Public Comment No. 974-NFPA 70-2021 [Global Input]

The Correlating Committee directs the Chair of CMP-12 to assign a task group to review all the definitions under their purview for compliance with the NEC Style Manual and to review definitions identified by the Correlating Committee that may contain correlation issues. The attachment includes a list of those definitions identified that need to be reviewed.

Additional Proposed Changes

File Name	Description	Approved
12_CN_361_Global.pdf	12 CN361	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 361 appeared in the First Draft Report on First Revision No. 9274.

The Correlating Committee directs the Chair of CMP-12 to assign a task group to review all the definitions under their purview for compliance with the NEC Style Manual and to review definitions identified by the Correlating Committee that may contain correlation issues. The attachment includes a list of those definitions identified that need to be reviewed.

Related Item

- First Revision No. 9274

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:29:57 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected
Resolution: A task group was assigned and reviewed definitions making changes where appropriate.

Correlating Committee Note No. 361-NFPA 70-2021 [Global Input]

Supplemental Information

File Name	Description	Approved
NEC_P12_Definitions_TG_Attachment_CN361.docx		

Submitter Information Verification

Committee: NEC-P12

Submittal Date: Thu May 06 22:42:21 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Chair of CMP-12 to assign a task group to review all the definitions under their purview for compliance with the NEC Style Manual and to review definitions identified by the Correlating Committee that may contain correlation issues. The attachment includes a list of those definitions identified that need to be reviewed.

First Revision No. 9274-NFPA 70-2021 [Global Input]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Correlating Committee Definitions Task Group
CMP-12 - Definitions

CMP-12 Definitions	Correlating Committee Comments
	The Correlating Committee directs the Chair of CMP-12 to assign a task group to review all the definitions under their purview for compliance with the NEC Style Manual and to review definitions identified by the Correlating Committee that may contain correlation issues. The attachment includes a list of those definitions identified that need to be reviewed.
Control Space (as applied to Elevator, Dumbwaiter). A space inside or outside the hoistway, other than a hoistway intended to be accessed with or without full bodily entry, that contains the elevator motor controller. This space could also contain electrical and/or mechanical equipment used directly in connection with the elevator, dumbwaiter, escalator, moving walk, or platform lift, but not the electrical driving machine or the hydraulic machine. (620) (CMP-12)	2.2.2.3.2 Article Number The Correlating Committee directs the panel to reconsider the first sentence for clarity, considering the use of the term "space", rather than the phrase "other than a hoistway".
Electric Vehicle Supply Equipment (EVSE). Equipment for plug-in charging comprising the conductors, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle. (625) (CMP-12) Informational Note: Electric vehicle power export equipment and electric vehicle supply equipment or wireless power transfer equipment are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional EVSE or bidirectional WPTE.	3.3.1.2 Clarity and Usability The Correlating Committee directs that the Panel rewrite the definition for usability and clarity. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is simple. The use of the term "comprising" results in a requirement in the definition, and should be rewritten in accordance with 2.2.2.2 of the NEC Style Manual. The Correlating Committee also directs the panel to include the full title of the acronym WPTE, since that term has not been used in the article, Section 3.2.3 NEC Style Manual.
Wireless Power Transfer Equipment (WPTE). Equipment comprising the conductors, including the ungrounded, grounded, and equipment grounding conductors, personnel protection system, power and control electronics, communication electronics, the output cable to the primary pad, the primary pad and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle without physical electrical contact. (625) (CMP-12) Informational Note No. 1: The general form of WPTE consists of two physical packages: a control box and a primary pad. Informational Note No. 2: Electric vehicle power export equipment and wireless power transfer equipment are sometimes contained in one set of equipment, sometimes referred to as a bidirectional WPTE.	The Correlating Committee directs that the Panel rewrite the definition for usability and clarity. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is simple. The use of the term "comprising" results in a requirement in the definition, and should be rewritten in accordance with 2.2.2.2 of the NEC Style Manual.

Cable, Abandoned Audio Distribution (Abandoned Audio Distribution Cable). Installed audio distribution cable that is not terminated at equipment and not identified for future use with a tag. (640) (CMP-12)	Task Group 2 Cable Issues
Cable, Abandoned Supply Circuits and Interconnecting (Abandoned Supply Circuits and Interconnecting Cables). Installed supply circuits and interconnecting cables that are not terminated at equipment and not identified for future use with a tag. (645) (CMP-12)	Task Group 2 Cable Issues
Controller, Motor (Motor Controller). The operative units of the control system comprising the starter device(s) and power conversion equipment used to drive an electric motor or the pumping unit used to power hydraulic control equipment. (620) (CMP-12)	Task Group 4 Controller, Motor 2.2.2.4 Multiple Terms
Cord Connector (as applied to Electrified Truck Parking Spaces). The necessary equipment usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors in an electrified truck parking space and intended to constitute the means of cutoff for the supply to that truck. (626) (CMP-12)	Task Group 8 Cord Connector - Power-Supply Cord 2.2.2.4 Multiple Terms
Disconnecting Means, Parking Space (Parking Space Disconnecting Means). The necessary equipment usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors in an electrified truck parking space and intended to constitute the means of cutoff for the supply to that truck. (626) (CMP-12)	Task Group 9 Disconnecting Means 2.2.2.4 Multiple Terms
Equipment, Portable (Portable Equipment) (as applied to Audio Equipment). Equipment fed with portable cords or cables intended to be moved from one place to another. (640) (CMP-12)	Task Group 3 Appliances-Equipment-Portable Issues
Equipment, Signal (Signal Equipment). Includes audible and visual equipment such as chimes, gongs, lights, and displays that convey information to the user. (620) (CMP-12)	Task Group 3 Appliances-Equipment-Portable Issues
Fastened-in-Place. Mounting means of equipment in which the fastening means are specifically designed to permit removal without the use of a tool. (625) (CMP-12)	Task Group 3 Appliances-Equipment-Portable Issues
Fixed-in-Place. Mounting means of equipment using fasteners that require a tool for removal. (625) (CMP-12)	Task Group 3 Appliances-Equipment-Portable Issues
Long-Time Rating (as applied to Nonmedical X-ray Equipment). A rating based on an operating interval of 5 minutes or longer. (660) (CMP-12)	Task Group 10 Long-Time & Momentary Rating 2.2.2.4 Multiple Terms
Momentary Rating (as applied to Nonmedical X-ray Equipment). A rating based on an operating interval that does not exceed 5 seconds. (660) (CMP-12)	Task Group 10 Long-Time & Momentary Rating 2.2.2.4 Multiple Terms

Portable. A device intended for indoor or outdoor use that is designed to be hand-carried from location to location, or easily transported without the use of other devices or equipment. (625) (CMP-12)	Task Group 3 Appliances-Equipment-Portable Issues
Portable (as applied to Nonmedical X-ray Equipment). X- ray equipment designed to be hand-carried. (660) (CMP-12)	Task Group 3 Appliances-Equipment-Portable Issues
Power-Supply Cord (as applied to EVSE). An assembly consisting of an attachment plug and length of flexible cord that connects equipment to a receptacle. (625) (CMP-12)	Task Group 8 Cord Connector - Power-Supply Cord 2.2.2.4 Multiple Terms
Temporary Equipment. Portable wiring and equipment intended for use with events of a transient or temporary nature where all equipment is presumed to be removed at the conclusion of the event. (640) (CMP-12)	Task Group 3 Appliances-Equipment-Portable Issues Term not in Article
Amplifier (Audio Amplifier) (Pre-Amplifier). Electronic equipment that increases the current or voltage, or both, of an audio signal intended for use by another piece of audio equipment. Amplifier is the term used within this article to denote an audio amplifier. (640) (CMP-12)	2.2.2.3.2 Article Number 2.2.2.5 Alternate Term Remove the second sentence "Within this Article"
Audio Signal Processing Equipment. Electrically operated equipment that produces, processes, or both, electronic signals that, when appropriately amplified and reproduced by a loudspeaker, produce an acoustic signal within the range of normal human hearing (typically 20–20 kHz). Within this article, the terms equipment and audio equipment are assumed to be equivalent to audio signal processing equipment. (640) (CMP-12) Informational Note: This equipment includes, but is not limited to, loudspeakers; headphones; pre-amplifiers; microphones and their power supplies; mixers; MIDI (musical instrument digital interface) equipment or other digital control systems; equalizers, compressors, and other audio signal processing equipment; and audio media recording and playback equipment, including turntables, tape decks and disk players (audio and multimedia), synthesizers, tone generators, and electronic organs. Electronic organs and synthesizers may have integral or separate amplification and loudspeakers. With the exception of amplifier outputs, virtually all such equipment is used to process signals (using analog or digital techniques) that have nonhazardous levels of voltage or current.	2.2.2.5 Article Number "Within this Article" Term only in definition
Audio System. Within this article, the totality of all equipment and interconnecting wiring used to fabricate a fully functional audio signal processing, amplification, and reproduction system. (640) (CMP- 12)	2.2.2.5 Article Number "Within this Article"

Control Room (as applied to Elevator, Dumbwaiter). An enclosed control space outside the hoistway, intended for full bodily entry, that contains the elevator motor controller. The room could also contain electrical and/or mechanical equipment used directly in connection with the elevator or dumbwaiter but not the electric driving machine or the hydraulic machine. (620) (CMP-12)	2.2.2.3.2 Article Number
Electric Vehicle Power Export Equipment (EVPE). The equipment, including the outlet on the vehicle, that is used to provide electrical power at voltages greater than or equal to 30 Vac or 60 Vdc to loads external to the vehicle, using the vehicle as the source of supply. (625) (CMP-12) Informational Note: Electric vehicle power export equipment and electric vehicle supply equipment or wireless power transfer equipment are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional EVSE or bidirectional WPTE.	3.3.1.2 Clarity and Usability 3.2.3 EVSE and WPTE Acronym
Information Technology Equipment (ITE). Equipment and systems rated 1000 volts or less, normally found in offices or other business establishments and similar environments classified as ordinary locations, that are used for creation and manipulation of data, voice, video, and similar signals that are not communications equipment as defined in Part I of Article 100 and do not process communications circuits as defined in 805.2. (CMP-12) Informational Note: For information on listing requirements for both information technology equipment and communications equipment, see UL 60950-1-2014, Information Technology Equipment — Safety — Part 1: General Requirements or UL 62368-1-2014, Audio/Video Information and Communication Technology Equipment Part 1: Safety Requirements.	4.1.3 Informational Note Structure Definition is in Art. 100
Information Technology Equipment Room. A room within the information technology equipment area that contains the information technology equipment. [75:3.3.14] (CMP-12)	4.3.2.3 Extract Reference
Load Management. The process of limiting the total electrical load on an electrical supply system to a set value by adjusting or controlling the individual loads. (625) (CMP-12) Informational Note: Load management is sometimes called demand-side management (DSM).	2.2.2.5 Alternate Terms Permitted without an Informational Note
Loudspeaker. Equipment that converts an ac electric signal into an acoustic signal. The term speaker is commonly used to mean loudspeaker. (640) (CMP-12)	2.2.2.5 Alternate Term 3.1.3 Informational Note. Move second sentence to IN
Machine Room (as applied to Elevator, Dumbwaiter). An enclosed machinery space outside the hoistway, intended for full bodily entry, that contains the electrical driving machine or the hydraulic machine. The room could also contain electrical and/or mechanical equipment used directly in connection with the elevator or dumbwaiter. (620) (CMP-12)	2.2.2.3.2 Article Number Only this Article

Machine Room and Control Room, Remote (Remote Machine Room and Control Room) (as applied to Elevator, Dumbwaiter). A machine room or control room that is not attached to the outside perimeter or surface of the walls, ceiling, or floor of the hoistway. (620) (CMP-12)	2.2.2.3.2 Only this Article 2.2.2.5 Alternate Terms (Machine Room, Remote)
Machinery, Industrial (Industrial Machinery) (Industrial Machine). A power-driven machine (or a group of machines working together in a coordinated manner), not portable by hand while working, that is used to process material by cutting; forming; pressure; electrical, thermal, or optical techniques; lamination; or a combination of these processes. It can include associated equipment used to transfer material or tooling, including fixtures, to assemble/disassemble, to inspect or test, or to package. [The associated electrical equipment, including the logic controller(s) and associated software or logic together with the machine actuators and sensors, are considered as part of the industrial machine.] (CMP-12)	Removal of Bracket in the definition, unclear what they are used for? Could be an Informational Note
Machinery Space (as applied to Elevator, Dumbwaiter, Platform Lift, and Stairway Chairlift). A space inside or outside the hoistway, intended to be accessed with or without full bodily entry, that contains the elevator, dumbwaiter, platform lift, or stairway chairlift equipment and could also contain equipment used directly in connection with the elevator, dumbwaiter, platform lift, or stairway chairlift. (620) (CMP-12)	2.2.2.3.2 Article Number Only this Article
Machinery Space and Control Space, Remote (Remote Machinery Space and Control Space) (as applied to Elevator, Dumbwaiter). A machinery space or control space that is not within the hoistway, machine room, or control room and that is not attached to the outside perimeter or surface of the walls, ceiling, or floor of the hoistway. (620) (CMP-12)	2.2.2.3.2 Article Number 2.2.2.5 Alternate Terms (Machinery Space)
Mobile (as applied to Nonmedical X-ray Equipment). X-ray equipment mounted on a permanent base with wheels and/or casters for moving while completely assembled. (660) (CMP-12)	2.2.2.3.2 Article Number Only this Article
Personnel Protection System (as applied to EVSE). A system of personnel protection devices and constructional features that when used together provide protection against electric shock of personnel. (625) (CMP-12)	2.2.2.3.2 Article Number Remove as applied to EVSE
Separable Power Supply Cable Assembly. A flexible cord or cable, including ungrounded, grounded, and equipment grounding conductors, provided with a cord connector, an attachment plug, and all other fittings, grommets, or devices installed for the purpose of delivering energy from the source of electrical supply to the truck or TRU flanged surface inlet. (626) (CMP-12)	3.2.3. Acronym Usage Acronym's first use in the Article.

Transportable (as applied to Nonmedical X-ray Equipment). X-ray equipment that is to be installed in a vehicle or that may be readily disassembled for transport in a vehicle. (660) (CMP-12)	2.2.2.3.2 Article Number (as applied to....)
Truck Flanged Surface Inlet. The device(s) on the truck into which the connector(s) is inserted to provide electric energy and other services. This device is part of the truck coupler. For the purposes of this article, the truck flanged surface inlet is considered to be part of the truck and not part of the electrified truck parking space supply equipment. (626) (CMP-12)	2.2.2 Definitions in Article 100 (For the purpose of this article)

Public Comment No. 980-NFPA 70-2021 [Global Input]

The Correlating Committee notes that more than one related term is referenced in the definitions. Section 2.2.2.4 of the NEC Style Manual review this issue and the Correlating Committee establishes a Task Group with representation from Code-Making Panels 12 and 15 to review the terms "Long-Time Rating" and "Momentary Rating" to consider one definition of each term for consistency. Each panel is assigned to revise the definitions under their purview to comply with the NEC Style Manual.

Additional Proposed Changes

File Name	Description	Approved
12_CN_400_Global.pdf	12 CN400	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 400 appeared in the First Draft Report on First Revision No. 9274.

The Correlating Committee notes that more than one related term is referenced in the definitions. Section 2.2.2.4 of the NEC Style Manual review this issue and the Correlating Committee establishes a Task Group with representation from Code-Making Panels 12 and 15 to review the terms "Long-Time Rating" and "Momentary Rating" to consider one definition of each term for consistency. Each panel is assigned to revise the definitions under their purview to comply with the NEC Style Manual.

Related Item

- First Revision No. 9274

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:51:38 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected
Resolution: The definitions of “long-time rating” and “momentary rating” were reviewed and no change was recommended.

Correlating Committee Note No. 400-NFPA 70-2021 [Global Input]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Fri May 07 16:57:28 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee notes that more than one related term is referenced in the definitions. Section 2.2.2.4 of the NEC Style Manual review this issue and the Correlating Committee establishes a Task Group with representation from Code-Making Panels 12 and 15 to review the terms "Long-Time Rating" and "Momentary Rating" to consider one definition of each term for consistency. Each panel is assigned to revise the definitions under their purview to comply with the NEC Style Manual.

First Revision No. 9274-NFPA 70-2021 [Global Input]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1077-NFPA 70-2021 [Definition: Cable Management System.]

Cable Management System.

An apparatus designed to control and organize ~~unused lengths~~ excess lengths of cable or cord~~ at electrified truck parking spaces~~ . (CMP-12)

Statement of Problem and Substantiation for Public Comment

With the move of all definitions to Article 100, whenever possible definitions should be worded such that they may be used in as much of the code as possible so that there are not multiple definitions for any particular term. This term describes a device with very broad and well-known use that is not unique to electrified truck parking spaces. The definition should reflect that broad use.

Related Item

• FR 9493

Submitter Information Verification

Submitter Full Name: Karl Reighard
Organization: Delmarva Power And Light
Affiliation: -self-
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 09 09:51:34 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7736-NFPA 70-2021
Statement: Definition revised for broader use throughout the NEC. Consequently, the revised definition is no longer purview of (CMP-12).

Public Comment No. 212-NFPA 70-2021 [Definition: Cable Management System.]

Cable Management System.

An apparatus designed to control and organize unused lengths of cable or cord at electrified ~~truck~~ vehicle parking spaces. (CMP-12)

Statement of Problem and Substantiation for Public Comment

I recommend making this more generally applicable to EV charging stations as there is no particular reason it should be limited to only applying to truck charging.

Related Item

• FR 9493 • PI 3466

Submitter Information Verification

Submitter Full Name: Marvin Hamon
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jul 12 12:25:02 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected
Resolution: The definition for cable management system is revised for broader use throughout the NEC.

Public Comment No. 989-NFPA 70-2021 [Definition: Control Space (as applied to elevator, dumbwai...]

Control Space (as applied to elevator, dumbwaiter).

A space inside or outside the hoistway, other than a hoistway intended to be accessed with or without full bodily entry, that contains the elevator motor controller. This space could also contain electrical and/or mechanical equipment used directly in connection with the elevator,dumbwaiter, escalator, moving walk, or platform lift, but not the electrical driving machine or the hydraulic machine. (620) (CMP-12)

Additional Proposed Changes

File Name	Description	Approved
12_CN_429.pdf	12 CN429	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 429 appeared in the First Draft Report on First Revision No. 9284.

The Correlating Committee directs the panel to reconsider the first sentence for clarity, considering the use of the term "space", rather than the phrase "other than a hoistway".

The Correlating Committee directs that this definition comply with the Style Manual Section 2.2.2.3.2 regarding using the article number following the defined term to indicate that the term only applies to that article. The panel should consider removing the language referencing "(as applied to Elevator, Dumbwaiter) as this wording is not necessary.

Related Item

• First Revision No. 9284

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 14:37:59 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7575-NFPA 70-2021
Statement: The modification to the definition more closely aligns with the definition of ASME A17.1/CSA B44.

Correlating Committee Note No. 429-NFPA 70-2021 [Definition: Control Space (for Elevator, Dumbwaiter).]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Sun May 09 22:19:43 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the panel to reconsider the first sentence for clarity, considering the use of the term “space”, rather than the phrase “other than a hoistway”.

The Correlating Committee directs that this definition comply with the Style Manual Section 2.2.2.3.2 regarding using the article number following the defined term to indicate that the term only applies to that article. The panel should consider removing the language referencing "(as applied to Elevator, Dumbwaiter) as this wording is not necessary.

First Revision No. 9284-NFPA 70-2021 [Definition: Control Space (for Elevator, Dumbwaiter).]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 229-NFPA 70-2021 [Definition: Controller, Motor. (Motor Controller)]

~~**Controller, Motor. (Motor Controller)**~~

~~The operative units of the control system comprising the starter device(s) and power conversion equipment used to drive an electric motor or the pumping unit used to power hydraulic control equipment. (620) (CMP-12)~~

Statement of Problem and Substantiation for Public Comment

This public comment is submitted on behalf of one of the Definitions Task Groups appointed by the Correlating Committee. This task group consisted of John Kovacik, (CMP 12) chair and Seth Carlton (CMP 11). The task group was assigned the following charge.

The Correlating Committee notes that more than one related term is being used for Controller, Motor (Motor Controller). Section 2.2.2.4 of the NEC Style Manual addresses terms with multiple definitions and states that if two or more definitions exist for a term, a task group shall be formed to work on the development of a single acceptable definition. If this cannot be accomplished, another term shall be selected or the term shall be identified in the context of the specific application. Therefore, the Correlating Committee established a Task Group with representation from CMPs 11 and 12 to consider one definition for correlation. Additionally, the Correlating Committee assigned the definition of "Controller, Motor" to CMP-11.

