment providing the primary protection function shall not be located in any hazardous (classified) location as defined in 500.5 and 505.5 or in the vicinity of easily ignitible material.

Exception: As permitted in 501.150 , 502.150 , and 503.150 .

Part IV. Grounding Methods

830.93 Grounding or Interruption of Metallic Members of Network-Powered Broadband Communications Cables.

Network-powered communications cables entering buildings or attaching to buildings shall comply with 830.93(A) or (B).

For purposes of this section, grounding located at mobile home service equipment located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, or at a mobile home disconnecting means grounded in accordance with 250.32 and located within 9.0 m (30 ft) of the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.

Informational Note: Selecting a grounding location to achieve the shortest practicable bonding conductor or grounding electrode conductor helps limit potential differences between the network-powered broadband communications circuits and other metallic systems.

(A) Entering Buildings.

In installations where the network-powered communications cable enters the building, the shield shall be grounded in accordance with 800.100 , and metallic members of the cable not used for communications or powering shall be grounded in accordance with 800.100 or interrupted by an insulating joint or equivalent device. The grounding or interruption shall be as close as practicable to the point of entrance.

~~**(B)** Terminating Outside of the Building.~~

~~In installations where the network-powered communications cable is terminated outside of the building, the shield shall be grounded in accordance with 800.100 , and metallic members of the cable not used for communications or powering shall be grounded in accordance with 800.100 or interrupted by an insulating joint or equivalent device. The grounding or interruption shall be as close as practicable to the point of attachment of the NIU.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Submitter Information Verification

Submitter Full Name: Derrick Atkins
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Submittal Date: Fri Sep 01 14:25:57 EDT 2023
Committee: NEC-P16

Committee Statement

Resolution: For clarity, ease-of-use and usability it is more appropriate to have as many requirements as practical for communications systems explicitly in one article such as 830 and not spread between X00, X50, X90, 800, and 830. The relocated text in the proposed X50 and X90 does not address the proposed revisions of several PIs including PI-3645, PI-3650, PI-3654, PI-3660, PI-3661, PI-3663, PI-3666, and PI-3670, that have been submitted to consolidate the common requirements of the various 8xx.93 sections into a single new 800.93

Public Input No. 3358-NFPA 70-2023 [Sections Part III., 840.90, 840.93, 840.94, Part IV., 840.1...]

Sections Part III., 840.90, 840.93, 840.94, Part IV., 840.101, 840.102

Part III. Protection

840.90 Protective Devices.

The requirements of 805.90 shall apply.

840.93 Grounding or Interruption.

Non-current-carrying metallic members of optical fiber cables, communications cables, or coaxial cables entering buildings or attaching to buildings shall comply with 840.93(A) , (B), or (C), respectively.

(A) Non-Current-Carrying Metallic Members of Optical Fiber Cables.

Non-current-carrying metallic members of optical fiber cables entering a building or terminating on the outside of a building shall comply with 770.93(A) or (B).

(B) Communications Cables.

The grounding or interruption of the metallic sheath of communications cable shall comply with 805.93 .

(C) Coaxial Cables.

Where the network terminal is installed inside or outside of the building, with coaxial cables terminating at the network terminal, and is either entering, exiting, or attached to the outside of the building, 820.93 shall apply.

840.94 Premises Circuits Leaving the Building.

Where circuits leave the building to power equipment remote to the building or outside the exterior zone of protection defined by a 46 m (150 ft) radius rolling sphere, 805.90 and 805.93 shall apply.

Informational Note: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems* , for the theory of the term *rolling sphere* .

Part IV. Grounding Methods

840.101 Premises Circuits Not Leaving the Building.

If the network terminal is served by a nonconductive optical fiber cable, or where any non-current-carrying metal member of a conductive optical fiber cable is interrupted by an insulating joint or equivalent device, and circuits that terminate at the network terminal are completely contained within the building (i.e., they do not exit the building), 840.101(A) , (B), or (C) shall apply, as applicable.

(A) Coaxial Cable Shield Grounding.