The task group has concluded the Panel 11 definition is generic and could apply to any motor controller. Conversely, the Panel 12 definition is very specific to hydraulic control equipment. Therefore, it is proposed to leave the Panel 11 definition for motor controller unchanged and replace the defined term in the Panel 12 definition with another term that is more specific to hydraulic control equipment. The Panel 12 members representing the National Elevator Industry, Martin Flanagan and Doug Henderson were consulted for their opinion on this matter. They felt the current CMP 12 definition for “Motion Controller” adequately defines a controller for hydraulic or elevator equipment and the Panel 12 definition of motor controller was not needed.

Related Item

• FR 9274 Global Input

Submitter Information Verification

Submitter Full Name: John Kovacik
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jul 14 23:27:41 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Accepted

Resolution:	SR-7578-NFPA 70-2021
Statement:	The deletion of the definition removes redundancy.

Public Comment No. 1659-NFPA 70-2021 [Definition: Cord Connector (as applied to Electrified Truck...]

~~**Cord Connector (as applied to Electrified Truck Parking Spaces).**~~

~~The necessary equipment usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors in an electrified truck parking space and intended to constitute the means of cutoff for the supply to that truck. (626) (CMP-12)~~

Statement of Problem and Substantiation for Public Comment

This public comment is submitted on behalf of one of the Definitions Task Groups appointed by the Correlating Committee. This task group consisted of John Kovacik, (CMP 12) chair, Dave Watson, (CMP 6) and Dean Hunter (CMP 7). The task group was assigned the following charge. The Correlating Committee notes that more than one related term is being used for “Cord Connector.” Section 2.2.2.4 of the NEC Style Manual addresses terms with multiple definitions and states that if two or more definitions exist for a term, a task group shall be formed to work on the development of a single acceptable definition. If this cannot be accomplished, another term shall be selected or the term shall be identified in the context of the specific application. Therefore, the Correlating Committee established a Task Group to consider one definition for correlation. Additionally, the Correlating Committee assigned the definition of "Cord Connector" to CMP-6.

There are two definitions for “Cord Connector” in the 2020 NEC. The first is in Part III of Article 100 covering definitions for Hazardous Locations terms. The second is in Article 626 covering Electrified Truck Parking Spaces. A third definition has been created by CMP-6 for Article 100 in the First Draft Report. The task group reviewed these definitions and concluded they could be combined into one. This was accomplished by modifying the definition in that was in Part III of Article 100 to address different types of termination, cables that could include hybrid communication, signal and control circuits, and strain reduction techniques at points of termination. This modified definition could cover all uses of the term “Cord Connector.” Therefore, the definition created by CMP-6 in the First Draft Report and the definition for “Cord Connector” as applied to Electrified Truck Parking Spaces are proposed to be deleted.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1658-NFPA 70-2021 [Definition: Cord Connector.]	Definition for a related term
Public Comment No. 1661-NFPA 70-2021 [Definition: Cord Connector.]	Definition for a related term
Public Comment No. 1658-NFPA 70-2021 [Definition: Cord Connector.]	
Public Comment No. 1661-NFPA 70-2021 [Definition: Cord Connector.]	

Related Item

- FR 9274 (Global Input)

Submitter Information Verification

Submitter Full Name: John Kovacik

Organization:	UL LLC
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Aug 17 00:33:13 EDT 2021
Committee:	NEC-P12

Committee Statement

Committee Action:	Accepted
Resolution:	SR-7739-NFPA 70-2021
Statement:	The definition of cord connector as applied to electrified truck parking spaces is deleted due to redundancy.

Public Comment No. 1261-NFPA 70-2021 [Definition: Disconnecting Means, Parking Space. (Parking Sp...]

~~**Disconnecting Means, Parking Space. (Parking Space Disconnecting Means)**~~

~~The necessary equipment usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors in an electrified truck parking space and intended to constitute the means of cutoff for the supply to that truck. (626) (CMP-12)~~

Statement of Problem and Substantiation for Public Comment

The code-wide definition of "disconnecting means" covers the issue well enough. Because the definition is no longer in Article 626 it cannot be argued that people that read Article 626 only read Article 626 and not the remainder of the code. Furthermore, the language discussing the location of the disconnecting means seems to be a requirement and therefore does not comply with the style manual.

Related Item

• FR 8496

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Ryan Jackson
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City:
State:
Zip:
Submittal Date: Wed Aug 11 14:25:58 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7740-NFPA 70-2021
Statement: The definition of parking space disconnecting means is deleted due to redundancy.

Public Comment No. 454-NFPA 70-2021 [Definition: Disconnecting Means, Parking Space. (Parking Sp...]

~~**Disconnecting Means, Parking Space. (Parking Space Disconnecting Means)**~~

~~The necessary equipment usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors in an electrified truck parking space and intended to constitute the means of cutoff for the supply to that truck. (626) (CMP-12)~~

Statement of Problem and Substantiation for Public Comment

This public comment is submitted on behalf of one of the Definitions Task Groups appointed by the Correlating Committee. This task group consisted of John Kovacik, (CMP 12) chair, Mike Stone (CMP 1) and Dean Hunter (CMP 7). The task group was assigned the following charge. The Correlating Committee notes that more than one related term is being used for “Disconnecting Means.” Section 2.2.2.4 of the NEC Style Manual addresses terms with multiple definitions and states that if two or more definitions exist for a term, a task group shall be formed to work on the development of a single acceptable definition. If this cannot be accomplished, another term shall be selected or the term shall be identified in the context of the specific application. Therefore, the Correlating Committee established a Task Group to consider one definition for correlation. Additionally, the Correlating Committee assigned the definition of "Disconnecting Means" to CMP-1.

The task group has concluded the definition for “Disconnecting Means (for Recreational Vehicles)” which appears in Article 551 and the definition for “Disconnecting Means, Parking space” which appears in Article 626 of the 2020 NEC are not needed.

The term “Disconnecting Means” appears in several locations in Article 551. The use of the term in these locations was found to be inaccurate if we are only referring to the disconnecting means inside of the recreational vehicle as the definition states. It was determined that the generic definition of “Disconnecting Means” in Article 100 is sufficient to address the use of the term “Disconnecting Means” in Article 551.

The term “Disconnecting Means, Parking Space” appears in only one location in Article 626 (626.24(C)). Upon review of the use of the term in that location, it was determined that the generic definition of “Disconnecting Means” in Article 100 is sufficient to address the use of the term “Disconnecting Means, Parking Space.”

The Article 100 definition of “Disconnecting Means” is sufficient to cover all uses of the term throughout the code. Therefore, it is proposed to leave the Panel 1 definition of “Disconnecting Means” unchanged and delete the definition of “Disconnecting Means” which appears in Article 551 and the definition for “Disconnecting Means, Parking space” which appears in Article 626 of the 2020 NEC. These definitions were proposed to be revised and moved to Article 100 for the 2023 NEC with FR 9274 (Global Input).

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 458-NFPA 70-2021 [Definition: Disconnecting Means, Recreational Vehicle. (Rec...]	
Public Comment No. 458-NFPA 70-2021 [Definition: Disconnecting Means, Recreational Vehicle. (Rec...]	

Related Item

• FR 9274 (Global Input)

Submitter Information Verification

Submitter Full Name: John Kovacik
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 27 16:55:32 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7740-NFPA 70-2021
Statement: The definition of parking space disconnecting means is deleted due to redundancy.

Public Comment No. 992-NFPA 70-2021 [Definition: Electric Vehicle Supply Equipment (EVSE).]

Electric Vehicle Supply Equipment (EVSE).

Equipment for plug-in charging comprising the conductors, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle. (625) (CMP-12)

Informational Note: Electric vehicle power export equipment and electric vehicle supply equipment or wireless power transfer equipment are sometimes contained in one piece of equipment, sometimes referred to as a bidirectional EVSE or bidirectional WPTE.

Additional Proposed Changes

File Name	Description	Approved
12_CN_430.pdf	12 CN430	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 430 appeared in the First Draft Report on First Revision No. 9472.

The Correlating Committee directs that the Panel rewrite the definition for usability and clarity. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is simple. The use of the term "comprising" results in a requirement in the definition, and should be rewritten in accordance with 2.2.2.2 of the NEC Style Manual.

The Correlating Committee also directs the panel to include the full title of the acronym WPTE, since that term has not been used in the article, Section 3.2.3 NEC Style Manual.

Related Item

• First Revision No. 9472

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 14:42:53 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR

Resolution:	SR-7744-NFPA 70-2021
Statement:	The definition of electric vehicle supply equipment is revised to remove mandatory language.

Correlating Committee Note No. 430-NFPA 70-2021 [Definition: Electric Vehicle Supply Equipment (EVSE).]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Sun May 09 22:20:26 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that the Panel rewrite the definition for usability and clarity. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is simple. The use of the term “comprising” results in a requirement in the definition, and should be rewritten in accordance with 2.2.2.2 of the NEC Style Manual.

The Correlating Committee also directs the panel to include the full title of the acronym WPTE, since that term has not been used in the article, Section 3.2.3 NEC Style Manual.

First Revision No. 9472-NFPA 70-2021 [Definition: Electric Vehicle Supply Equipment (EVSE).]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1942-NFPA 70-2021 [Definition: Information Technology Equipment (ITE).]

Information Technology Equipment (ITE).

Equipment and systems rated 1000 volts or less, normally found in offices or other business establishments and similar environments classified as ordinary locations, that are used for creation and manipulation of data, voice, video, and similar signals that are not communications equipment as defined in Part I of Article 100 and do not process communications circuits as defined in ~~805.2.~~ Part I of Article 100. (CMP-12)

Informational Note: For information on listing requirements for both information technology equipment and communications equipment, see UL 60950-1-2014, *Information Technology Equipment — Safety — Part 1: General Requirements* or UL 62368-1-2014, *Audio/Video Information and Communication Technology Equipment Part 1: Safety Requirements*.

Statement of Problem and Substantiation for Public Comment

The definition of communications circuits which was located in 805.2 in the 2020 NEC has been moved to part I of Article 100.

Related Item

• Public Input No. 3970-NFPA 70-2020 [Section No. 805.2)

Submitter Information Verification

Submitter Full Name: George Zimmerman
Organization: CME Consulting, Inc.
Affiliation: Ethernet Alliance
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 17:31:47 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7701-NFPA 70-2021
Statement: The references to other articles were removed from the definition as all definitions reside in Article 100. In addition, the dates were removed from the informational note references to align with 90.5.

Public Comment No. 1034-NFPA 70-2021 [Definition: Load Management System.]

~~**Load Management System.**~~

~~Associated interconnected equipment that will actively regulate the individual loads via load control equipment such that the total load on the electrical supply system stays below a given maximum permitted total value. The system performs the task of load management. (625) (CMP-12)~~

~~Informational Note: Load control equipment consists of equipment or modules within a piece of equipment that communicate with individual loads and other load control equipment within a load management system to manage the total load on the electrical supply system. The communications between load control equipment, as well as the implementation of the control process, may be achieved through hardware, software, or a combination of both.~~

Statement of Problem and Substantiation for Public Comment

This public comment is submitted on behalf of the Energy Management Task Group formed under the direction of the Correlating Committee to review all current and proposed definitions and requirements related to load management, load management system, power control system, energy management system and related terms to ensure a coordinated approach throughout the Code. See CCN-279.

The task group members are; Chad Kennedy (Chair), Tim Zgonena, Rebekah Hren, Greg Ball, Jason Fisher, Doug Burkett, Robert Jordan, Matthew Grover, Tim Windey, Karl Reighard, and Brian Baughman. This task group of balanced interests provided the expertise to develop these public comments covering energy management across the NEC.

The definition of "Load Management System" is removed from the Code, as it is redundant with the definition of Energy Management System and the requirements of Article 750.

This public comment is part of a series of actions recommended by the task group. See the related public comments which complete this action.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 36-NFPA 70-2021 [Definition: Energy Management System.]	
Public Comment No. 1036-NFPA 70-2021 [Definition: Load Management.]	
Public Comment No. 1039-NFPA 70-2021 [Section No. 220.70]	
Public Comment No. 1041-NFPA 70-2021 [Section No. 625.42(A)]	
Public Comment No. 1042-NFPA 70-2021 [Section No. 625.42(B)]	
Public Comment No. 1045-NFPA 70-2021 [Section No. 700.4(C)]	
Public Comment No. 1046-NFPA 70-2021 [Section No. 701.4(C)]	
Public Comment No. 1047-NFPA 70-2021 [Section No. 702.4(B)]	
Public Comment No. 1052-NFPA 70-2021 [Section No. 705.11(A)(1)]	
Public Comment No. 1053-NFPA 70-2021 [Section No. 705.12 [Excluding any Sub-Sections]]	
Public Comment No. 1043-NFPA 70-2021 [Section No. 705.13]	

Public Comment No. 1050-NFPA 70-2021 [Section No. 705.28(A)]
Public Comment No. 1044-NFPA 70-2021 [Section No. 705.46]
Public Comment No. 1048-NFPA 70-2021 [Section No. 708.22(B)]
Public Comment No. 1049-NFPA 70-2021 [Section No. 705.80]
Public Comment No. 1037-NFPA 70-2021 [Section No. 750.30]
Public Comment No. 1406-NFPA 70-2021 [Section No. 230.82]
Public Comment No. 36-NFPA 70-2021 [Definition: Energy Management System.]
Public Comment No. 1036-NFPA 70-2021 [Definition: Load Management.]
Public Comment No. 1037-NFPA 70-2021 [Section No. 750.30]
Public Comment No. 1039-NFPA 70-2021 [Section No. 220.70]
Public Comment No. 1041-NFPA 70-2021 [Section No. 625.42(A)]
Public Comment No. 1042-NFPA 70-2021 [Section No. 625.42(B)]
Public Comment No. 1043-NFPA 70-2021 [Section No. 705.13]
Public Comment No. 1044-NFPA 70-2021 [Section No. 705.46]
Public Comment No. 1045-NFPA 70-2021 [Section No. 700.4(C)]
Public Comment No. 1046-NFPA 70-2021 [Section No. 701.4(C)]
Public Comment No. 1047-NFPA 70-2021 [Section No. 702.4(B)]
Public Comment No. 1048-NFPA 70-2021 [Section No. 708.22(B)]
Public Comment No. 1049-NFPA 70-2021 [Section No. 705.80]
Public Comment No. 1050-NFPA 70-2021 [Section No. 705.28(A)]
Public Comment No. 1052-NFPA 70-2021 [Section No. 705.11(A)(1)]
Public Comment No. 1053-NFPA 70-2021 [Section No. 705.12 [Excluding any Sub-Sections]]
Public Comment No. 1406-NFPA 70-2021 [Section No. 230.82]

Related Item

• CN 279

Submitter Information Verification

Submitter Full Name: Chad Kennedy
Organization: Schneider Electric
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 21:05:07 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Accepted
Resolution: SR-7748-NFPA 70-2021
Statement: Definition deleted due to redundancy with the definition of Energy Management System and the requirements of Article 750.

Public Comment No. 1271-NFPA 70-2021 [Definition: Long-Time Rating (as applied to nonmedical X-ra...]

Long-Time Rating (as applied to ~~nonmedical~~ X-ray equipment).

A rating based on an operating interval of 5 minutes or longer. (~~660) (~~ CMP-12)

Statement of Problem and Substantiation for Public Comment

The term "long-time rating" is used in Articles 660 and 517 in the context of X-ray equipment.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1272-NFPA 70-2021 [Definition: Long-Time Rating (Standby Power).]	

Related Item

- FR 8496

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Ryan Jackson
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 11 14:51:51 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: It is important to keep the definition for medical and nonmedical equipment long time ratings as separate definitions due to the difference in equipment performance and evaluation.

Public Comment No. 1662-NFPA 70-2021 [Definition: Power-Supply Cord (as applied to EVSE).]

~~**Power-Supply Cord (as applied to EVSE).**~~

~~An assembly consisting of an attachment plug and length of flexible cord that connects equipment to a receptacle. (625) (CMP-12)~~

Statement of Problem and Substantiation for Public Comment

This public comment is submitted on behalf of one of the Definitions Task Groups appointed by the Correlating Committee. This task group consisted of John Kovacik, (CMP 12) chair, Dave Watson, (CMP 6) and Dean Hunter (CMP 7). The task group was assigned the following charge. The Correlating Committee notes that more than one related term is being used for “Power-Supply Cord.” Section 2.2.2.4 of the NEC Style Manual addresses terms with multiple definitions and states that if two or more definitions exist for a term, a task group shall be formed to work on the development of a single acceptable definition. If this cannot be accomplished, another term shall be selected or the term shall be identified in the context of the specific application. Therefore, the Correlating Committee established a Task Group to consider one definition for correlation. Additionally, the Correlating Committee assigned the definition of "Power-Supply Cord" to CMP-6.

There are two definitions for “Power-Supply Cord” in the First Draft Report for the 2023 NEC. The first is from Article 625 of the 2020 NEC where the definition is “Power-Supply Cord (as applied to EVSE (Electric Vehicle Supply Equipment)).” The second is a new definition created by CMP-6 for Article 100. The task group reviewed these definitions and concluded that one definition could be sufficient. This was accomplished by modifying the new definition created by CMP-6 to refer to it as an assembly consisting of a cord connector and a length of cord, including grounded, and ungrounded conductors connecting equipment through different types of terminations for power delivery, where the cord could include hybrid communication, signal and control circuits. This modified definition could cover all uses of the term “Power-Supply Cord.” Therefore, the definition for “Power-Supply Cord (as applied to EVSE)” is proposed to be deleted.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1663-NFPA 70-2021 [Definition: Power-Supply Cord.]	Definition for a related term
Public Comment No. 1663-NFPA 70-2021 [Definition: Power-Supply Cord.]	

Related Item

- FR 9274 (Global Input)

Submitter Information Verification

Submitter Full Name: John Kovacik
Organization: UL LLC
Street Address:
City:
State:
Zip:

Submittal Date: Tue Aug 17 01:08:03 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Accepted
Resolution: SR-7749-NFPA 70-2021
Statement: The definition of power-supply cord as applied to EVSE was deleted due to redundancy.

Public Comment No. 1185-NFPA 70-2021 [Definition: Safety Circuit.]

~~**Safety Circuit.**~~

~~The part of a control system containing one or more devices that perform a safety-related function. [**79:** 3.3.95] (670) (CMP-12)~~

~~Informational Note: See NFPA 79-2021, *Electrical Standard for Industrial Machinery. Safety-related control system* and *safety interlock circuit* are common terms that can be used to refer to the safety circuit in other standards. The safety circuit can include hard-wired, communication, and software-related components.~~

Statement of Problem and Substantiation for Public Comment

This definition is not necessary.

It was introduced as a result of new language in 670.6, however the devices it describes are internal to industrial machinery and therefore out of scope of NFPA 70.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1169-NFPA 70-2021 [Section No. 670.6]	
Public Comment No. 1169-NFPA 70-2021 [Section No. 670.6]	

Related Item

• FR 9518 • FR 9578

Submitter Information Verification

Submitter Full Name: Karl Reighard
Organization: Delmarva Power And Light
Affiliation: -self-
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 10 14:38:58 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected
Resolution: The definition of safety circuit is critical to the application of the overvoltage protection requirement for industrial machinery.

Public Comment No. 994-NFPA 70-2021 [Definition: Wireless Power Transfer Equipment (WPTE).]

Wireless Power Transfer Equipment (WPTE).

Equipment comprising the conductors, including the ungrounded, grounded, and equipment grounding conductors, personnel protection system, power and control electronics, communication electronics, the output cable to the primary pad, the primary pad and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle without physical electrical contact. (625) (CMP-12)

Informational Note No. 1: The general form of WPTE consists of two physical packages: a control box and a primary pad.

Informational Note No. 2: Electric vehicle power export equipment and wireless power transfer equipment are sometimes contained in one set of equipment, sometimes referred to as a bidirectional WPTE.

Additional Proposed Changes

File Name	Description	Approved
12_CN_431.pdf	12 CN431	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 431 appeared in the First Draft Report on First Revision No. 9401.

The Correlating Committee directs that the Panel rewrite the definition for usability and clarity. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is simple. The use of the term "comprising" results in a requirement in the definition, and should be rewritten in accordance with 2.2.2.2 of the NEC Style Manual.

Related Item

• First Revision No. 9401

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 14:45:04 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR

Resolution:	SR-7753-NFPA 70-2021
Statement:	The definition of wireless power transfer equipment was revised to remove mandatory language.

Correlating Committee Note No. 431-NFPA 70-2021 [Definition: Wireless Power Transfer Equipment (WPTE).]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Sun May 09 22:21:37 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that the Panel rewrite the definition for usability and clarity. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is simple. The use of the term "comprising" results in a requirement in the definition, and should be rewritten in accordance with 2.2.2.2 of the NEC Style Manual.

First Revision No. 9401-NFPA 70-2021 [Definition: Wireless Power Transfer Equipment (WPTE).]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1480-NFPA 70-2021 [Definition: Zone.]

Zone.

A physically identifiable area (such as barriers or separation by distance) within an information technology equipment room, with dedicated power and cooling systems for the information technology equipment or systems. (645) (CMP-12)

Statement of Problem and Substantiation for Public Comment

This term "zone" is another example of why moving all these definitions to one article is problematic. The word "zone" occurs throughout the NEC. It means something specific to article 645 that it does not mean for other articles. To know what definitions are unique to article 645, one must study the whole definitions section, highlight the ones with article 645 at the and of the definition. Then they must go to the code making panel index, find what definitions may apply to specific definitions under the purview of that CMP, and also highlight those.

A user friendly NEC will result in more code compliant and safe installations. An NEC written to be so convoluted as to create a sales channel for separately produced and differently formatted definitions guides to the NEC should be against the goals of the NFPA.

Related Item

• First Revision No. 9274-NFPA 70-2021 [Global Input]

Submitter Information Verification

Submitter Full Name: Josh Weaver
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Sat Aug 14 11:52:54 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: There was no proposed text. The definition has (645) at the end of the definition signifying that this definition only applies to its use in Article 645. Zone represents an area in an information technology equipment room.

Public Comment No. 939-NFPA 70-2021 [Section No. 610.1]

610.1 Scope.

This article covers the installation of electrical equipment and wiring used in connection with cranes, monorail hoists, hoists, and all runways.

Informational Note: See ASME B30, *Safety Standards for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings*, for further information.

Additional Proposed Changes

File Name	Description	Approved
12_CN_43.pdf	12 CN43	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 43 appeared in the First Draft Report on First Revision No. 9504.

The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

Related Item

• First Revision No. 9504

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 10:30:47 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected
Resolution: No action was required.

Correlating Committee Note No. 43-NFPA 70-2021 [Section No. 610.1]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 15:26:58 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

First Revision No. 9504-NFPA 70-2021 [Section No. 610.1]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 943-NFPA 70-2021 [Section No. 620.1]

620.1 Scope.

This article covers the installation of electrical equipment and wiring used in connection with elevators, dumbwaiters, escalators, moving walks, platform lifts, and stairway chairlifts.

Informational Note No. 1: For further information, see ASME A17.1-2016/CSA B44-16, *Safety Code for Elevators and Escalators*.

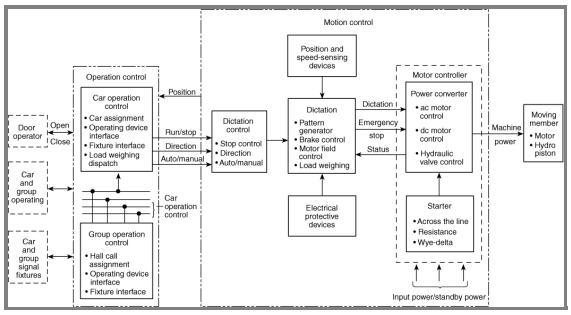
Informational Note No. 2: For further information, see CSA B44.1-14/ASME A17.5-2014, *Elevator and Escalator Electrical Equipment*.

Informational Note No. 3: The term *wheelchair lift* has been changed to *platform lift*. For further information, see ASME A18.1-2014, *Safety Standard for Platform Lifts and Stairway Chairlifts*.

Informational Note No. 4: The motor controller, motion controller, and operation controller are located in a single enclosure or a combination of enclosures.

Informational Note No. 5: Informational Note Figure 620.1, No. 5 is for information only.

Figure Informational Note Figure 620.1, No. 5 Control System.



Additional Proposed Changes

File Name	Description	Approved
12_CN_44_Detail.pdf	12 CN44	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 44 appeared in the First Draft Report on First Revision No. 9598.

The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and directs the Panel to revise the Informational Notes to comply with 4.1.3 of the NEC Style Manual.

Related Item

• First Revision No. 9598

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:

City:
State:
Zip:
Submittal Date: Thu Aug 05 11:21:07 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7503-NFPA 70-2021
Statement: The information notes have been edited to comply with the NFPA Style Manual.

Correlating Committee Note No. 44-NFPA 70-2021 [Detail]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 15:29:07 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and directs the Panel to revise the Informational Notes to comply with 4.1.3 of the NEC Style Manual.

First Revision No. 9598-NFPA 70-2021 [Detail]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 240-NFPA 70-2021 [Section No. 620.6]

620.6 Ground-Fault Circuit-Interrupter Protection for Personnel.

(A) ~~GFCI Receptacle.~~ Pits, Hoistways, and on Cars

Each 125-volt, single-phase, 15- and 20-ampere receptacle installed in pits, in hoistways, on the cars of elevators and dumbwaiters associated with wind turbine tower elevators, on the platforms or in the runways and machinery spaces of platform lifts and stairway chairlifts, and in escalator and moving walk wellways shall be a listed Class A ground-fault circuit-interrupter type.

(B) ~~GFCI Receptacle or GFCI Circuit Breaker.~~ Machine Rooms, Control Spaces, Machinery Spaces and Control Rooms

All 125-volt, single-phase, 15- and 20-ampere receptacles installed in machine rooms, control spaces, machinery spaces, and control rooms shall have listed Class A ground-fault circuit-interrupter protection for personnel.

(C) ~~Single Receptacle GFCI Protected.~~ Sump Pumps

A permanently installed sump pump shall be permanently wired or shall be supplied by a single receptacle that is protected by a listed Class A ground-fault circuit-interrupter.

Statement of Problem and Substantiation for Public Comment

The first level subdivisions speak to the types of GFCI protection for various areas. The titles of those first level subdivisions should reflect those areas.

Related Item

• FR-9291

Submitter Information Verification

Submitter Full Name: Don Ganiere
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jul 15 10:20:23 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7507-NFPA 70-2021

Statement: The titles of the subsections of 620.6 were revised to clarify the intent of the subsections, and 620.6(C) was revised to eliminate the single GFCI receptacle requirement.

Section 620.6(B) was revised to add “truss interior” to 620.6(B) to align with the

addition of “truss interiors” in 620.23.

Public Comment No. 2031-NFPA 70-2021 [Section No. 620.6(C)]

(C) Single Receptacle GFCI Protected.

A permanently installed sump pump shall be permanently wired or shall be supplied by a single receptacle that is protected by a listed Class A ground-fault circuit-interrupter located in the same space and not equipped with receptacles . If permanently wired, 422(A)(6) shall not apply..

Statement of Problem and Substantiation for Public Comment

The long-standing intent of the rules for pit receptacles has been first, that a worker in that location should not have to climb out of the pit to reset the GFCI protection, and second, that the likelihood of a trip by multiple connected loads should also be minimized. Thus, the single receptacle limitation, or hard wiring. It may appear that hard wiring defeats the GFCI requirement, but it is not quite worded as a Chapter 6 amendment of Chapter 4. The hard wiring as worded in the original text (when submitted for the 2020 NEC) preceded the creation of Sec. 422.5(A)(6), and it does not directly countermand that rule. The Art. 620 wording in its former (2017 NEC) home expressly stated that a single receptacle for a sump pump did not require GFCI protection. That was absolutely a Chapter 6 amendment. This new (2020 NEC) wording can be interpreted as a rejection of hard wiring GFCI protection, and precedent supports that view, but in fact the wording is not correct on this point This comment fully implements that intent. In addition, single receptacle point-of-use GFCIs have long disappeared from the market, which suggests GFCI protection with a separate device ahead of the single receptacle, with a faceless GFCI adjacent to the receptacle. This comment is squarely directed at implementing the technical intent of this rule, as repeatedly expressed over many code cycles.

Related Item

• FR-9291

Submitter Information Verification

Submitter Full Name: Frederic Hartwell
Organization: Hartwell Electrical Services, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 08:23:00 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7507-NFPA 70-2021
Statement: The titles of the subsections of 620.6 were revised to clarify the intent of the subsections, and 620.6(C) was revised to eliminate the single GFCI receptacle requirement.

Section 620.6(B) was revised to add “truss interior” to 620.6(B) to align with the

addition of “truss interiors” in 620.23.

Public Comment No. 1845-NFPA 70-2021 [Section No. 620.12]

620.12 Minimum Size of Conductors.

The minimum size of conductors, other than conductors that form an integral part of control equipment, shall be in accordance with 620.12(A) and (B).

(A) Traveling Cables.

(1) Lighting Circuits.

For lighting circuits, 14 AWG copper, 20 AWG copper or larger conductors shall be permitted in parallel, provided the ampacity is equivalent to at least that of 14 AWG copper.

(2) Class 2 and Communications Circuits.

Cables used for Class 2 or communications circuits shall be listed as Type CMP-LP or CMR-LP with a current limit equal to or greater than the current required to power the powered Class 2 or communications device._ Cables shall comply with 800.179.

(3) Other Circuits.

For other circuits, the minimum size conductor shall be 20 AWG copper.

(4) Paralleled Conductors.

Where ampacity requirements or voltage drop conditions in a traveling cable circuit prevent the use of a single conductor of AWG 14 or smaller, conductors shall be permitted in parallel in compliance with all the following:

(1) Each conductor shall be no smaller than 20 AWG copper.

(2) The paralleled conductors shall be the same type and have the same ampacity rating.

(3) No more than 3 conductors shall be paralleled.

(4) The overcurrent protection shall be such that the ampacity of each individual conductor will not be exceeded if one of the parallel conductors becomes inadvertently disconnected.

(B) Other Wiring.

24 AWG copper. Smaller size listed conductors shall be permitted.

Statement of Problem and Substantiation for Public Comment

The addition of the new 620.12(A)(2) addresses the use of cables for communication circuits; however, it does not provide the user with directions to locate the requirements for the cable types listed. NEII requests that a reference by added to direct the user of the code to the appropriate code provisions in Article 800 for the CMP and CMR cables based on correlation with FR-9036.

Related Item

• PI 3041 • FR 9328 • FR 9036 • FR 9027

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, In
Street Address:
City:

State:
Zip:
Submittal Date: Wed Aug 18 10:53:58 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7510-NFPA 70-2021
Statement: The word “Communications” has been added in 620.12(A) (2) before “Cables” for clarity. Types of Communications Cables have been eliminated. Through extensive discussion with traveling cable manufacturers minimum wire gauge for communications circuits should be #24 AWG and not #26 AWG.

Public Comment No. 944-NFPA 70-2021 [Section No. 620.12(A)]

(A) Traveling Cables.

(1) Lighting Circuits.

For lighting circuits, 14 AWG copper, 20 AWG copper or larger conductors shall be permitted in parallel, provided the ampacity is equivalent to at least that of 14 AWG copper.

(2) Class 2 and Communications Circuits.

Cables used for Class 2 or communications circuits shall be listed as Type CMP-LP or CMR-LP with a current limit equal to or greater than the current required to power the powered Class 2 or communications device.

(3) Other Circuits.

For other circuits, the minimum size conductor shall be 20 AWG copper.

(4) Paralleled Conductors.

Where ampacity requirements or voltage drop conditions in a traveling cable circuit prevent the use of a single conductor of AWG 14 or smaller, conductors shall be permitted in parallel in compliance with all the following:

(1) Each conductor shall be no smaller than 20 AWG copper.

(2) The paralleled conductors shall be the same type and have the same ampacity rating.

(3) No more than 3 conductors shall be paralleled.

(4) The overcurrent protection shall be such that the ampacity of each individual conductor will not be exceeded if one of the parallel conductors becomes inadvertently disconnected.

Additional Proposed Changes

File Name	Description	Approved
12_CN_45.pdf	12 CN45	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 45 appeared in the First Draft Report on First Revision No. 9328.

The Correlating Committee refers FR 9328 to CMP's 3 and 16 for information, as the requirements address the use of communication cables which are under the purview of these Panels.

Related Item

• First Revision No. 9328

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:

Submittal Date: Thu Aug 05 11:23:12 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected
Resolution: No proposed text change was provided.

Correlating Committee Note No. 45-NFPA 70-2021 [Section No. 620.12(A)]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 15:30:34 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee refers FR 9328 to CMP's 3 and 16 for information, as the requirements address the use of communication cables which are under the purview of these Panels.

First Revision No. 9328-NFPA 70-2021 [Section No. 620.12(A)]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 2062-NFPA 70-2021 [Section No. 620.12(A)(2)]

(2) Class 2 and Communications Circuits.

Cables used for Class 2 or communications circuits shall ~~be listed as Type CMP-LP or CMR-LP with a~~ have a current limit equal to or greater than the current required to power the powered Class 2 or communications device. The minimum conductor size for communications circuits shall be 24AWG.

Statement of Problem and Substantiation for Public Comment

Propose removal of "shall be listed as Type CMP-LP or CMR-LP " for the following reasons:
- Riser and plenum rated cables are designed for stationary applications and are relatively stiff due to material characteristics and are not designed for continuous flexing applications required of a traveling cable.
- Elevator traveling cables are listed with their own flame rating to prevent vertical flame spread in the event of a fire. Plenum and riser ratings on the interior components is unnecessary and will result in increased product costs associated with additional regulatory listing fees, etc.
- Requiring this listing for all 'communications circuits' would also apply to standard telephone pairs and coax that are not used in PoE applications.

24AWG conductor size added to accommodate modern elevator applications (PoE, IP devices, IoT, data transfer, etc.) that are based on smaller conductor sizes. This will allow elevator communications wiring to be directly compatible with standard building wiring infrastructure and hardware.

Related Item

• Article 620.12 (A) • Article 620.36

Submitter Information Verification

Submitter Full Name: Dillard Green
Organization: Draka Elevator Products
Affiliation: traveling cable manufacturer
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 10:02:59 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7510-NFPA 70-2021
Statement: The word “Communications” has been added in 620.12(A) (2) before “Cables” for clarity. Types of Communications Cables have been eliminated. Through extensive discussion with traveling cable manufacturers minimum wire gauge for communications circuits should be #24 AWG and not #26 AWG.

Public Comment No. 2122-NFPA 70-2021 [Section No. 620.12(A)(2)]

(2) Class 2 and Communications Circuits.

Cables used for Class 2 or communications circuits shall ~~be listed as Type CMP-LP or CMR-LP with a~~ have current limit equal to or greater than the current required to power the powered Class 2 or communications device. The minimum conductor size for communication circuits shall be 26AWG. Communication cables shall comply with 800.179.

Statement of Problem and Substantiation for Public Comment

The addition of the new 620.12(A)(2) addresses the use of cables for communication circuits; however, it does not provide the user with directions to locate the requirements for cable types listed. TKE request that a reference be added to direct the user of the code to the appropriate code provision in Article 800 for the cables used for communication circuits.
Propose removal of "shall be listed as Type CMP-LP or CMR-LP" for the following reasons:
> Riser and plenum rated cables are designed for stationary applications and are relative stiff due to material characteristics and are not designed for continuous flexing applications required of a traveling cable.
> Elevator traveling cables are listed with their own flame rating to prevent vertical flame spread in the event of a fire. Plenum and riser ratings on interior components is unnecessary and will result in increased product cost associated with additional regulatory listing fees, etc.
> Requiring this listing for all "communication circuits" would also apply to standard telephone pairs and coax that are not used in PoE applications.
Allowing a smaller gauge for communication cables to accommodate PoE, IP, IoT, data transfer, etc. will allow elevator communication wiring to be directly compatible with standard building wiring infrastructure and hardware.

Related Item

• PI 3041 • FR 9328 • FR9036 • FR 9027 • PC 2062 • PC 2167

Submitter Information Verification

Submitter Full Name: John Henderson
Organization: TK Elevator
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 12:59:55 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7510-NFPA 70-2021
Statement: The word “Communications” has been added in 620.12(A) (2) before “Cables” for clarity. Types of Communications Cables have been eliminated. Through extensive discussion with traveling cable manufacturers minimum wire gauge for communications

circuits should be #24 AWG and not #26 AWG.

Public Comment No. 98-NFPA 70-2021 [Section No. 620.21]

620.21 Wiring Methods.

Conductors, cables, and optical fiber cables located in hoistways, escalator and moving walk wellways, platform lifts, stairway chairlift runways, machinery spaces, control spaces, in or on cars, machine rooms, and control rooms, not including the traveling cables connecting the car or counterweight and hoistway wiring, shall be installed in rigid metal conduit, intermediate metal conduit, electrical metallic tubing, rigid nonmetallic conduit, or wireways, or shall be Type MC, MI, or AC cable unless otherwise permitted in 620.21(A) through (C). Unused conductors in an enclosure shall be insulated or protected from accidental contact with exposed live parts.

Exception: Cords and cables of listed cord-and-plug-connected equipment shall not be required to be installed in a raceway.

Informational Note: When an elevator is classified as a fire service access elevator or occupant evacuation operation elevator, some building codes require additional protection for conductors that are located outside of the elevator hoistway and machine room.

(A) Elevators.

(1) Hoistways and Pits.

(a) Types CL2P, CL2R, and CL2 cables shall be permitted, provided the cables are supported and protected from physical damage. Substitute cables for Class 2 cables installed in accordance with ~~725~~ 722 .~~154~~ 135 (~~A~~ E) shall be permitted.

(b) Flexible cords and cables that are components of listed equipment and used in circuits operating at 30 volts rms or less or 42 volts dc or less shall be permitted, provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

(c) The following wiring methods shall be permitted in the hoistway in lengths not to exceed 1.8 m (6 ft):

(4) Flexible metal conduit.

(5) Liquidtight flexible metal conduit.

(6) Liquidtight flexible nonmetallic conduit.

(7) Flexible cords and cables, or conductors grouped together and taped or corded, shall be permitted to be installed without a raceway. They shall be located to be protected from physical damage, shall be of a flame-retardant type, and shall be part of one of the following:

(8) Listed equipment

(9) Driving machine

(10) Driving machine brake

Exception to 620.21(A)(1)(c)(1), (A)(1)(c)(2), and (A)(1)(c)(3): The conduit length shall not be required to be limited between risers and limit switches, interlocks, operating buttons, and similar devices.

(k) A sump pump or oil recovery pump located in the pit shall be permitted to be cord connected. The cord shall be a hard usage oil-resistant type, of a length not to exceed 1.8 m (6 ft), and shall be located to be protected from physical damage.

(l) Hard-service cords and junior hard-service cords that conform to the requirements of Article 400 (Table 400.4) shall be permitted as flexible connections between the fixed wiring in the hoistway and hoistway access switches when located in the hoistway door sight guard.

Informational Note: See ASME A17.1-2019/CSA B44-19, *Safety Code for Elevators and Escalators*.

(2) Cars.

(a) Flexible metal conduit, liquidtight flexible metal conduit, or liquidtight flexible nonmetallic conduit of metric designator 12 (trade size ⅜), or larger, not exceeding 1.8 m (6 ft) in length, shall be permitted on cars where so located as to be free from oil and if securely fastened in place.

Exception: Liquidtight flexible nonmetallic conduit of metric designator 12 (trade size ⅜), or larger, as defined by 356.2(2), shall be permitted in lengths in excess of 1.8 m (6 ft).

(b) Hard-service cords and junior hard-service cords that conform to the requirements of Article 400 (Table 400.4) shall be permitted as flexible connections between the fixed wiring on the car and devices on the car doors or gates. Hard-service cords only shall be permitted as flexible connections for the top-of-car operating device or the car-top work light. Devices or luminaires shall be grounded by means of an equipment grounding conductor run with the circuit conductors. Cables with smaller conductors and other types and thicknesses of insulation and jackets shall be permitted as flexible connections between the fixed wiring on the car and devices on the car doors or gates, if listed for this use.

(c) Flexible cords and cables that are components of listed equipment and used in circuits operating at 30 volts rms or less or 42 volts dc or less shall be permitted, provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

(d) The following wiring methods shall be permitted on the car assembly in lengths not to exceed 1.8 m (6 ft):

(5) Flexible metal conduit

(6) Liquidtight flexible metal conduit

(7) Liquidtight flexible nonmetallic conduit

(8) Flexible cords and cables, or conductors grouped together and taped or corded, shall be permitted to be installed without a raceway. They shall be located to be protected from physical damage and shall be of a flame-retardant type and shall be part of one of the following:

(9) Listed equipment

(10) A driving machine

(11) A driving machine brake

(3) Within Machine Rooms, Control Rooms, and Machinery Spaces and Control Spaces.

(a) Flexible metal conduit, liquidtight flexible metal conduit, or liquidtight flexible nonmetallic conduit of metric designator 12 (trade size ⅜), or larger, not exceeding 1.8 m (6 ft) in length, shall be permitted between control panels and machine motors, machine brakes, motor-generator sets, disconnecting means, and pumping unit motors and valves.

Exception: Liquidtight flexible nonmetallic conduit metric designator 12 (trade size ⅜) or larger, as defined in 356.2(2), shall be permitted to be installed in lengths in excess of 1.8 m (6 ft).