The shield of coaxial cable shall be grounded by one of the following:

(1) Any of the methods described in 820.100 or 800.106

(2) A fixed connection to an equipment grounding conductor as described in 250.118

(3) Connection to the network terminal grounding terminal provided that the terminal is connected to ground by one of the methods described in 820.100 or 800.106 , or to an equipment grounding conductor through a listed grounding device that will retain the ground connection if the network terminal is unplugged

~~**(B)** Communications Circuit Grounding.~~

~~Communications circuits shall not be required to be grounded.~~

~~**(C)** Network Terminal Grounding.~~

~~The network terminal shall not be required to be grounded unless required by its listing. If the coaxial cable shield is separately grounded as described in 840.101(A)(1) or 840.101(A)(2), the use of a cord and plug for the connection to the network terminal grounding connection shall be permitted.~~

~~Informational Note: If required to be grounded, a listed device that extends the equipment grounding conductor from the receptacle to the network terminal equipment grounding terminal is permitted. Sizing of the extended equipment grounding conductor is covered in Table 250.122.~~

~~**840.102** Premises Circuits Leaving the Building.~~

~~If circuits leave the building to power equipment remote to the building or outside the exterior zone of protection defined by a 46-m (150-ft) radius rolling sphere, the installation of communications wires and cables shall comply with 800.100 and 800.106, and the installation of coaxial cables shall comply with 820.100 and 800.106.~~

~~Informational Note: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems*, for the application of the term *rolling sphere*.~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

Submitter Information Verification

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Submittal Date: Fri Sep 01 14:28:24 EDT 2023
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Committee Statement

Resolution: For clarity and ease-of-use, it is more appropriate to have as many requirements as practical for communications systems explicitly in one article such as 840 and not spread between X00, X50, X90, 800, and 840. The relocated text in the proposed X50 and X90 does not address the proposed revisions of several PIs including PI-3645, PI-3650, PI-3654, PI-3660, PI-3661, PI-3663, PI-3666, and PI-3670, that have been submitted to consolidate the common requirements of the various 8xx.93 sections into a single new 800.93

Public Input No. 3360-NFPA 70-2023 [Sections Part IV., 840.101]

~~**Sections Part IV., 840.101**~~

~~**Part IV.** Grounding Methods~~

~~**840.101** Premises Circuits Not Leaving the Building.~~

~~If the network terminal is served by a nonconductive optical fiber cable, or where any non-current-carrying metal member of a conductive optical fiber cable is interrupted by an insulating joint or equivalent device, and circuits that terminate at the network terminal are completely contained within the building (i.e., they do not exit the building), 840.101(A) , (B), or (C) shall apply, as applicable.~~

~~**(A)** Coaxial Cable Shield Grounding.~~

~~The shield of coaxial cable shall be grounded by one of the following:~~

(1) ~~Any of the methods described in 820.100 or 800.106~~

(2) ~~A fixed connection to an equipment grounding conductor as described in 250.118~~

(3) ~~Connection to the network terminal grounding terminal provided that the terminal is connected to ground by one of the methods described in 820.100 or 800.106 , or to an equipment grounding conductor through a listed grounding device that will retain the ground connection if the network terminal is unplugged~~

~~**(B)** Communications Circuit Grounding.~~

~~Communications circuits shall not be required to be grounded.~~

~~**(C)** Network Terminal Grounding.~~

~~The network terminal shall not be required to be grounded unless required by its listing. If the coaxial cable shield is separately grounded as described in 840.101(A)(1) or 840.101(A)(2) , the use of a cord and plug for the connection to the network terminal grounding connection shall be permitted.~~

~~Informational Note: If required to be grounded, a listed device that extends the equipment grounding conductor from the receptacle to the network terminal equipment grounding terminal is permitted. Sizing of the extended equipment grounding conductor is covered in Table 250.122 .~~

Additional Proposed Changes

File Name	Description	Approved
Limited_Energy_TG_Substantiation.docx	Limited Energy TG Chair Substantiation	

Statement of Problem and Substantiation for Public Input

As part of the work by the Limited Energy TG, the section is deleted as it is relocated into the new Limited Energy Grounding, Bonding, and Primary Protective Article.