(b) Where motor-generators, machine motors, or pumping unit motors and valves are located adjacent to or underneath control equipment and are provided with extra-length terminal leads not exceeding 1.8 m (6 ft) in length, such leads shall be permitted to be extended to connect directly to controller terminal studs without regard to the carrying-capacity requirements of Articles 430 and 445. Auxiliary gutters shall be permitted in machine and control rooms between controllers, starters, and similar apparatus.

(c) Flexible cords and cables that are components of listed equipment and used in circuits operating at 30 volts rms or less or 42 volts dc or less shall be permitted, provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

(d) On existing or listed equipment, conductors shall also be permitted to be grouped together and taped or corded without being installed in a raceway. Such cable groups shall be supported at intervals not over 900 mm (3 ft) and located so as to be protected from physical damage.

(e) Flexible cords and cables in lengths not to exceed 1.8 m (6 ft) that are of a flame-retardant type and located to be protected from physical damage shall be permitted in these rooms and spaces without being installed in a raceway. They shall be part of one of the following:

(6) Listed equipment

(7) A driving machine

(8) A driving machine brake

(4) Counterweight.

The following wiring methods shall be permitted on the counterweight assembly in lengths not to exceed 1.8 m (6 ft):

(1) Flexible metal conduit

(2) Liquidtight flexible metal conduit

(3) Liquidtight flexible nonmetallic conduit

(4) Flexible cords and cables, or conductors grouped together and taped or corded, shall be permitted to be installed without a raceway. They shall be located to be protected from physical damage, shall be of a flame-retardant type, and shall be part of one of the following:

(5) Listed equipment

(6) A driving machine

(7) A driving machine brake

(B) Escalators.

(1) Wiring Methods.

Flexible metal conduit, liquidtight flexible metal conduit, or liquidtight flexible nonmetallic conduit shall be permitted in escalator and moving walk wellways. Flexible metal conduit or liquidtight flexible conduit of metric designator 12 (trade size ⅜) shall be permitted in lengths not in excess of 1.8 m (6 ft).

Exception: Metric designator 12 (trade size ⅜), nominal, or larger liquidtight flexible nonmetallic conduit, as defined in 356.2(2), shall be permitted to be installed in lengths in excess of 1.8 m (6 ft).

(2) Class 2 Circuit Cables.

Types CL2P, CL2R, and CL2 cables shall be permitted to be installed within escalators and moving walkways, provided the cables are supported and protected from physical damage. Substitute cables for Class 2 cables installed in accordance with ~~725~~ 722 . ~~154~~ 135 (~~A~~ E) shall be permitted.

(3) Flexible Cords.

Hard-service cords that conform to the requirements of Article 400 (Table 400.4) shall be permitted as flexible connections on escalators and moving walk control panels and disconnecting means where the entire control panel and disconnecting means are arranged for removal from machine spaces as permitted in 620.5.

(C) Platform Lifts and Stairway Chairlift Raceways.

(1) Wiring Methods.

Flexible metal conduit or liquidtight flexible metal conduit shall be permitted in platform lifts and stairway chairlift runways and machinery spaces. Flexible metal conduit or liquidtight flexible conduit of metric designator 12 (trade size ⅜) shall be permitted in lengths not in excess of 1.8 m (6 ft).

Exception: Metric designator 12 (trade size ⅜) or larger liquidtight flexible nonmetallic conduit, as defined in 356.2(2), shall be permitted to be installed in lengths in excess of 1.8 m (6 ft).

(2) Class 2 Circuit Cables.

Types CL2P, CL2R, and CL2 cables shall be permitted to be installed within platform lifts and stairway chairlift runways and machinery spaces, provided the cables are supported and protected from physical damage. Substitute cables for Class 2 cables installed in accordance with ~~725~~ 722 . ~~154~~ 135 (~~A~~ E) shall be permitted.

(3) Flexible Cords and Cables.

Flexible cords and cables that are components of listed equipment and used in circuits operating at 30 volts rms or less or 42 volts dc or less shall be permitted in lengths not to exceed 1.8 m (6 ft), provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

Statement of Problem and Substantiation for Public Comment

Global FR-9582 created the First Draft text for new Article 722, Cables for Power-Limited Circuits. The cable substitution requirements in 725.154(A) are being relocated to 722.135(E).

This PC only recommends changing 725.154(A) to 722.135(E) in 620.21(A)(1), 620.21(B)(2) and 620.21(C)(2). ALL THE OTHER UNDERLINED TEXT IS AN ARTIFACT OF THE TerraView PROGRAM.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 100-NFPA 70-2021 [Section No. 640.3]	Revises references from Article 725 to new Article 722

Public Comment No. 187-NFPA 70-2021 [Section No. 645.3(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 188-NFPA 70-2021 [Section No. 646.3(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 189-NFPA 70-2021 [Section No. 645.10(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 100-NFPA 70-2021 [Section No. 640.3]	
Public Comment No. 187-NFPA 70-2021 [Section No. 645.3(B)]	
Public Comment No. 188-NFPA 70-2021 [Section No. 646.3(B)]	
Public Comment No. 189-NFPA 70-2021 [Section No. 645.10(B)]	

Related Item

• PI 33 • PI 34 • PI 35 • FR-9582 • FR-9327 • FR-9309 • FR-9304

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: CableSafe, Inc./OFS
Affiliation: PLASTICS (Plastics Industry Association)
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jul 02 15:14:33 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7511-NFPA 70-2021
Statement: Section references have been aligned with actions taken by CMP-3 to move requirements from Article 725 to new Article 722.

Public Comment No. 1861-NFPA 70-2021 [Section No. 620.21(A)]

(A) Elevators.

(1) Hoistways and Pits.

(a) Types CL2P, CL2R, and CL2 cables shall be permitted, provided the cables are supported and protected from physical damage. Substitute cables for Class 2 cables installed in accordance with ~~725.154(A)~~ 722.135 shall be permitted.

(b) Flexible cords and cables that are components of listed equipment and used in circuits operating at 30 volts rms or less or 42 volts dc or less shall be permitted, provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

(c) The following wiring methods shall be permitted in the hoistway in lengths not to exceed 1.8 m (6 ft):

(4) Flexible metal conduit.

(5) Liquidtight flexible metal conduit.

(6) Liquidtight flexible nonmetallic conduit.

(7) Flexible cords and cables, or conductors grouped together and taped or corded, shall be permitted to be installed without a raceway. They shall be located to be protected from physical damage, shall be of a flame-retardant type, and shall be part of one of the following:

(8) Listed equipment

(9) Driving machine

(10) Driving machine brake

Exception to 620.21(A)(1)(c)(1), (A)(1)(c)(2), and (A)(1)(c)(3): The conduit length shall not be required to be limited between risers and limit switches, interlocks, operating buttons, and similar devices.

(k) A sump pump or oil recovery pump located in the pit shall be permitted to be cord connected. The cord shall be a hard usage oil-resistant type, of a length not to exceed 1.8 m (6 ft), and shall be located to be protected from physical damage.

(l) Hard-service cords and junior hard-service cords that conform to the requirements of Article 400 (Table 400.4) shall be permitted as flexible connections between the fixed wiring in the hoistway and hoistway access switches when located in the hoistway door sight guard.

Informational Note: See ASME A17.1-2019/CSA B44-19, *Safety Code for Elevators and Escalators*.

(2) Cars.

(a) Flexible metal conduit, liquidtight flexible metal conduit, or liquidtight flexible nonmetallic conduit of metric designator 12 (trade size ⅜), or larger, not exceeding 1.8 m (6 ft) in length, shall be permitted on cars where so located as to be free from oil and if securely fastened in place.

Exception: Liquidtight flexible nonmetallic conduit of metric designator 12 (trade size ⅜), or larger, as defined by 356.2(2), shall be permitted in lengths in excess of 1.8 m (6 ft).

(b) Hard-service cords and junior hard-service cords that conform to the requirements of Article 400 (Table 400.4) shall be permitted as flexible connections between the fixed wiring on the car and devices on the car doors or gates. Hard-service cords only shall be permitted as flexible connections for the top-of-car operating device or the car-top work light. Devices or luminaires shall be grounded by means of an equipment grounding conductor run with the circuit conductors. Cables with smaller conductors and other types and thicknesses of insulation and jackets shall be permitted as flexible connections between the fixed wiring on the car and devices on the car doors or gates, if listed for this use.

(c) Flexible cords and cables that are components of listed equipment and used in circuits operating at 30 volts rms or less or 42 volts dc or less shall be permitted, provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

(d) The following wiring methods shall be permitted on the car assembly in lengths not to exceed 1.8 m (6 ft):

(5) Flexible metal conduit

(6) Liquidtight flexible metal conduit

(7) Liquidtight flexible nonmetallic conduit

(8) Flexible cords and cables, or conductors grouped together and taped or corded, shall be permitted to be installed without a raceway. They shall be located to be protected from physical damage and shall be of a flame-retardant type and shall be part of one of the following:

(9) Listed equipment

(10) A driving machine

(11) A driving machine brake

(3) Within Machine Rooms, Control Rooms, and Machinery Spaces and Control Spaces.

(a) Flexible metal conduit, liquidtight flexible metal conduit, or liquidtight flexible nonmetallic conduit of metric designator 12 (trade size ⅜), or larger, not exceeding 1.8 m (6 ft) in length, shall be permitted between control panels and machine motors, machine brakes, motor-generator sets, disconnecting means, and pumping unit motors and valves.

Exception: Liquidtight flexible nonmetallic conduit metric designator 12 (trade size ⅜) or larger, as defined in 356.2(2), shall be permitted to be installed in lengths in excess of 1.8 m (6 ft).

(b) Where motor-generators, machine motors, or pumping unit motors and valves are located adjacent to or underneath control equipment and are provided with extra-length terminal leads not exceeding 1.8 m (6 ft) in length, such leads shall be permitted to be extended to connect directly to controller terminal studs without regard to the carrying-capacity requirements of Articles 430 and 445. Auxiliary gutters shall be permitted in machine and control rooms between controllers, starters, and similar apparatus.

(c) Flexible cords and cables that are components of listed equipment and used in circuits operating at 30 volts rms or less or 42 volts dc or less shall be permitted, provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

(d) On existing or listed equipment, conductors shall also be permitted to be grouped together and taped or corded without being installed in a raceway. Such cable groups shall be supported at intervals not over 900 mm (3 ft) and located so as to be protected from physical damage.

(e) Flexible cords and cables in lengths not to exceed 1.8 m (6 ft) that are of a flame-retardant type and located to be protected from physical damage shall be permitted in these rooms and spaces without being installed in a raceway. They shall be part of one of the following:

(6) Listed equipment

(7) A driving machine

(8) A driving machine brake

(4) Counterweight.

The following wiring methods shall be permitted on the counterweight assembly in lengths not to exceed 1.8 m (6 ft):

(1) Flexible metal conduit

(2) Liquidtight flexible metal conduit

(3) Liquidtight flexible nonmetallic conduit

(4) Flexible cords and cables, or conductors grouped together and taped or corded, shall be permitted to be installed without a raceway. They shall be located to be protected from physical damage, shall be of a flame-retardant type, and shall be part of one of the following:

(5) Listed equipment

(6) A driving machine

(7) A driving machine brake

Statement of Problem and Substantiation for Public Comment

NEII supports the intent of the change; however, this change needs to be correlated with FR-9582 which moves the requirements for these cables from Article 725.154 into Article 722.135.

Related Item

• Global FR 9582 • PI 34 • FR 9327

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, In
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 11:52:46 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7511-NFPA 70-2021
Statement: Section references have been aligned with actions taken by CMP-3 to move requirements from Article 725 to new Article 722.

Public Comment No. 2146-NFPA 70-2021 [Section No. 620.21(A)(1)]

(1) Hoistways and Pits.

(a) Types CL2P, CL2R, and CL2 cables shall be permitted, provided the cables are supported and protected from physical damage. Substitute cables for Class 2 cables installed in accordance with ~~725.154(A) shall~~ 722.135 shall be permitted.

(b) Flexible cords and cables that are components of listed equipment and used in circuits operating at 30 volts rms or less or 42 volts dc or less shall be permitted, provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

(c) The following wiring methods shall be permitted in the hoistway in lengths not to exceed 1.8 m (6 ft):

(4) Flexible metal conduit.

(5) Liquidtight flexible metal conduit.

(6) Liquidtight flexible nonmetallic conduit.

(7) Flexible cords and cables, or conductors grouped together and taped or corded, shall be permitted to be installed without a raceway. They shall be located to be protected from physical damage, shall be of a flame-retardant type, and shall be part of one of the following:

(8) Listed equipment

(9) Driving machine

(10) Driving machine brake

Exception to 620.21(A)(1)(c)(1), (A)(1)(c)(2), and (A)(1)(c)(3): The conduit length shall not be required to be limited between risers and limit switches, interlocks, operating buttons, and similar devices.

(k) A sump pump or oil recovery pump located in the pit shall be permitted to be cord connected. The cord shall be a hard usage oil-resistant type, of a length not to exceed 1.8 m (6 ft), and shall be located to be protected from physical damage.

(l) Hard-service cords and junior hard-service cords that conform to the requirements of Article 400 (Table 400.4) shall be permitted as flexible connections between the fixed wiring in the hoistway and hoistway access switches when located in the hoistway door sight guard.

Informational Note: See ASME A17.1-2019/CSA B44-19, *Safety Code for Elevators and Escalators*.

Statement of Problem and Substantiation for Public Comment

TKE supports the intent of the change; however, the change needs to be correlated with FR 9582 which moves the requirements for these cables from Article 725.154 into Article 722.135.

Related Item

• Global FR 9582 • PI 34 • FR 9327

Submitter Information Verification

Submitter Full Name: John Henderson
Organization: TK Elevator
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 13:58:18 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7511-NFPA 70-2021
Statement: Section references have been aligned with actions taken by CMP-3 to move requirements from Article 725 to new Article 722.

Public Comment No. 1864-NFPA 70-2021 [Section No. 620.21(B)]

(B) Escalators.

(1) Wiring Methods.

Flexible metal conduit, liquidtight flexible metal conduit, or liquidtight flexible nonmetallic conduit shall be permitted in escalator and moving walk wellways. Flexible metal conduit or liquidtight flexible conduit of metric designator 12 (trade size ⅜) shall be permitted in lengths not in excess of 1.8 m (6 ft).

Exception: Metric designator 12 (trade size ⅜), nominal, or larger liquidtight flexible nonmetallic conduit, as defined in 356.2(2), shall be permitted to be installed in lengths in excess of 1.8 m (6 ft).

(2) Class 2 Circuit Cables.

Types CL2P, CL2R, and CL2 cables shall be permitted to be installed within escalators and moving walkways, provided the cables are supported and protected from physical damage. Substitute cables for Class 2 cables installed in accordance with ~~725.154(A)~~ 722.135 shall be permitted.

(3) Flexible Cords.

Hard-service cords that conform to the requirements of Article 400 (Table 400.4) shall be permitted as flexible connections on escalators and moving walk control panels and disconnecting means where the entire control panel and disconnecting means are arranged for removal from machine spaces as permitted in 620.5.

Statement of Problem and Substantiation for Public Comment

NEII supports the intent of the change; however, this change needs to be correlated with FR-9582 which moves the requirements for these cables from Article 725.154 into Article 722.135.

Related Item

• Global FR 9582 • PI 35 • FR 9309

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, In
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 11:58:03 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7511-NFPA 70-2021

Statement: Section references have been aligned with actions taken by CMP-3 to move requirements from Article 725 to new Article 722.

Public Comment No. 2149-NFPA 70-2021 [Section No. 620.21(B)(2)]

(2) Class 2 Circuit Cables.

Types CL2P, CL2R, and CL2 cables shall be permitted to be installed within escalators and moving walkways, provided the cables are supported and protected from physical damage. Substitute cables for Class 2 cables installed in accordance with ~~725.154(A) shall~~ 722.135 shall be permitted.

Statement of Problem and Substantiation for Public Comment

TKE supports the intent of the change; however, the change needs to be correlated with FR 9582 which moves the requirements for these cables from Article 725.154 into Article 722.135.

Related Item

• Global FR 9582 • PI 35 • FR 9309

Submitter Information Verification

Submitter Full Name: John Henderson
Organization: TK Elevator
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 14:05:35 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7511-NFPA 70-2021
Statement: Section references have been aligned with actions taken by CMP-3 to move requirements from Article 725 to new Article 722.

Public Comment No. 1852-NFPA 70-2021 [Section No. 620.22]

620.22 Branch Circuits for Car Lighting, Receptacle(s), Ventilation, Heating, and Air-Conditioning.

(A) Car Light Receptacles, Auxiliary Lighting, and Ventilation.

A separate branch circuit shall supply the car lights. The car lights branch circuit shall be permitted to supply receptacles, ~~accessory equipment (~~ alarm devices, ~~alarm bells, monitoring~~ Emergency Responder Radio Coverage (ERRC) equipment, cab environmental purification systems, monitoring devices not part of the control system), auxiliary lighting power source, car emergency signalling, communication devices (including their associated charging circuits), and ventilation on each elevator car or inside the operation controller. The overcurrent device protecting the branch circuit shall be located in the elevator machine room, control room, machinery space, or control space. Where there is no machine room, control room, machinery space, or control space outside the hoistway, the overcurrent device shall be located outside the hoistway and accessible to qualified persons only.

Required lighting shall not be connected to the load side of a ground-fault circuit interrupter.

(B) Air-Conditioning and Heating Source.

A separate branch circuit shall supply the air-conditioning and heating units on each elevator car. The overcurrent device protecting the branch circuit shall be located in the elevator machine room, control room, machinery space, or control space. Where there is no machine room, control room, machinery space, or control space outside the hoistway, the overcurrent device shall be located outside the hoistway and accessible only to qualified persons.

Statement of Problem and Substantiation for Public Comment

NEII requests that the committee approve PI-3022 as submitted with editorial corrections. The current draw for the proposed additional items is very small so the risk of tripping the breaker is minimal. The current language already allows other accessory items to be installed on the circuit. This change will also better align the code with approved changes for the next edition of ASME A17.1/CSA B44 Safety Code for Elevators and Escalators.

Related Item

• PI 3022 • PI 3025 • FR 9318

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, In
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 11:08:07 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Rejected but see related SR

Action:	
Resolution:	SR-7515-NFPA 70-2021
Statement:	Requirements in 620.22(A) have been revised to specify permissible loads on the car light circuit.

Public Comment No. 2126-NFPA 70-2021 [Section No. 620.22(A)]

(A) Car Light Receptacles, Auxiliary Lighting, and Ventilation.

A separate branch circuit shall supply the car lights. The car lights branch circuit shall be permitted to supply receptacles,~~accessory equipment (~~ _ alarm devices, ~~alarm bells,~~ Emergency Responder Radio Coverage (ERRC) equipment, cab ventilation purification systems, monitoring devices not part of the control system~~)~~ , auxiliary lighting power source, car emergency signaling, communication devices (including their associated charging circuits) and ventilation on each elevator car or inside the operation controller. The overcurrent device protecting the branch circuit shall be located in the elevator machine room, control room, machinery space, or control space. Where there is no machine room, control room, machinery space, or control space outside the hoistway, the overcurrent device shall be located outside the hoistway and accessible to qualified persons only.

Required lighting shall not be connected to the load side of a ground-fault circuit interrupter.

Statement of Problem and Substantiation for Public Comment

TKE request that the committee approve PI 3022 as submitted with editorial corrections. The current draw for the proposed additional items is very small. The risk of tripping the breaker is minimal. The current language already allows other "accessory equipment" to be installed on the circuit. The change will also better align with the approved changes to the next edition of the ASME A17.1/CSA B44 Safety Code for Elevators and Escalators.

Related Item

• P! 3022 • PI 3025 • FR 9318

Submitter Information Verification

Submitter Full Name: John Henderson
Organization: TK Elevator
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 13:07:41 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7515-NFPA 70-2021
Statement: Requirements in 620.22(A) have been revised to specify permissible loads on the car light circuit.

Public Comment No. 1680-NFPA 70-2021 [Section No. 620.23]

620.23 Branch Circuits for ~~Machine Room, Control Room/Machinery Space, Control Space, Cartop Lighting, or Truss Interior Lighting and Receptacle(s)~~ Lighting and Receptacles Outlets in Machinery Rooms or Spaces in Control Rooms or Spaces and on Cartops .

(A) Separate Branch Circuits.

~~The branch circuit(s) supplying~~ Branch circuit supplying the lighting for machine rooms, control rooms, machinery spaces, control spaces, ~~cartop lighting, or truss interior lighting shall~~ cartops of elevators or dumbwaiters shall be separate from ~~the~~ branch ~~circuit(s) supplying the receptacle(s) in~~ circuit supplying the receptacle in those places. These circuits shall supply no other loads.

Required lighting shall not be connected to the load side of a ground-fault circuit interrupter.

(B) Lighting ~~Switch.~~

~~The machine room, control room/machinery space, or control space lighting switch shall~~

Switches or Listed Wall-Mounted Control Devices.

Lighting switches and listed wall-mounted control devices for machinery rooms or spaces, control rooms or spaces or any combination of the two shall be located at the ~~point~~ points of entry to those rooms or spaces .

(C) Duplex Receptacle.

At least one 125-volt, single-phase, 15- or 20-ampere duplex receptacle shall be provided in each machine room, control room and machinery space ~~, control space, and truss interior~~ or control space .

Informational Note: See ASME A17.1-2019/CSA B44-19, *Safety Code for Elevators and Escalators*, for illumination levels.

Statement of Problem and Substantiation for Public Comment

The term “truss interior” is undefined within both the NEC® and Webster’s Collegiate Dictionary (2020 NEC® Style Manual 1.2; Manual of Style for NFPA Technical Committee Documents 2.3.1.3.1 and 3.2.1.2). Further, an internet search does not yield any definitions within any published standards whatsoever; the sole search results is to the name of an interior design firm.

In the absence of any definition or specifications for “truss interior”, it cannot be ascertained whether or not existing listing requirements for general-purpose luminaires in 620.23(A) and for general-purpose receptacles in 620.23(C) are sufficient to assure safe application in such installations, or if additional requirements or constraints identified for this specific purpose in the NEC® and in listing product standards are needed. Consequently, First Revision indications of “truss interior lighting” and of “truss interior” in relation to receptacles are deleted throughout this Section.

In 620.23(A), the branch circuits are already designated for “supplying the lighting” so the added “lighting” following added “cartop” is redundant. Further, it is clarified that “cartop” refers specifically to elevators and dumbwaiters among all the applications encompassed by Article 620.

As 620.23(B) presently reads, not the lighting switch but the machine room or the control room/machinery space (also the control space lighting switch) must be located at the point-of-entry, and the point of entry to what? The room or space, the elevator car, the escalator? Revised to comply with English as a First Language and to vaccinate against ambiguity.

In 620.23(B), to correlate with 2020 edition revisions to 210.70(C), the phrase “and listed wall-mounted control devices” has been appended to “switches”.

All entries indicating “(s)” for ambiguous singularization/pluralization are deleted throughout this Section as not complying with 2020 NEC® Style Manual 3.3.3. Plurals are to be used.

Related Item

• FR 9321

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 17 11:09:00 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7530-NFPA 70-2021

Statement: The cartop lighting was removed from the lighting branch circuit to lessen the risk to maintenance workers of cartop circuit failure. The term truss interior was not removed as it identifies the structure of moving walkways and escalators.

Public Comment No. 1853-NFPA 70-2021 [Section No. 620.23]

620.23 Branch Circuits for Machine Room, Control Room/Machinery Space, Control Space, ~~Cartop Lighting, or~~ or Truss Interior Lighting and Receptacle(s).

(A) Separate Branch Circuits.

The branch circuit(s) supplying the lighting for machine rooms, control rooms, machinery spaces, control spaces, ~~cartop lighting,~~ or truss interior lighting shall be separate from the branch circuit(s) supplying the receptacle(s) in those places. These circuits shall supply no other loads.

Required lighting shall not be connected to the load side of a ground-fault circuit interrupter.

(B) Lighting Switch.

The machine room, control room/machinery space, or control space lighting switch shall be located at the point of entry.

(C) Duplex Receptacle.

At least one 125-volt, single-phase, 15- or 20-ampere duplex receptacle shall be provided in each machine room, control room and machinery space, control space, and truss interior.

Informational Note: See ASME A17.1-2019/CSA B44-19, *Safety Code for Elevators and Escalators*, for illumination levels.

Statement of Problem and Substantiation for Public Comment

NEII supports the revision to add “Truss Interior Lighting” but is opposed to the addition of “Cartop Lighting”. The code requirements in ASME A17.1/CSA B44 already address the concern raised by PI-4263; therefore, this part of the revision is unnecessary and would result in a requirement for an extra conductor being needed for the car to separate the lighting and car top receptacle circuits. Please remove “Cartop Lighting” from this Revision.

Related Item

• PI 3028 • PI 4263 • FR 9321

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, In
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 11:17:08 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7530-NFPA 70-2021

Statement: The cartop lighting was removed from the lighting branch circuit to lessen the risk to maintenance workers of cartop circuit failure. The term truss interior was not removed as it identifies the structure of moving walkways and escalators.

Public Comment No. 2132-NFPA 70-2021 [Section No. 620.23]

620.23 Branch Circuits for Machine Room, Control Room/Machinery Space, Control Space, ~~Cartop Lighting, or~~ Truss Interior Lighting and Receptacle(s).

(A) Separate Branch Circuits.

The branch circuit(s) supplying the lighting for machine rooms, control rooms, machinery spaces, control spaces, ~~cartop lighting, or~~ and truss interior lighting shall be separate from the branch circuit(s) supplying the receptacle(s) in those places. These circuits shall supply no other loads.

Required lighting shall not be connected to the load side of a ground-fault circuit interrupter.

(B) Lighting Switch.

The machine room, control room/machinery space, or control space lighting switch shall be located at the point of entry.

(C) Duplex Receptacle.

At least one 125-volt, single-phase, 15- or 20-ampere duplex receptacle shall be provided in each machine room, control room and machinery space, control space, and truss interior.

Informational Note: See ASME A17.1-2019/CSA B44-19, *Safety Code for Elevators and Escalators*, for illumination levels.

Statement of Problem and Substantiation for Public Comment

TKE supports the revision to add "truss interior lighting" but is opposed to the addition of "cartop lighting". The code requirements in ASME A17.1/CSA B44 already address the concern raised in PI 4263; therefore, this part of the revision is unnecessary and would result in a requirement for extra traveling cable conductors (possibly three) in order to separate the car-top lighting from the car-top receptacle. Please remove "cartop lighting" from the proposal.

Related Item

• PI 3028 • PI 4263 • FR 9321

Submitter Information Verification

Submitter Full Name: John Henderson
Organization: TK Elevator
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 13:23:07 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7530-NFPA 70-2021

Statement: The cartop lighting was removed from the lighting branch circuit to lessen the risk to maintenance workers of cartop circuit failure. The term truss interior was not removed as it identifies the structure of moving walkways and escalators.

Public Comment No. 1855-NFPA 70-2021 [Section No. 620.36]

620.36 Different Systems in One Raceway or Traveling Cable.

Optical fiber cables and conductors for operating devices, operation and motion control, power, signaling, fire alarm, lighting, heating, and air-conditioning circuits of 1000 volts or less shall be permitted to be run in the same traveling cable or raceway system if all conductors are insulated for the maximum voltage applied to any conductor within the cables or raceway system and if all live parts of the equipment are insulated from ground for this maximum voltage. Such a traveling cable or raceway shall also be permitted to include Type CMP-LP or CMR-LP cables complying with 800 .179.

Statement of Problem and Substantiation for Public Comment

The revision to 630.36 addresses the use of cables for communication circuits; however, it does not provide the user with directions to locate the requirements for the cable types listed. NEII requests that a reference by added to direct the user of the code to the appropriate code provisions in Article 800 for the CMP and CMR cables based on correlation with FR-9036.

Related Item

• PI 3043 • FR 9333 • FR 9036 • FR 9027

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, In
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 11:28:46 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7545-NFPA 70-2021
Statement: The requirement that communications conductors comply with Article 800.179 ensures that cable types used will be suitable for the purpose. The addition of shielded pair and coaxial cables for communications purposes allows for the greatest flexibility in installation while maintaining safety.

Public Comment No. 2076-NFPA 70-2021 [Section No. 620.36]

620.36 Different Systems in One Raceway or Traveling Cable.

Optical fiber cables and conductors for operating devices, operation and motion control, power, signaling, fire alarm, lighting, heating, and air-conditioning circuits of 1000 volts or less shall be permitted to be run in the same traveling cable or raceway system if all conductors are insulated for the maximum voltage applied to any conductor within the cables or raceway system and if all live parts of the equipment are insulated from ground for this maximum voltage. Such a traveling cable or raceway shall also be permitted to include shielded pairs, coaxial cables, and other communications circuits. Type CMP-LP or CMR-LP cables are also permitted in raceways .

Statement of Problem and Substantiation for Public Comment

Add "shielded pairs, coaxial cables, and other communications circuits" to allow for these components in both traveling cable and raceway. If only 'Type CMP-LP or CMR-LP cables' are allowed, standard telephone pairs and coax would not be included. Adding the term ' communications circuits" allows for broader applications and accommodates potential future developments.
Add "Type CMP-LP or CMR-LP cables are also permitted in raceways" to separate from use within traveling cables.
Type CMP-LP or CMR-LP cables are not designed for continuous flexing applications and are therefore not suitable as components within elevator traveling cables. Plenum and riser ratings on the interior components is unnecessary since elevator traveling cables are listed with their own flame rating to prevent vertical flame spread in the event of a fire.

Related Item

• FR No. 9333 (620.36)

Submitter Information Verification

Submitter Full Name: Dillard Green
Organization: Draka Elevator Products
Affiliation: cable manufacturer
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 10:44:23 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7545-NFPA 70-2021
Statement: The requirement that communications conductors comply with Article 800.179 ensures that cable types used will be suitable for the purpose. The addition of shielded pair and coaxial cables for communications purposes allows for the greatest flexibility in installation while maintaining safety.

Public Comment No. 2138-NFPA 70-2021 [Section No. 620.36]

620.36 Different Systems in One Raceway or Traveling Cable.

Optical fiber cables and conductors for operating devices, operation and motion control, power, signaling, fire alarm, lighting, heating, and air-conditioning circuits of 1000 volts or less shall be permitted to be run in the same traveling cable or raceway system if all conductors are insulated for the maximum voltage applied to any conductor within the cables or raceway system and if all live parts of the equipment are insulated from ground for this maximum voltage. Such ~~a~~ traveling cable or raceway shall also be permitted to include shielded pairs, coaxial cables, and other communication circuits. Type CMP-LP or CMR-LP cables complying with 800 .179 are permitted in raceways.

Statement of Problem and Substantiation for Public Comment

The revision to 630.36 addresses the use of cables for communication circuits; however, it does not provide the user with directions to locate the requirements for the cable types listed. TKE request that a reference be added to direct the user of the code to the appropriate code provision in Article 800 for the CMP and CMR cables based on correlation with FR 9036. Add "shielded pairs, coaxial cables and other communication circuits" to allow these components in both traveling cable and raceway. Adding the term "communication circuits" allows for broader application and accommodates potential future developments.
Add "Type CMP-LP or CM-LP are also permitted in raceway" to separate from use in traveling cables. Type CMP-LP or CMR-LP cables are not designed for continuous flexing applications and are therefore not suitable as components within traveling cables. Plenum and riser rated on the interior component is unnecessary since elevator traveling cables are listed with their own fame rating to prevent vertical flame spread in the event of a fire.

Related Item

• PI 3043 • FR 9333 • FR 9036 • FR 9027 • PC 2076

Submitter Information Verification

Submitter Full Name: John Henderson
Organization: TK Elevator
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 13:37:26 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7545-NFPA 70-2021
Statement: The requirement that communications conductors comply with Article 800.179 ensures that cable types used will be suitable for the purpose. The addition of shielded pair and coaxial cables for communications purposes allows for the greatest flexibility in

installation while maintaining safety.

Public Comment No. 946-NFPA 70-2021 [Section No. 620.37]

620.37 Wiring in Hoistways, Machine Rooms, Control Rooms, Machinery Spaces, and Control Spaces.

(A) Uses Permitted.

Only such electrical wiring, raceways, and cables used directly in connection with the elevator or dumbwaiter, including wiring for signals, for communication with the car, for lighting, heating, air conditioning, and ventilating the elevator car, for fire-detecting systems, for pit sump pumps, or branch circuits identified in 620.24, and for heating, lighting, and ventilating the hoistway, shall be permitted inside the hoistway, machine rooms, control rooms, machinery spaces, and control spaces.

(B) Lightning Protection.

Bonding of elevator rails (car and/or counterweight) to a lightning protection system down conductor(s) shall be permitted. The lightning protection system down conductor(s) shall not be located within the hoistway. Elevator rails or other hoistway equipment shall not be used as the down conductor for lightning protection systems.

Informational Note No. 1: See 250.106 for bonding requirements.

Informational Note No. 2: See NFPA 780-2020, *Standard for the Installation of Lightning Protection Systems*, for further information.

(C) Feeders.

Feeders for supplying power to elevators and dumbwaiters shall be installed outside the hoistway unless as follows:

(1) By special permission, feeders for elevators shall be permitted within an existing hoistway if no conductors are spliced within the hoistway.

(2) Feeders shall be permitted inside the hoistway for elevators with driving machine motors located in the hoistway or on the car or counterweight.

Additional Proposed Changes

File Name	Description	Approved
12_CN_46.pdf	12 CN46	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 46 appeared in the First Draft Report on First Revision No. 9336.

The Correlating Committee asks the Panel to reconsider the use of the word "identified". The Correlating Committee directs the Panel to review the paragraph in 620.37(A) "Uses Permitted," and consider rewriting the sentence in a list format in accordance with 2.1.5.1 of the NEC Style Manual.

Related Item

• First Revision No. 9336

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC

Organization: NEC Correlating Committee

Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 11:25:33 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7546-NFPA 70-2021
Statement: Section 620.37 was revised to align with the style manual.

Correlating Committee Note No. 46-NFPA 70-2021 [Section No. 620.37]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 15:43:10 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee asks the Panel to reconsider the use of the word "identified". The Correlating Committee directs the Panel to review the paragraph in 620.37(A) “Uses Permitted,” and consider rewriting the sentence in a list format in accordance with 2.1.5.1 of the NEC Style Manual.

First Revision No. 9336-NFPA 70-2021 [Section No. 620.37]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 826-NFPA 70-2021 [Section No. 620.38]

620.38 Electrical Equipment in Garages and Similar Occupancies.

Electrical equipment and wiring used for elevators, dumbwaiters, escalators, moving walks, and platform lifts and stairway chairlifts in garages shall comply with the requirements of Article 511.

Informational Note: Garages used for parking or storage and where no repair work is done in accordance with 511.3(A) are not classified.

Additional Proposed Changes

File Name	Description	Approved
CN_67.pdf	70_CN67	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 67 appeared in the First Draft Report.

The Correlating Committee directs the Panel to review references to the entire Article in compliance with 4.1.4 of the NEC Style Manual.

Related Item

• Correlating Note No. 67

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 04 12:57:14 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7627-NFPA 70-2021
Statement: Section 620.38 was revised to align with the style manual.

Correlating Committee Note No. 67-NFPA 70-2021 [Section No. 620.38]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Mon May 03 17:47:23 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to review references to the entire Article in compliance with 4.1.4 of the NEC Style Manual.

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1529-NFPA 70-2021 [Section No. 620.51(A)]

(A) Type.

The disconnecting means shall be an enclosed externally operable fused motor circuit switch or circuit breaker that is lockable only in the open position in accordance with 110.25.

The disconnecting means shall be a listed device.

Informational Note No. 1: See ASME A17.1-2019/CSA B44-19, *Safety Code for Elevators and Escalators*, for additional information.

Informational Note No. 2: See ASME A18.1-2017, *Safety Standard for Platform Lifts and Stairway Chairlifts*, for additional information.

Exception No. 1: Where an individual branch circuit supplies a platform lift, the disconnecting means required by 620.51(C)(4) shall be permitted to comply with 430.109(C). This disconnecting means shall be listed and shall be lockable open in accordance with 110.25.

Exception No. 2: Where an individual branch circuit supplies a stairway chairlift, the stairway chairlift shall be permitted to be cord-and-plug-connected, provided it complies with 422.16(A) and the cord does not exceed 1.8 m (6 ft) in length.

Exception No. 3: A stairway chairlift that uses batteries as the primary source, The 120-volt AC that supplies to the battery charging system shall be permitted to be cord-and-plug-connected, provided it complies with 422.16(A) and the cord does not exceed 1.8 m (6 ft) in length.

Statement of Problem and Substantiation for Public Comment

This input is being submitted on behalf of the Minnesota Department of Labor and Industry. The Department's 15 office/field staff, and 70 plus contract electrical inspectors complete over 150,000 electrical inspections annually.
Many chairlifts being installed receive their power from batteries that are charged buy a DC trickle charger. The DC trickle charger receives it's power from the 120-volt AC system. These battery chargers draw very little amperage and are generally installed on general use light branch circuits in the home without any concern about overloading the branch circuit, and the cord and plug provides a convenient disconnecting means. The current language is confusing as to weather or not the battery charging equipment for the stairway chairlift is allowed to be cord and plug connected even though it may not have an individual branch circuit, but instead uses an existing general lighting circuit to feed the receptacle. The individual branch circuit requirement for these particular units doesn't add any electrical safety, or loading concerns because of the small current draw.

Related Item

• PI 9342 • FR 9342

Submitter Information Verification

Submitter Full Name: Dean Hunter
Organization: Minnesota Department of Labor
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 16 11:10:36 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7549-NFPA 70-2021
Statement: Exception No. 2 was modified to identify situations where a cord-and-plug connection is permitted.

Public Comment No. 1857-NFPA 70-2021 [Section No. 620.51(D)]

(D) Identification and Signs.

(1) More than One Driving Machine.

Where there is more than one driving machine in a machine room, the disconnecting means shall be provided with a unique identification corresponding to the driving machine controlled.

The disconnecting means shall be provided with a sign to identify the location of the supply-side overcurrent protective device.

Informational Note: See ASME A17.1-2019/CSA B44-19, *Safety Code for Elevators and Escalators*, for information on identification of elevators and associated equipment.

(2) Available Fault Current Field Marking.

~~Where an elevator control panel is used, it~~ The disconnecting means shall be legibly marked in the field with the available fault current at its line terminals. The field marking(s) shall include the date the available fault current calculation was performed and be of sufficient durability to withstand the environment involved.

When modifications to the electrical installation occur that affect the available fault current at ~~the elevator control panel~~ the disconnecting means , the available fault current shall be verified or recalculated as necessary to ensure ~~the elevator control panel's short~~ the equipment's short -circuit current rating is sufficient for the available fault current at the line terminals of the equipment. The required field marking(s) shall be adjusted to reflect the new level of available fault current.

Statement of Problem and Substantiation for Public Comment

NEII requests that PI-3024 be approved as submitted. Article 620.51 deals with Disconnecting means, so the “it” in 620.51(d)(2) refers to the disconnecting means, not the elevator control panel. This change is needed to clarify that point. Also, if there is a Drive Isolation Transformer between the disconnect and the controller that would impact the marking, so it needs to be on the disconnecting means.

Related Item

• PI 3024 • PI 3033 • CN 47 • FR 9356

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, In
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 11:34:14 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Rejected but see related SR

Action:

Resolution: SR-7558-NFPA 70-2021

Statement: Article 620.51 deals with Disconnecting means, so the “it” in 620.51(d)(2) refers to the disconnecting means, not the elevator control panel. This change is needed to clarify that point. Also, if there is a Drive Isolation Transformer between the disconnect and the controller that would impact the marking, so it needs to be on the disconnecting means.

Public Comment No. 947-NFPA 70-2021 [Section No. 620.51(D)(1)]

(1) More than One Driving Machine.

Where there is more than one driving machine in a machine room, the disconnecting means shall be provided with a unique identification corresponding to the driving machine controlled.

The disconnecting means shall be provided with a sign to identify the location of the supply-side overcurrent protective device.

Informational Note: See ASME A17.1-2019/CSA B44-19, *Safety Code for Elevators and Escalators*, for information on identification of elevators and associated equipment.

Additional Proposed Changes

File Name	Description	Approved
12_CN_47.pdf	12 CN47	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 47 appeared in the First Draft Report on First Revision No. 9356.

The Correlating Committee directs that FR 9356 be reviewed for compliance with 4.1.1 of the NEC Style Manual. It is not clear if this requirement supplements or modifies the requirement in 110.22. If it does not supplement or modify 110.22, it should be deleted.

Related Item

• First Revision No. 9356

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 11:27:42 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7556-NFPA 70-2021
Statement: Section 620.51(D)(1) has been deleted to align with the style manual section 4.1.1. This requirement is covered by 110.22 and does not need to be repeated. Renumber subsequent sections.

Correlating Committee Note No. 47-NFPA 70-2021 [Section No. 620.51(D)(1)]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 15:49:36 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that FR 9356 be reviewed for compliance with 4.1.1 of the NEC Style Manual. It is not clear if this requirement supplements or modifies the requirement in 110.22. If it does not supplement or modify 110.22, it should be deleted.