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Committee Statement

Resolution: For clarity and ease-of-use, it is more appropriate to have as many requirements as practical for communications systems explicitly in one article such as 840 and not spread between X00, X50, X90, 800, and 840.

Public Input No. 1173-NFPA 70-2023 [Sections Part V., 820.154]

~~**Sections Part V., 820.154**~~

~~**Part V.** Installation Methods Within Buildings~~

~~**820.154** Substitutions of Listed CATV Cables.~~

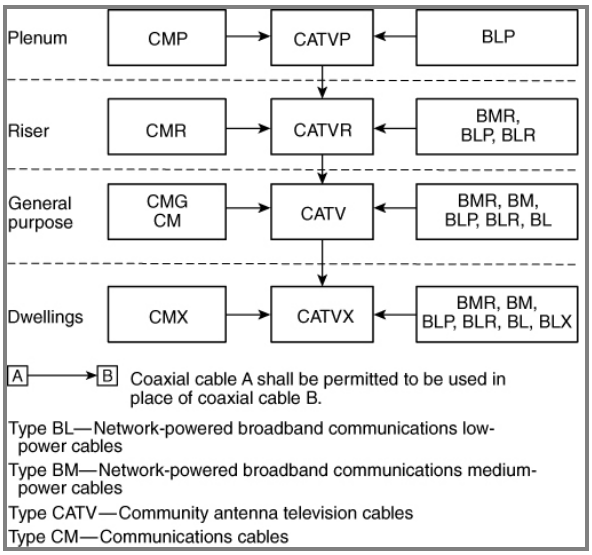
~~The substitutions for coaxial cables in Table 820.154 and illustrated in Figure 820.154 shall be permitted.~~

~~Informational Note: The substitute cables in Table 820.154 and Figure 820.154 are only coaxial-type cables.~~

~~Table 820.154 Coaxial Cable Uses and Permitted Substitutions~~

~~Cable Type Permitted Substitutions CATVP CMP, BLP CATVR CATVP, CMP, CMR, BMR, BLP, BLR CATV CATVP, CMP, CATVR, CMR, CMG, CM, BMR, BM, BLP, BLR, BL CATVX CATVP, CMP, CATVR, CMR, CATV, CMG, CM, BMR, BM, BLP, BLR, BL, BLX~~

~~**Figure 820.154 Coaxial Cable Substitution Hierarchy.**~~



Statement of Problem and Substantiation for Public Input

PI 1169 moves the cable substitution hierarchies into the general article (Article 800). This PI coordinates with PI 1169 by deleting the cable substitution requirements from this Article.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1169-NFPA 70-2023 [Section No. 800.154]	Moves cable substitutions into 800.154
Public Input No. 1169-NFPA 70-2023 [Section No. 800.154]	

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Committee: NEC-P16

Committee Statement

Resolution: FR-7783-NFPA 70-2024
Statement: The cable substitution hierarchies have been incorporated into the general article, Article 800. This revision coordinates with action taken on 800.154 by deleting the cable substitution requirements from this Article.

Public Input No. 1132-NFPA 70-2023 [Part VI.]

Part ~~VI~~ V . Premises Powering of Communications Equipment over Communications Cables

Statement of Problem and Substantiation for Public Input

It seems that Part V of Article 840 was omitted, so Part VI should have become Part V and then Part VII should have become Part VI.

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Committee: NEC-P16

Committee Statement

Resolution: FR-7813-NFPA 70-2024
Statement: Article Part numbers have been revised to appear sequentially per the NEC style manual.

Public Input No. 1134-NFPA 70-2023 [Part VII.]

Part ~~VII~~ VI . Listing Requirements

Statement of Problem and Substantiation for Public Input

It seems that Part V of Article 840 was omitted, so Part VI should have become Part V and then Part VII should have become Part VI.

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