First Revision No. 9356-NFPA 70-2021 [Section No. 620.51(D)(1)]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 2140-NFPA 70-2021 [Section No. 620.51(D)(2)]

(2) Available Fault Current Field Marking.

~~Where an elevator control panel is used, it~~ The disconnecting means shall be legibly marked in the field with the available fault current at its line terminals. The field marking(s) shall include the date the available fault current calculation was performed and be of sufficient durability to withstand the environment involved.

When modifications to the electrical installation occur that affect the available fault current at the ~~elevator control panel~~ disconnecting means , the available fault current shall be verified or recalculated as necessary to ensure the ~~elevator control panel's short~~ equipment's short -circuit current rating is sufficient for the available fault current at the line terminals of the equipment. The required field marking(s) shall be adjusted to reflect the new level of available fault current.

Statement of Problem and Substantiation for Public Comment

TKE request that PI 3024 be approved as submitted. Article 620.51 deals with Disconnecting means, so the "it" in 620.51(D)(2) refers to the disconnecting means, not to the elevator control panel. The change is needed to clarify that point. Also, if there is a Drive Isolation Transformer (DIT) between the disconnect and the controller, that would impact the marking. Available short circuit current marking should be on the disconnect not on the elevator control panel that is marked with its short circuit current rating.

Related Item

• PI 3024 • PI 3033 • CN 47 • FR 9356

Submitter Information Verification

Submitter Full Name: John Henderson
Organization: TK Elevator
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 13:43:46 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7558-NFPA 70-2021
Statement: Article 620.51 deals with Disconnecting means, so the “it” in 620.51(d)(2) refers to the disconnecting means, not the elevator control panel. This change is needed to clarify that point. Also, if there is a Drive Isolation Transformer between the disconnect and the controller that would impact the marking, so it needs to be on the disconnecting means.

Public Comment No. 1082-NFPA 70-2021 [Section No. 620.51(E)]

(E)– **Transient** Overvoltage Protection.

Where any of the disconnecting means in 620.51 has been designated as supplying an emergency system load, a legally required system load, or a critical operation power system load, a listed surge protective device (SPD) shall be installed in accordance with Part II of Article 242.

Statement of Problem and Substantiation for Public Comment

Not all overvoltage protection circuits provide transient (surge) protection, and not all surge protection circuits provide protection against longer-term overvoltage conditions. The word "transient" should be added to clarify what the required protection is intended to address.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1080-NFPA 70-2021 [Section No. 645.18]	
Public Comment No. 1080-NFPA 70-2021 [Section No. 645.18]	

Related Item

• FR 9361 • FR 9238

Submitter Information Verification

Submitter Full Name: Karl Reighard
Organization: Delmarva Power And Light
Affiliation: -self-
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 09 11:16:22 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: The change in the section title to “Transient Overvoltage Protection does not add to clarity or safety requirements. The reader is already referred to Part II of Article 242 for specific requirements.

Public Comment No. 948-NFPA 70-2021 [Section No. 625.6]

625.6 Listed.

All equipment covered by the scope of this article shall be listed.

Additional Proposed Changes

File Name	Description	Approved
12_CN_48.pdf	12 CN48	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 48 appeared in the First Draft Report on First Revision No. 9405.

The Correlating Committee directs the Panel to reconsider the revised sentence for clarity. Rather than a generic reference to the Scope, which may be misapplied, consider an itemization of those items to be listed, such as: "Electric vehicle power transfer system equipment for the purposes of charging, power export, or bidirectional current flow shall be listed."

Related Item

• First Revision No. 9405

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 11:31:37 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7703-NFPA 70-2021
Statement: The sentence was revised to clarify which equipment is required to be listed.

Correlating Committee Note No. 48-NFPA 70-2021 [Section No. 625.5]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 15:51:13 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to reconsider the revised sentence for clarity. Rather than a generic reference to the Scope, which may be misapplied, consider an itemization of those items to be listed, such as: "Electric vehicle power transfer system equipment for the purposes of charging, power export, or bidirectional current flow shall be listed."

First Revision No. 9405-NFPA 70-2021 [Section No. 625.5]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1434-NFPA 70-2021 [Section No. 625.17(A)]

~~**(A)** Power-Supply Cord.~~

~~The cable for cord-connected electric vehicle supply equipment (EVSE) shall comply with all of the following:~~

(1) ~~Be any of the types specified in 625.17(B) (1) or hard service cord, junior hard service cord, or portable power cable types in accordance with Table 400.4 . Hard service cord, junior hard service cord, or portable power cable types shall be listed, as applicable, for exposure to oil and damp and wet locations.~~

(2) ~~Have an ampacity as specified in Table 400.5(A)(1) or, for 8 AWG and larger, in the 60°C (140°F) columns of Table 400.5(A)(2) .~~

(3) ~~Have an overall length as specified in either of the following:~~

(4) ~~When the interrupting device of the personnel protection system specified in 625.22 is located within the enclosure of the supply equipment or charging system, the power-supply cord shall be not more than the length indicated in (i) or (ii):~~

(5) ~~For portable equipment in accordance with 625.44(A) , the power-supply cord shall be not more than 300 mm (12 in.) long.~~

(6) ~~For fastened-in-place equipment in accordance with 625.44(B) , the power-supply cord shall be not more than 1.8 m (6 ft) long and the equipment shall be installed at a height that prevents the power-supply cord from contacting the floor when it is connected to the proper receptacle.~~

(7) ~~When the interrupting device of the personnel protection system specified in 625.22 is located at the attachment plug, or within the first 300 mm (12 in.) of the power-supply cord, the overall cord length shall be not greater than 4.6 m (15 ft).~~

Statement of Problem and Substantiation for Public Comment

Article 625.17 is out of scope for Article 625 and for the NEC. This article attempts to modify a listed product. Listed products are under the purview of the Product Standard.

Related Item

• FR 9474

Submitter Information Verification

Submitter Full Name: Karl Reighard
Organization: Delmarva Power And Light
Affiliation: -self-
Street Address:
City:
State:

Zip:

Submittal Date: Fri Aug 13 11:49:15 EDT 2021

Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: Construction requirements in 625.17 (A) are critical to remain in the NEC to ensure product standards align with these requirements.

Public Comment No. 1113-NFPA 70-2021 [Section No. 625.22]

625.22 Personnel Protection System.

EVSE that is provided with a conductive connection to the vehicle shall have a listed system of protection against electric shock of personnel. Where cord-and-plug-connected equipment is used, the interrupting device of a listed personnel protection system shall be provided according to 625.17(A). A personnel protection system shall not be required for EVSE that supplies less than 60 volts dc ~~and WPTE~~ .

Statement of Problem and Substantiation for Public Comment

WPTE should not be excluded from the PPS requirement. The charging pad for WPTE systems is typically mounted on the garage floor or on ground outside where is it fully exposed to water and other contaminants. The cord or cable that connects this pad to the power source is often also exposed to the same. Any failure in the insulation of these cords / cables or the seals where they enter the pad assembly could easily create a shock hazard.

Related Item

• FR 9415

Submitter Information Verification

Submitter Full Name: Karl Reighard
Organization: Delmarva Power And Light
Affiliation: -self-
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 09 15:27:01 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7713-NFPA 70-2021
Statement: The Section was revised to require PPS for WPTE. WPTE has cables and components that are typically mounted in areas subject to water and other contaminants. Failures in these cables and components could create a shock hazard. A listed PPS is still needed for WPTE because it is exposed to damp and wet conditions.

Public Comment No. 2014-NFPA 70-2021 [Section No. 625.40]

625.40 Electric Vehicle Branch Circuit.

Each outlet installed for the purpose of supplying EVSE greater than 16 amperes or 120 volts shall be supplied by an individual branch circuit.

Exception: Branch circuits shall be permitted to feed multiple EVSEs provided the installation can be rating limited through a load management system ~~is used.~~ as permitted by 625.42(A), and/or adjustment per 625.42(B), or where the EVSE output and maximum overcurrent rating and wire size per its listing allow for more than one such EVSE to share a branch circuit. Outlets that are so limited, and split-wired duplex receptacles, shall be labeled to indicate their rating.

Statement of Problem and Substantiation for Public Comment

EVSE with "restricted access" adjustable maximum current (eg. three EVSE each set to one-third output on a shared branch) are equivalent to a load management system only with a fixed rather than dynamic setting. Article 625.42 has been revised in the first revision accordingly. The outlets, whether junction boxes or receptacles, should be labeled to make clear that they cannot provide the apparently available power, and if they are part of a load managed system, or simply reduced capacity (one-third in the example above). In the case of duplex receptacles, which are available as 6-20R, it is not apparent if the receptacle provides one or two 250 V 20 A circuits, but that is an economical way of providing power for PHEVs.

Related Item

• PI-3111 requested acceptance of load control and more than one device is listed and labeled.	• FR-9416 added exception for load management system, but missed restricted access adjustment option, or other fixed reduced rating option.	• PC-1803 proposes to permit receptacle/branch table exception for rating limited EVSE per this article	• PC-1816 proposes effectively exempting EVSE from table based partly on this article	• PC-2024 proposes accepting typical ways of restricting access to software commissiong that could be recognized as restricting adjustment for this article	• PC-2021 proposes recognizing rating limit of restricted access setting and/or load management

Submitter Information Verification

Submitter Full Name: Kevin Cheong
Organization: ChargePoint Inc.
Affiliation: ChargePoint Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 23:26:50 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-7714-NFPA 70-2021
Statement:	The Exception was revised for clarity and consistency. The term “load management system” was removed and replaced with specific NEC Sections.

Public Comment No. 2020-NFPA 70-2021 [Section No. 625.41]

625.41 Overcurrent Protection.

Overcurrent protection for feeders and branch circuits supplying EVSE and WPTE, including bidirectional EVSE and WPTE, shall be sized ~~for continuous duty and shall have a current rating of not less than 125 percent of the maximum load of the equipment. Where noncontinuous loads are supplied from the same feeder, the overcurrent device shall have a current rating of not less than the sum of the noncontinuous loads plus 125 percent of the continuous loads.~~ based on the EV charging loads being considered continuous and the product rating (including adjustment if in accordance with 625.42(B), or load management system limit at that location if in accordance with 625.42(A), or its maximum allowable overcurrent listing).

Statement of Problem and Substantiation for Public Comment

The first revision allows multiple EVSE on a branch circuit for load management systems, and we have proposed also allowing adjustable or fixed limited rating EVSE to be considered a variant of the same principle. The overcurrent for the branch should be matched to maximum load that the multi-EVSE circuit can draw, up to the limit of what the EVSE is listed to be connected to. Ideally this article and 625.40 would overlap less wrt service, feeder, and branch. Some EVSE are listed as 50 A output, but permitted to be protected with an 80 A overcurrent (our Flex unit), Three such units each set to 20 A (whether restricted access adjustment or load management) can safely be permitted on an 80 A branch. Fixed (non-adjustable) EVSE with similar listing should also be acceptable (eg. two 16 A units on a 40 A cct). We suggest you also consider whether 100 % rated overcurrent protection should be permitted to use the per 210.20A Exception.

Related Item

- PI-3118 created two options for limited ratings, but missed the idea of fixed limited ratings.
- FR-9555 acknowledged load managements ability to protect a branch circuit, and the equivalence of adjustment.
- PC-2021 proposes recognizing restricted access adjustment and/or load management determing rating.

Submitter Information Verification

Submitter Full Name: Kevin Cheong
Organization: ChargePoint Inc.
Affiliation: ChargePoint Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 23:57:05 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: The NEC has an accepted method of calculating conductor sizes based on 125% of loads considered continuous. The submitter does not provide adequate technical substantiation for exempting this load from that calculation method.

Public Comment No. 1041-NFPA 70-2021 [Section No. 625.42(A)]

(A) ~~Load~~ Energy Management System.

Where ~~a~~ an EMS in accordance with 750.30 provides load management ~~system is used~~ of EVSE , the maximum equipment load on a service and feeder shall be the maximum load permitted by the ~~load management system~~ EMS . The ~~load management system~~ EMS shall be permitted to be integral to one piece of equipment or integral to a listed system consisting of one piece of equipment. When one or more pieces of equipment are provided with an integral load management control, the system shall be marked to indicate this control is provided.

Statement of Problem and Substantiation for Public Comment

This public comment is submitted on behalf of the Energy Management Task Group formed under the direction of the Correlating Committee to review all current and proposed definitions and requirements related to load management, load management system, power control system, energy management system and related terms to ensure a coordinated approach throughout the Code. See CN-279.

The task group members are; Chad Kennedy (Chair), Tim Zgonena, Rebekah Hren, Greg Ball, Jason Fisher, Doug Burkett, Robert Jordan, Matthew Grover, Tim Windey, Karl Reighard, and Brian Baughman. This task group of balanced interests provided the expertise to develop these public comments covering energy management across the NEC.

This section has been revised for the purposes of clarity and consistency with the broader term of Energy Management System to include both load and source. This public comment is part of a series of actions recommended by the task group. See the related public comments which complete this action.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 36-NFPA 70-2021 [Definition: Energy Management System.]	
Public Comment No. 1034-NFPA 70-2021 [Definition: Load Management System.]	
Public Comment No. 1036-NFPA 70-2021 [Definition: Load Management.]	
Public Comment No. 1039-NFPA 70-2021 [Section No. 220.70]	
Public Comment No. 1037-NFPA 70-2021 [Section No. 750.30]	
Public Comment No. 1048-NFPA 70-2021 [Section No. 708.22(B)]	
Public Comment No. 1049-NFPA 70-2021 [Section No. 705.80]	
Public Comment No. 1044-NFPA 70-2021 [Section No. 705.46]	
Public Comment No. 1050-NFPA 70-2021 [Section No. 705.28(A)]	
Public Comment No. 1043-NFPA 70-2021 [Section No. 705.13]	
Public Comment No. 1053-NFPA 70-2021 [Section No. 705.12 [Excluding any Sub-Sections]]	
Public Comment No. 1052-NFPA 70-2021 [Section No. 705.11(A)(1)]	
Public Comment No. 1045-NFPA 70-2021 [Section No. 700.4(C)]	
Public Comment No. 1046-NFPA 70-2021 [Section No. 701.4(C)]	
Public Comment No. 1047-NFPA 70-2021 [Section No. 702.4(B)]	

Public Comment No. 1042-NFPA 70-2021 [Section No. 625.42(B)]

Public Comment No. 1406-NFPA 70-2021 [Section No. 230.82]

Public Comment No. 36-NFPA 70-2021 [Definition: Energy Management System.]

Public Comment No. 1034-NFPA 70-2021 [Definition: Load Management System.]

Public Comment No. 1036-NFPA 70-2021 [Definition: Load Management.]

Public Comment No. 1037-NFPA 70-2021 [Section No. 750.30]

Public Comment No. 1039-NFPA 70-2021 [Section No. 220.70]

Public Comment No. 1042-NFPA 70-2021 [Section No. 625.42(B)]

Public Comment No. 1043-NFPA 70-2021 [Section No. 705.13]

Public Comment No. 1044-NFPA 70-2021 [Section No. 705.46]

Public Comment No. 1045-NFPA 70-2021 [Section No. 700.4(C)]

Public Comment No. 1046-NFPA 70-2021 [Section No. 701.4(C)]

Public Comment No. 1047-NFPA 70-2021 [Section No. 702.4(B)]

Public Comment No. 1048-NFPA 70-2021 [Section No. 708.22(B)]

Public Comment No. 1049-NFPA 70-2021 [Section No. 705.80]

Public Comment No. 1050-NFPA 70-2021 [Section No. 705.28(A)]

Public Comment No. 1052-NFPA 70-2021 [Section No. 705.11(A)(1)]

Public Comment No. 1053-NFPA 70-2021 [Section No. 705.12 [Excluding any Sub-Sections]]

Public Comment No. 1406-NFPA 70-2021 [Section No. 230.82]

Related Item

• CN-279

Submitter Information Verification

Submitter Full Name: Chad Kennedy
Organization: Schneider Electric
Street Address:
City:
State:
Zip:
Submittal Date: Fri Aug 06 08:59:39 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7716-NFPA 70-2021
Statement: This section has been revised for the purposes of clarity and consistency with the broader term of Energy Management System to include both load and source.

Public Comment No. 2022-NFPA 70-2021 [Section No. 625.42(A)]

(A) ~~Load~~ EV Energy Management System.

Where ~~a load management~~ an EV Energy management system is used, the maximum equipment load on a service and feeder shall be the maximum load permitted by the ~~load management~~ EV Energy management system. The ~~load management~~ EV Energy management system shall be permitted to be integral to one piece of equipment or integral to a listed system consisting of one piece of equipment. When one or more pieces of equipment are provided with an integral load management control, the system shall be marked to indicate this control is provided.

Statement of Problem and Substantiation for Public Comment

The term Energy Management System is already used in article 750, and Load Management in 750.30. If the system is to be listed, it should be in accordance with a standard listed in the Informational Notes of Article 625.1, and/or Annex A for article 625 or 750, but no such standard is listed. As a member of the technical sub-committee C232(343) for CSA SPE-343 which is intended to be a binational standard with UL for EV Energy Management Systems, we recommend consideration to use the same term for this very specific load management system. The draft of the standard is out for public review at https://publicreview.csa.ca/home/details/4380 and covers many unique aspects of this type of system. If accepted this change would need to be correlated to several other articles though.

• PI-3118 commented on the system being listed, but could not reference a standard as it does not yet exist in the UL system, but based on other binational standards should be close to UL 9741.

Related Item

• PC-1803, 1816, 2014, and 2015 propose to allow for load management

Submitter Information Verification

Submitter Full Name: Kevin Cheong
Organization: ChargePoint Inc.
Affiliation: ChargePoint Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 00:31:16 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7716-NFPA 70-2021
Statement: This section has been revised for the purposes of clarity and consistency with the broader term of Energy Management System to include both load and source.

Public Comment No. 1042-NFPA 70-2021 [Section No. 625.42(B)]

(B) EVSE with Adjustable Settings.

~~Adjustable settings~~ Electric vehicle supply equipment with restricted access to an ampere adjusting means shall be permitted. If adjustments have an impact on the rating label, those changes shall be in accordance with manufacturer's instructions, and the adjusted rating shall appear on the rating label with sufficient durability to withstand the environment involved. Electric vehicle supply equipment ~~with restricted access to an ampere adjusting means~~ as referenced shall be permitted to have ampere ratings that are equal to the adjusted current setting. ~~Sizing the service and feeder to match the adjusting means shall be permitted. Access to the ampere adjusting means of an EVSE shall be restricted if it is not to be accessed by a user after installation. Such restricted access shall be accomplished by at least one of the following:~~

(1) ~~A cover or door that requires the use of a tool to open~~

(2) ~~Locked doors accessible only to qualified personnel~~

(3) ~~Password protected commissioning software accessible only to qualified personnel~~

(4) ~~Commissioning software that defaults to the factory setting after the initial installation setting with the factory setting being the lowest setting in the range~~

Statement of Problem and Substantiation for Public Comment

This public comment is submitted on behalf of the Energy Management Task Group formed under the direction of the Correlating Committee to review all current and proposed definitions and requirements related to load management, load management system, power control system, energy management system and related terms to ensure a coordinated approach throughout the Code. See CCN-279.

The task group members are; Chad Kennedy (Chair), Tim Zgonena, Rebekah Hren, Greg Ball, Jason Fisher, Doug Burkett, Robert Jordan, Matthew Grover, Tim Windey, Karl Reighard, and Brian Baughman. This task group of balanced interests provided the expertise to develop these public comments covering energy management across the NEC.

Common requirements for EMS are relocated to Article 750 to provide consistency and eliminate redundant requirements across the Code. This public comment is part of a series of actions recommended by the task group. See the related public comments which complete this action.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 36-NFPA 70-2021 [Definition: Energy Management System.]	
Public Comment No. 1034-NFPA 70-2021 [Definition: Load Management System.]	
Public Comment No. 1036-NFPA 70-2021 [Definition: Load Management.]	
Public Comment No. 1039-NFPA 70-2021 [Section No. 220.70]	
Public Comment No. 1041-NFPA 70-2021 [Section No. 625.42(A)]	
Public Comment No. 1037-NFPA 70-2021 [Section No. 750.30]	

Public Comment No. 1048-NFPA 70-2021 [Section No. 708.22(B)]

Public Comment No. 1049-NFPA 70-2021 [Section No. 705.80]

Public Comment No. 1050-NFPA 70-2021 [Section No. 705.28(A)]

Public Comment No. 1044-NFPA 70-2021 [Section No. 705.46]

Public Comment No. 1043-NFPA 70-2021 [Section No. 705.13]

Public Comment No. 1053-NFPA 70-2021 [Section No. 705.12 [Excluding any Sub-Sections]]

Public Comment No. 1052-NFPA 70-2021 [Section No. 705.11(A)(1)]

Public Comment No. 1045-NFPA 70-2021 [Section No. 700.4(C)]

Public Comment No. 1046-NFPA 70-2021 [Section No. 701.4(C)]

Public Comment No. 1047-NFPA 70-2021 [Section No. 702.4(B)]

Public Comment No. 1406-NFPA 70-2021 [Section No. 230.82]

Public Comment No. 36-NFPA 70-2021 [Definition: Energy Management System.]

Public Comment No. 1034-NFPA 70-2021 [Definition: Load Management System.]

Public Comment No. 1036-NFPA 70-2021 [Definition: Load Management.]

Public Comment No. 1037-NFPA 70-2021 [Section No. 750.30]

Public Comment No. 1039-NFPA 70-2021 [Section No. 220.70]

Public Comment No. 1041-NFPA 70-2021 [Section No. 625.42(A)]

Public Comment No. 1043-NFPA 70-2021 [Section No. 705.13]

Public Comment No. 1044-NFPA 70-2021 [Section No. 705.46]

Public Comment No. 1045-NFPA 70-2021 [Section No. 700.4(C)]

Public Comment No. 1046-NFPA 70-2021 [Section No. 701.4(C)]

Public Comment No. 1047-NFPA 70-2021 [Section No. 702.4(B)]

Public Comment No. 1048-NFPA 70-2021 [Section No. 708.22(B)]

Public Comment No. 1049-NFPA 70-2021 [Section No. 705.80]

Public Comment No. 1050-NFPA 70-2021 [Section No. 705.28(A)]

Public Comment No. 1052-NFPA 70-2021 [Section No. 705.11(A)(1)]

Public Comment No. 1053-NFPA 70-2021 [Section No. 705.12 [Excluding any Sub-Sections]]

Public Comment No. 1406-NFPA 70-2021 [Section No. 230.82]

Related Item

• CN-279

Submitter Information Verification

Submitter Full Name: Chad Kennedy
Organization: Schneider Electric
Street Address:
City:
State:
Zip:
Submittal Date: Fri Aug 06 09:08:02 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action:	Accepted
Resolution:	SR-7721-NFPA 70-2021
Statement:	Common requirements for EMS are relocated to Article 750 to provide consistency and eliminate redundant requirements across the Code.

Public Comment No. 2024-NFPA 70-2021 [Section No. 625.42(B)]

(B) EVSE with Adjustable Settings.

Adjustable settings shall be permitted. If adjustments have an impact on the rating label, those changes shall be in accordance with manufacturer's instructions, and the adjusted rating shall appear on the rating label with sufficient durability to withstand the environment involved. Electric vehicle supply equipment with restricted access to an ampere adjusting means shall be permitted to have ampere ratings that are equal to the adjusted current setting. Sizing the service and feeder to match the adjusting means shall be permitted. Access to the ampere adjusting means of an EVSE shall be restricted if it is not to be accessed by a user after installation. Such restricted access shall be accomplished by at least one of the following:

(1) A cover or door that requires the use of a tool to open

(2) ~~Locked doors accessible only to qualified personnel~~

(3) ~~Password protected commissioning software accessible only to qualified personnel~~
~~Commissioning software that defaults to the factory setting after the initial installation setting with the factory setting being the lowest setting in the range~~

(4) or that can be locked or sealed shut

(5) Commissioning software protected with a password that is provided with the unit, or set by the original installer, or obtained from the manufacturer during commissioning, and that can only be reset by someone with the currently active password, by the manufacturer, or by a means with restricted access in accordance with sentence 1.

If the adjusting means is software that is not restricted (intended to be accessible to a user after initial installation) the software shall default to a setting of not more than 16 A.

Statement of Problem and Substantiation for Public Comment

The current password protection requirement is subject to confusion and doesn't reflect currently available EVSE already listed to UL 2594 such that some currently installed EVSE could no longer be considered acceptable, and a tool accessible or other restricted cover or door is not equivalent to a password only accessible to qualified personnel. It is unclear how a password can be made accessible to only qualified personnel. The purchaser or installer of a new piece of equipmet is the one that would determine the lock used, and for homeowner installs they may not technically be considered qualified. The prior sentence 4 was not a means of restricting access, and the lowest setting of known available product varies from as little as 6 A to 12 A depending on model. A setting of 16 A corresponds to typical PHEV. As noted for sentence A I should point out that the public review draft of the EVEMS standard allows for three levels of password (installer-rating adjustment; system manager - accounts/payment; and user - charge control) already, and only the rating password has relevance to this article.

Related Item

• PI-3118 added the idea of default setting, but did not recognize the variation in existing product on what lowest setting might be.

• PC-1803, 1816, 2014, and 2020 propose to allow recoginition of restricted access adjustable settings

Submitter Information Verification

Submitter Full Name: Kevin Cheong
Organization: ChargePoint Inc.
Affiliation: ChargePoint Inc.

Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 00:45:59 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: Common requirements for EMS are relocated to Article 750 to provide consistency and eliminate redundant requirements across the Code.

Public Comment No. 2214-NFPA 70-2021 [Section No. 625.42(B)]

(B) EVSE with Adjustable Settings.

Adjustable settings shall be permitted. If adjustments have an impact on the rating label, those changes shall be in accordance with manufacturer's instructions, and the adjusted rating shall appear on the rating label with sufficient durability to withstand the environment involved. Electric vehicle supply equipment with restricted access to an ampere adjusting means shall be permitted to have ampere ratings that are equal to the adjusted current setting. Sizing the service and feeder to match the adjusting means shall be permitted. Access to the ampere adjusting means of an EVSE shall be restricted if it is not to be accessed by a user after installation. Such restricted access shall be accomplished by at least one of the following:

(1) A cover or door that requires the use of a tool to open

(2) Locked doors accessible only to qualified personnel

(3) ~~Password protected~~ Electronically locked commissioning software with credentials only accessible only to qualified personnel

(4) Commissioning software that defaults to the factory setting after the initial installation setting with the factory setting being the lowest setting in the range

Statement of Problem and Substantiation for Public Comment

Passwords are increasingly regarded as inferior security mechanisms. The code should not require any one method of electronic access control over another. For instance one or more of a badge reader, fingerprint sensor, or facial recognition method could be combined to provide superior security to a simple password.

Related Item

• PI 311-NFPA 70-2020

Submitter Information Verification

Submitter Full Name:	Jason Potterf
Organization:	Cisco
Affiliation:	Entertainment Services and Technology Association (ESTA)
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Thu Aug 19 17:00:18 EDT 2021
Committee:	NEC-P12

Committee Statement

Committee Action:	Rejected

Resolution:	Common requirements for EMS are relocated to Article 750 to provide consistency and eliminate redundant requirements across the Code.

Public Comment No. 2021-NFPA 70-2021 [Section No. 625.42 [Excluding any Sub-Sections]]

The EVSE shall have sufficient rating to supply the load served. Electric vehicle charging loads shall be considered to be continuous loads for the purposes of this article. Service and feeder shall be sized in accordance with the product ratings, unless the overall rating of the installation can be limited through controls as permitted by 625.42(A) and/or (B).

Statement of Problem and Substantiation for Public Comment

The rating can be limited by one or both methods (the restricted access adjustment might set a maximum, the load management system might set a further reduced limit in response to other loads). The feeders and service can be impacted by both.

Related Item

- PI-3118 also recognizes that the load management system and adjustable rating are similar principles.
- FR-9565 acknowledges the equivalence of the two sub-articles of 625.42, but the idea of fixed limited ratings was not considered.
- PC-1803, 1816, 2014, and 2020 propose recognizing several methods of limiting rating that can be used separately or in combination

Submitter Information Verification

Submitter Full Name: Kevin Cheong
Organization: ChargePoint Inc.
Affiliation: ChargePoint Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 00:24:44 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7715-NFPA 70-2021
Statement: The Panel is changing the term “and” to “or” to address the submitter’s intent and is per the NEC Style Manual.

Public Comment No. 1404-NFPA 70-2021 [Section No. 625.43]

625.43 Disconnecting Means.

For EVSE and WPTE rated more than 60 amperes or more than 150 volts to ground, the disconnecting means shall be provided and installed in a readily accessible location, adjacent to or remote from the equipment. If the disconnecting means is installed remote from the equipment, a plaque shall be installed on the equipment denoting the location of the disconnecting means. The disconnecting means shall be lockable open in accordance with 110.25.

Informational Note: Considerations for testing for the absence of voltage should be made at the time of installation. If test points are insulated or not readily accessible due to the presence of barriers or guards, consider utilizing a permanently mounted absence of voltage tester (AVT). NFPA 70E provides guidance for safely verifying the absence of voltage. _

Statement of Problem and Substantiation for Public Comment

With insulation and barrier requirements becoming more common, it is increasingly difficult in certain situations to safely test for the absence of voltage with a portable tester. NFPA 70E has recognized both portable testers and permanently mounted absence of voltage testers as acceptable methods for verifying the absence of voltage since 2018. Permanently mounted absence of voltage testers can significantly reduce risk and exposure to electrical hazards when testing for absence of voltage. However, because it is permanently mounted, the tester has to be considered during the installation of the equipment. Adding an informational note that encourages equipment designers and installers to consider how absence of voltage testing will be performed will lead to increased safety of those who operate and maintain the equipment after it is installed, regardless of whether portable or permanently-mounted testers are used. This informational note does not require absence of voltage testers, but only seeks to make people aware that there are multiple methods to accomplish this task and points the user of the standard to NFPA 70E for more information on this topic. If this topic is not considered at the time of installation, it may not be possible to mitigate testing risks later during the life of the equipment.

Related Item

• PI 3994 • FR 9522

Submitter Information Verification

Submitter Full Name: Rachel Bugaris
Organization: Panduit Corp
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 12 14:51:39 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution:	There are multiple methods of testing for the presence or absence of voltage and the addition of an informational note recommending a specific method is unnecessary.

Public Comment No. 949-NFPA 70-2021 [Section No. 625.43]

625.43 Disconnecting Means.

For EVSE and WPTE rated more than 60 amperes or more than 150 volts to ground, the disconnecting means shall be provided and installed in a readily accessible location, adjacent to or remote from the equipment. If the disconnecting means is installed remote from the equipment, a plaque shall be installed on the equipment denoting the location of the disconnecting means. The disconnecting means shall be lockable open in accordance with 110.25.

Additional Proposed Changes

File Name	Description	Approved
12_CN_49.pdf	12 CN49	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 49 appeared in the First Draft Report on First Revision No. 9465.

The Correlating Committee directs the Panel to reconsider the revised sentence for clarity. It is not clear if the locking requirement applies to both local and remote disconnects. Additionally, if the disconnect is mounted adjacent (an unenforceable term discouraged by the NEC Style Manual) or remotely, stating both could lead to confusion and is unnecessary.

Related Item

• First Revision No. 9465

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 11:33:34 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7722-NFPA 70-2021
Statement: Readily accessible is a defined term. Adjacent and remote are not defined and their use is discouraged by the style manual.

Correlating Committee Note No. 49-NFPA 70-2021 [Section No. 625.43]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 15:55:21 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to reconsider the revised sentence for clarity. It is not clear if the locking requirement applies to both local and remote disconnects. Additionally, if the disconnect is mounted adjacent (an unenforceable term discouraged by the NEC Style Manual) or remotely, stating both could lead to confusion and is unnecessary.

First Revision No. 9465-NFPA 70-2021 [Section No. 625.43]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
11 Affirmative All
1 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Affirmative with Comment

Hickman, Palmer L.

It is recommended that the following Correlating Committee committee statement be revised for accuracy: "The Correlating Committee directs the Panel to reconsider the revised sentence for clarity. It is not clear if the locking requirement applies to both local and remote disconnects. Additionally, if the disconnect is mounted adjacent (an unenforceable term discouraged by the NEC Style Manual) or remotely, stating both could lead to confusion and is unnecessary." The statement should be revised by replacing "disconnects" and "disconnect" with the defined term "disconnecting means."

Public Comment No. 2025-NFPA 70-2021 [Section No. 625.44(A)]

(A) Portable Equipment.

Portable equipment shall be connected to the premises wiring system by one or more of the following methods:

(1) A nonlocking, 2-pole, 3-wire grounding-type receptacle outlet rated at 125 volts, single phase, 15 or 20 amperes

(2) A nonlocking, 2-pole, 3-wire grounding-type receptacle outlet rated at 250 volts, single phase, 15 or 20 amperes

(3) A nonlocking, 2-pole, 3-wire or 3-pole, 4-wire grounding-type receptacle outlet rated at 250 volts, single phase, 30 or 50 amperes, or 125/250 volts, single-phase, 30, 50 or ~~50~~ 60 amperes

(4) A nonlocking, 2-pole, 3-wire grounding-type receptacle outlet rated at 60 volts dc maximum, 15 or 20 amperes

Statement of Problem and Substantiation for Public Comment

We believe the use of 14-60R receptacles should be permitted since they are recognized by the NEC and modern EVs are available with increasingly more capable on-board chargers. For EV-Ready installations this would allow more flexibility. Corresponding changes are proposed to several articles in section 625 and 210 to suit.

Related Item

• PI-3746 also proposed recognition of 60 A receptacles but the body of the sentnce already mentioned "higher than 50 A"

• PC1803, and 1816 propose an exception for EV charging receptacles subject to compliance with other rules

Submitter Information Verification

Submitter Full Name: Kevin Cheong
Organization: ChargePoint Inc.
Affiliation: ChargePoint Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 01:05:14 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Accepted
Resolution: SR-7725-NFPA 70-2021
Statement: Section revised to allow 14-60R receptacles.

Public Comment No. 2026-NFPA 70-2021 [Section No. 625.44(B)]

(B) Fastened-in-Place Equipment.

Equipment that is fastened-in-place shall be connected to the premises wiring system by one of the following methods:

(1) A nonlocking, 2-pole, 3-wire grounding-type receptacle outlet rated 125 volts or 250 volts, single phase, up to 50 amperes

(2) A nonlocking, 3-pole, 4-wire grounding-type receptacle outlet rated 250 volts, three phase, up to 50 amperes

(3) A nonlocking, 3-pole, 4-wire grounding-type receptacle outlet rated 125/250 volts, single phase, 30, 50 or ~~50~~ 60 amperes

(4) A nonlocking, 2-pole, 3-wire grounding-type receptacle outlet rated 60 volts dc maximum, 15 or 20 amperes

Statement of Problem and Substantiation for Public Comment

We are requesting recognition of 14-60R receptacles to suit newer EVs (like the F-150 Lightning) and EV-Ready installations with EVEMS and plug and cord connections as per our parallel proposal to several articles in 210 and 625

• PI-3746 also requested recognition of 60 A receptacles, but the text already acknowledged receptacle higher than 50 A.

Related Item

• PC-1903, and 1816, propose exception for EV charging receptacles/branch subject to compliance with various other articles.

Submitter Information Verification

Submitter Full Name: Kevin Cheong
Organization: ChargePoint Inc.
Affiliation: ChargePoint Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 01:11:51 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Accepted
Resolution: SR-7727-NFPA 70-2021
Statement: Section revised to allow 14-60R receptacles.

Public Comment No. 1268-NFPA 70-2021 [Section No. 625.46]

625.46 Loss of Primary Source.

Means shall be provided such that, upon loss of voltage from the utility or other electrical system(s), energy cannot be back fed through the electric vehicle and the supply equipment to the premises wiring system unless permitted ~~in~~ by 625.48.

Statement of Problem and Substantiation for Public Comment

Although this PC highlights only this one instance, it is in response to FR 9468, which was created in response to PI 259 - a global aimed at standardizing language throughout the code. Standardizing the language is generally a good thing, however there is a good reason for both "...unless permitted in..." and "...unless permitted by..." to both exist in the code.

Whenever you are referencing a physical location to which some regulation is applied, or within which some condition is being regulated, "permitted in" would be the correct language. Whenever you are referencing either a governing code or standard, or a portion thereof, "permitted by" would be the correct language. To understand the relationship and application of these two phrases please consider the following.

You are not permitted or prevented 'in' law, you are permitted or prevented 'by' law. While it is true that the regulatory wordings appear ‘in’ the laws, when those laws are applied to the conditions and activities of the world they become the legislation ‘by which’ those conditions and activities are regulated. Take for example speed limits. The limits and punishments for exceeding them are stated 'in' a section of the traffic code, but I am regulated 'by' that code - not in it.

Because the codes and standards that we develop become the acting law for those items within their scope for the jurisdictions to which they are applied, the wordings we use should match the accepted legal wordings for references to other legislative works.

With that in mind, the correct wordings for all of the NEC references listed in PI #259 would be as follows:

300.13(A) "...unless permitted by 300.15, ..." (no change)

348.20(A) All "...unless permitted in..." should be changed to "...unless permitted by..." (6 instances)

356.20(A) All "...unless permitted in..." should be changed to "...unless permitted by..." (2 instances)

411.5(B) "...as permitted by..." (no change)

625.46 "...unless permitted by..." (no change)

626.26 "...unless permitted by..." (no change)

725.136(A) "...unless permitted by..." (no change)

760.136(A) "...unless permitted by..." (no change)

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225.30 All "...unless permitted in..." should be changed to "...unless permitted by..." (2 instances)

230.2 "...unless permitted in 230.2(A)..." should be changed to "...unless permitted by 230.2(A)..."

348.20 (Not sure of purpose of original reference. Changes covered in 348.20(A) line above.)

356.20 (Not sure of purpose of original reference. Changes covered in 356.20(A) line above.)

411.5(B) "...as permitted by..." (no change)

625.46 (Not sure of purpose of original reference. Changes covered in 625.46 line above.)

626.26 (Not sure of purpose of original reference. Changes covered in 626.26 line above.)

725.136(A) (Not sure of purpose of original reference. Changes covered in 725.136(A) line above.)

760.136(A) (Not sure of purpose of original reference. Changes covered in 760.136(A) line above.)

In addition to those from the original PI, the need for some additional corrections was noticed during the writing of this PC. These additional items are:

356.20(A) "...as required in 410.117(C), ..." should be changed to "...as required by 410.117(C),..."

626.30 "...receptacles required in 626.24(B)." should be changed to "...receptacles required by 626.24."

225.34(A) All "...permitted in 225.33..." should be changed to "...permitted by 225.33..." (2 instances)

348.12(2) "...as permitted in 620.21(A)(1)." should be changed to "...as permitted by 620.21(A)(1)."

256.30(2) "...permitted in 410.117(C)." should be changed to "...permitted by 410.117(c)."

356.60 All "...as permitted in..." should be changed to "...as permitted by..." (2 instances)

Related Item

• FR 9468 • PI 259

Submitter Information Verification

Submitter Full Name: Karl Reighard
Organization: Delmarva Power And Light
Affiliation: -self-
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 11 14:46:45 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Accepted
Resolution: SR-7728-NFPA 70-2021
Statement: Section revised for clarity.

Public Comment No. 2129-NFPA 70-2021 [Section No. 625.54]

625.54 Ground-Fault Circuit-Interrupter Protection for Personnel.

All receptacles installed for the connection of electric vehicle charging shall have ground-fault circuit-interrupter protection for personnel in accordance with 210.8 unless the receptacle is greater than 20A, 120V, is labeled for EV charging only, is installed in other than a dwelling unit, or as part of a rating limited system in accordance with 625 . 42 (A) and/or (B) including corresponding labeling, or rendered inaccessible by a fixed or fastened-in-place installation of an EVSE .

Additional Proposed Changes

File Name	Description	Approved
NEC_625.54_change_proposal_Draft_2.docx	Further substantiation for Public Comment on 625.54	

Statement of Problem and Substantiation for Public Comment

We believe the provisions of UL 2231-1, UL 2231-2, UL 2594, UL 2202, 625.17, 625.22, 625.1, 625.5, Annex A, etc. provide adequate personnel protection without the risk of nuisance tripping requiring a manual reset resulting in abandoned charging sessions. UL 2231 allows for automatic retries to deal with transient events like surges. Requiring GFCI (Class A) protection is an impediment to EV-Ready installations, and abandoned charge sessions could discourage EV adoption, with very limited additional protection (basically the short length of cord from a receptacle to the EVSE). We are requesting, in parallel proposals, the ability to use 14-60R receptacles and this requirement is an impediment. Receptacles greater than 20A, 120V, used in non-dwelling unit parking stalls, and labeled for EV Charging only, as part of a load management system, are extremely unlikely to be used for any other purpose.

Related Item

- PI-4479 indicated it is not possible to provide class A GFCI protection above 50 A 125/250 VAC.
- CN-50 pointed out that this article should only exist if it amends the requirements of 210.8 in some clear way.

Submitter Information Verification

Submitter Full Name: Kevin Cheong
Organization: ChargePoint Inc.
Affiliation: ChargePoint Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 13:17:44 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Rejected

Action:

Resolution: Simply labeling a receptacle for EV charging "only" will not prevent the average homeowner from using it for other purposes.

PUBLIC COMMENT – Proposed Amendment to NEC 2023 Edition:

Original 2020 NEC:

625.54 Ground-Fault Circuit-Interrupter Protection for Personnel.

In addition to the requirements in 210.8, all receptacles installed for the connection of electric vehicle charging shall have ground-fault circuit-interrupter protection for personnel.

First Draft Revisions:

625.54 Ground-Fault Circuit-Interrupter Protection for Personnel.

~~In addition to the requirements in 210.8 , all~~ All receptacles installed for the connection of electric vehicle charging shall have ground-fault circuit-interrupter protection for personnel in accordance with 210.8.

Current NEC 2020 text with First Draft Posting:

625.54 Ground-Fault Circuit-Interrupter Protection for Personnel.

All receptacles installed for the connection of electric vehicle charging shall have ground-fault circuit-interrupter protection for personnel in accordance with 210.8.

Proposed text: 625.54 Ground-Fault Circuit-Interrupter Protection for Personnel.

All receptacles installed for the connection of electric vehicle charging shall have ground-fault circuit-interrupter protection for personnel in accordance with 210.8 unless the receptacle greater than 16 A or 120 V, is labelled for EV charging only, is installed in other than a dwelling unit, or as part of rating limited system in accordance with 625.42 (A) and/or (B) including corresponding labelling, or rendered inaccessible by a fixed or fastened-in-place installation of an EVSE.

Statement of the Problem and Substantiation for Public Comment:

1. The current GFCI requirement is an impediment to the deployment of EV-Ready installations in strata, and other buildings as it would require an electrician for each EVSE installation. While GFCI is appropriate for some receptacles, it isn't required for hardwired installations and some receptacle installations are basically equivalent.
2. 625.1 lists UL 2594, and 2202, and 625.5 requires equipment to be listed, and Annex A lists for 625:
    a. UL 2231-1 Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits; Part 1: General Requirements,
    b. UL 2231-1 Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits; Part 2: Particular Requirements for Protection Devices for Use in Charging Systems,
    c. UL 2594 Electric Vehicle Supply Equipment
    d. UL 2202 Electric Vehicle (EV) Charging System Equipment
    e. Etc.

    Thus, this requirement is somewhat redundant as long as the receptacle isn't used for other purposes. Where a receptacle greater than a 5-15R or 5-20R, such as a 6-20R, 14-30R, 14-50R, 6-50R, and potentially 14-60R, as are common for EVSE, the receptacle is dedicated to EVSE, unlikely to be used by other equipment especially if not in a dwelling unit garage, and in a location accessible to an EV (eg. commercial garage, carport, driveway) and therefore not suitable for use by other equipment such as a portable hot-tub, dryer or range. See 625.17 and 625.22.

3. The definition of Ground-Fault Circuit Interrupter (GFCI) requires compliance with that of a Class A device. However, UL 2231-1 & 2 allow for not only CCID5, but also alternatives such as: Basic Insulation, CCID20, Ground monitor/interrupter and a centrally grounded system (for typical AC-L2 EVSE); or Double Insulation and CCID20; or Reinforced Insulation and CCIC20. Thus, the rule effectively dictates CCID5. The EVSE Personnel Protection Systems includes an auto-reset feature whereas a Class A GFCI does not, and GFCI can be tripped for surges or other short-term events, so could prevent proper charging of the vehicle for a temporary issue.

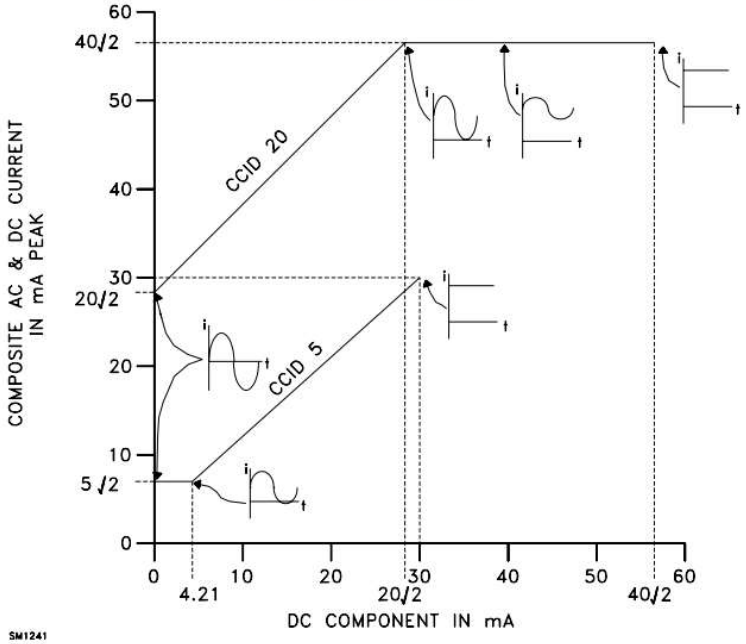
Table 2
Protective system requirements for grounded systems

Voltages and conditions	Required features[a]
0 – 15 Vrms between any two conductors	BI
15 – 300 Vrms between any two conductors with no conductor over 150 Vrms to ground	BI + CCID5 or BI + CCID20 + GM/I or DI + CCID20 or RI + CCID20
150 – 300 Vrms, single-phase or 150 – 260 Vrms, three-phase between any two conductors	BI + CCID5 + CLG or BI + CCID20 + GM/I + CLG or DI + CCID20 + CLG or RI + CCID20 + CLG
Over 150 Vrms on any conductor to ground	BI + CCID20 + GM/I + CLG or DI + CCID20 + CLG or RI + CCID20 + CLG
Over 300 Vrms on any conductor to ground	BI + CCID20 + GM/I + CLG/I or DI + CCID20 + CLG/I or RI + CCID20 + CLG/I
Over 1000 Vrms between any two conductors	Not permitted

Table 6
Interrupting time

Type of source for fault current	Maximum allowable opening time (sec)
All except pure DC	$T = (20/I)^{(1.43)}$ for values of I that equal or exceed the maximum permitted trip threshold
Direct current (No AC content)	$T = (40 \times 1.414/I)^{4}$ for values of $I > 30 \leq 100.6$ mA $T = (20/I)^{(1.43)}$ for values of I greater than 100.6 mA
in which T is expressed in seconds and I is expressed in milliamperes.	

Figure 6
Trip threshold for a CCID



Ground fault circuit interrupter, Class A (Class A GFCI)

A Class A ground fault circuit interrupter (Class A GFCI) is an interrupter that will interrupt the circuit to the load when the ground fault current is 6 mA or more, but not when the ground fault current is 4 mA* or less in a time

a) not greater than that given by the equation

$$T = \left(\frac{20}{I}\right)^{1.43}$$

where

T is in seconds; and

I is the ground fault current in rms milliamperes for fault currents between 4 mA and 260 mA; and

b) not greater than 25 ms for ground fault currents over 260 mA.

** When the ambient air temperature is less than –5 °C or more than 40 °C, the minimum tripping current may be 3.5 mA instead of 4.*

In addition, a Class A GFCI is to be capable of interrupting the circuit to the load, in keeping with the above requirements, if the identified circuit conductor (neutral) becomes inadvertently grounded between the interrupter and the load.

The prime function of a Class A GFCI is to provide protection against hazardous electric shocks from leakage current flowing to ground from defective circuits or equipment. It does not provide protection against shock if a person makes contact with two of the circuit conductors on the load side of the GFCI.

Class A GFCIs are marked "GROUND FAULT CIRCUIT INTERRUPTER CLASS A" or with an abbreviated form such as "GFCI CL A", "GFCI A", or "CL A" where the area available for marking makes the complete text impracticable.

4. The provision of GFCI for the receptacle is redundant to the requirements of 625.22 and 625.17A which permit the personnel protection system to be located in the enclosure of the supply equipment or charging system provided the cord length is limited.

Public Comment No. 951-NFPA 70-2021 [Section No. 625.54]

625.54 Ground-Fault Circuit-Interrupter Protection for Personnel.

All receptacles installed for the connection of electric vehicle charging shall have ground-fault circuit-interrupter protection for personnel in accordance with 210.8.

Additional Proposed Changes

File Name	Description	Approved
12_CN_50.pdf	12 CN50	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 50 appeared in the First Draft Report on First Revision No. 9471.

The Correlating Committee directs the Panel to clarify the requirement. If the requirement is intended to mandate GFCI protection for all receptacles installed for the connection of electric vehicle charging, regardless of whether the receptacle is installed in a location that requires GFCI protection in 210.8, this requirement needs to be revised for clarity. If the requirement is intended to indicate that 210.8 is applicable, without modification, then the need for the Section shall be reviewed for compliance with 4.1.1 of the NEC Style Manual. It is not necessary to repeat requirements in Chapters 1 through 4.

Related Item

• First Revision No. 9471

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 11:35:17 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7731-NFPA 70-2021
Statement: Section revised for clarity and eliminated confusion.

Correlating Committee Note No. 50-NFPA 70-2021 [Section No. 625.54]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:02:16 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to clarify the requirement. If the requirement is intended to mandate GFCI protection for all receptacles installed for the connection of electric vehicle charging, regardless of whether the receptacle is installed in a location that requires GFCI protection in 210.8, this requirement needs to be revised for clarity. If the requirement is intended to indicate that 210.8 is applicable, without modification, then the need for the Section shall be reviewed for compliance with 4.1.1 of the NEC Style Manual. It is not necessary to repeat requirements in Chapters 1 through 4.

First Revision No. 9471-NFPA 70-2021 [Section No. 625.54]

Ballot Results

✔ **This item has passed ballot**

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 953-NFPA 70-2021 [Section No. 626.1]

626.1 Scope.

This article covers the electrical conductors and equipment external to the truck or transport refrigerated unit that connects nonpropulsion electrical elements of trucks or transport refrigerated units to a supply of electricity, and the installation of equipment and devices related to electrical installations within an electrified truck parking space.

Additional Proposed Changes

File Name	Description	Approved
12_CN_51.pdf	12 CN51	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 51 appeared in the First Draft Report on First Revision No. 9492.

The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

Related Item

• First Revision No. 9492

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 11:50:56 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected
Resolution: No action was required.

Correlating Committee Note No. 51-NFPA 70-2021 [Section No. 626.1]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:04:17 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

First Revision No. 9492-NFPA 70-2021 [Section No. 626.1]

Ballot Results

✔ **This item has passed ballot**

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1144-NFPA 70-2021 [Section No. 630.8]

~~**630.8** Ground-Fault Circuit-Interrupter Protection for Personnel.~~

~~All 125-volt, single-phase, 15- and 20-ampere receptacles, installed in work areas where welders are operated, for electrical hand tools or portable lighting equipment shall have ground-fault circuit-interrupter protection for personnel.~~

Statement of Problem and Substantiation for Public Comment

This was a new section proposed to be added this cycle based on a single public input, PI 2430. All conditions and locations of concern contained in that PI are already addressed under Article 210.8(B)(6) and Article 210.8(B)(8), making the addition of section 630.8 redundant and unnecessary. For greatest clarity and usability of the code all GFCI requirements should be contained in Article 210.

Related Item

• FR 9510 • PI 2430

Submitter Information Verification

Submitter Full Name: Karl Reighard
Organization: Delmarva Power And Light
Affiliation: -self-
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 10 11:03:45 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: The addition of GFCI protection requirements are preferred to ensure the safe operation of electric welders. The substantiation for this change referenced welding laboratories and is not called out specifically in 210.8(B).

Public Comment No. 1558-NFPA 70-2021 [Section No. 630.8]

~~**630.8** Ground-Fault Circuit-Interrupter Protection for Personnel.~~

~~All 125-volt, single-phase, 15- and 20-ampere receptacles, installed in work areas where welders are operated, for electrical hand tools or portable lighting equipment shall have ground-fault circuit-interrupter protection for personnel.~~

Statement of Problem and Substantiation for Public Comment

The excessive use of commas in this sentence leaves it incoherent.

Related Item

• FR 9510

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Ryan Jackson
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 16 14:04:31 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: The addition of GFCI protection requirements are preferred to ensure the safe operation of electric welders. The substantiation for this change referenced welding laboratories and is not called out specifically in 210.8(B).

Public Comment No. 1679-NFPA 70-2021 [Section No. 630.8]

630.8 Ground-Fault Circuit-Interrupter Protection for Personnel.

All 125-volt, ~~single-phase,~~ 15- and 20-ampere receptacles supplied by single-phase branch circuits rated 150 volts or less to ground , installed in work areas where welders are operated, for electrical hand tools or portable lighting equipment shall have ground-fault circuit-interrupter protection for personnel.

Statement of Problem and Substantiation for Public Comment

NEMA agrees with the new requirement for GFCI protection in welding areas as a necessary safety improvement. NEMA proposes changes to the wording to align with the wording in Section 210.8.
As recommended in the FR 9510-NFPA 70-2021 ballot comment by the NEMA CMP 12 representative, Todd Lottmann:
“NEMA agrees with the new requirement for GFCI protection in welding areas as a necessary safety improvement. NEMA suggests the following change to the wording to align with section 210.8: 630.35 Ground-Fault Circuit-Interrupter Protection for Personnel in welding shops. All 125-volt, single-phase, 15-and 20-ampere branch circuits supplying outlets or devices installed in work areas where welders are operated, for electrical hand tools or portable lighting equipment, shall have ground-fault circuit-interrupter protection for personnel.”

Related Item

• FR 9510

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 17 11:04:08 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7585-NFPA 70-2021
Statement: The requirement in 630.8 was revised to align with the requirements in 210.8.

Public Comment No. 241-NFPA 70-2021 [Section No. 630.8]

~~**630.8** Ground-Fault Circuit-Interrupter Protection for Personnel.~~

~~All 125-volt, single-phase, 15- and 20-ampere receptacles, installed in work areas where welders are operated, for electrical hand tools or portable lighting equipment shall have ground-fault circuit-interrupter protection for personnel.~~

Statement of Problem and Substantiation for Public Comment

This new requirement is outside the scope of this article. The scope only includes the welding apparatus and does not extend to receptacles installed in the area where welding apparatus is being used.

Code users are unlikely to find this requirement in this location when installing new receptacle circuit in areas where welding equipment is being used. This would be more appropriately addressed in 210.8 with the other GFCI protection requirements.

Related Item

• FR-9510

Submitter Information Verification

Submitter Full Name: Don Ganiere
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jul 15 10:50:07 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: The addition of GFCI protection requirements are preferred to ensure the safe operation of electric welders. The substantiation for this change referenced welding laboratories and is not called out specifically in 210.8(B).

Public Comment No. 954-NFPA 70-2021 [Section No. 630.8]

630.8 Ground-Fault Circuit-Interrupter Protection for Personnel.

All 125-volt, single-phase, 15- and 20-ampere receptacles, installed in work areas where welders are operated, for electrical hand tools or portable lighting equipment shall have ground-fault circuit-interrupter protection for personnel.

Additional Proposed Changes

File Name	Description	Approved
12_CN_52.pdf	12 CN52	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 52 appeared in the First Draft Report on First Revision No. 9510.

The Correlating Committee refers FR 951 o to CMP 2 for information.

Related Item

• First Revision No. 9510

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 11:53:16 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7585-NFPA 70-2021
Statement: The requirement in 630.8 was revised to align with the requirements in 210.8.

Correlating Committee Note No. 52-NFPA 70-2021 [New Section after 630.6]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:05:16 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee refers FR 9510 to CMP 2 for information.

First Revision No. 9510-NFPA 70-2021 [New Section after 630.6]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 2037-NFPA 70-2021 [Section No. 630.13]

630.13 Disconnecting Means.

A disconnecting means shall be provided in the supply circuit for each arc welder that is not equipped with a disconnect mounted as an integral part of the welder. ~~The~~ For other than cord-and-plug connections, the disconnecting means' identity shall be marked in accordance with 110.22(A).

The disconnecting means shall be a switch, circuit breaker, or listed cord-and-plug connector, and its rating shall be not less than that necessary to accommodate overcurrent protection as specified in 630.12.

Statement of Problem and Substantiation for Public Comment

The word "means" in this context is possessive, hence the apostrophe. The principal focus of this comment is the marking rule. The disconnecting function of a cord-and-plug connection is self evident and marking the receptacle location is excessive.

Related Item

• FR-9506

Submitter Information Verification

Submitter Full Name: Frederic Hartwell
Organization: Hartwell Electrical Services, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 08:54:54 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7589-NFPA 70-2021
Statement: The reference to 110.22 was removed as it is redundant according to NEC style manual 4.1.1. The committee would like to clarify marking of all disconnecting means options is required and necessary for the safe use of electric welders including cord and plug connected equipment.

Public Comment No. 956-NFPA 70-2021 [Section No. 630.33]

630.33 Disconnecting Means.

A switch or circuit breaker shall be provided by which each resistance welder and its control equipment can be disconnected from the supply circuit. The ampere rating of this disconnecting means shall not be less than the supply conductor ampacity determined in accordance with 630.31. The supply circuit switch shall be permitted as the welder disconnecting means where the circuit supplies only one welder. The disconnecting means identity shall be marked in accordance with 110.22(A).

Additional Proposed Changes

File Name	Description	Approved
12_CN_53.pdf	12 CN53	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 53 appeared in the First Draft Report on First Revision No. 9508.

The Correlating Committee directs that FR 9508 be reviewed for compliance with 4.1.1 of the NEC Style Manual. It is not necessary to repeat requirements in Chapters 1 through 4.

Related Item

• First Revision No. 9508

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 11:55:16 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7590-NFPA 70-2021
Statement: The reference to 110.22 was removed as it is redundant according to NEC style manual 4.1.1.

Correlating Committee Note No. 53-NFPA 70-2021 [Section No. 630.33]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:06:26 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that FR 9508 be reviewed for compliance with 4.1.1 of the NEC Style Manual. It is not necessary to repeat requirements in Chapters 1 through 4.

First Revision No. 9508-NFPA 70-2021 [Section No. 630.33]

Ballot Results

✔ **This item has passed ballot**

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 100-NFPA 70-2021 [Section No. 640.3]

640.3 Locations and Other Articles.

Circuits and equipment shall comply with 640.3(A) through (N), as applicable.

(A) Spread of Fire or Products of Combustion.

Section 300.21 shall apply.

(B) Ducts, Plenums, and Other Air-Handling Spaces.

Section 300.22(B) shall apply to circuits and equipment installed in ducts specifically fabricated for environmental air. Section 300.22(C) shall apply to circuits and equipment installed in other spaces used for environmental air (plenums).

Exception No. 1: Class 2 and Class 3 cables installed in accordance with ~~725~~ 722 .135(B) ~~and Table 725.154~~ shall be permitted to be installed in ducts specifically fabricated for environmental air.

Exception No. 2: Class 2 and Class 3 cables installed in accordance with ~~725~~ 722 .135(~~C~~ B) ~~and Table 725.154~~ shall be permitted to be installed in other spaces used for environmental air (plenums).

Informational Note: See NFPA 90A-2021, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 4.3.11.2.6.5, which permits loudspeakers, loudspeaker assemblies, and their accessories listed in accordance with UL 2043-2013, *Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces*, to be installed in other spaces used for environmental air (ceiling cavity plenums).

(C) Communications Cables.

Types CMP, CMR, CMG, and CM communications cables shall be permitted to substitute for Class 2 and Class 3 cables in accordance with ~~725~~ 722 .~~154~~ 135 (~~A~~ E).

(D) Cable Trays.

Cable trays and cable tray systems shall be installed in accordance with Part II of Article 392. The installation of Class 2, Class 3, and Type PLTC cables in cable trays shall be in accordance with ~~725~~ 722 .135(~~H~~ B), ~~725 .136(G), and Table 725.154.~~

~~Informational Note: See 725.135~~

~~(~~

~~H), 725.136(G), and Table 725.154 for the use of Class 2, Class 3, and Type PLTC cable in cable trays.~~

~~(~~

E) Hazardous (Classified) Locations.

Equipment used in hazardous (classified) locations shall comply with the applicable requirements of Chapter 5 .

(F) Assembly Occupancies.

Equipment used in assembly occupancies shall comply with Article 518 .

(G) Theaters, Audience Areas of Motion Picture and Television Studios, and Similar Locations.

Equipment used in theaters, audience areas of motion picture and television studios, and similar locations shall comply with Article 520 .

(H) Carnivals, Circuses, Fairs, and Similar Events.

Equipment used in carnivals, circuses, fairs, and similar events shall comply with Article 525 .

(I) Motion Picture and Television Studios.

Equipment used in motion picture and television studios shall comply with Article 530 .

(J) Swimming Pools, Fountains, and Similar Locations.

Audio equipment used in or near swimming pools, fountains, and similar locations shall comply with Article 680 .

(K) Combination Systems.

Where the authority having jurisdiction permits audio systems for paging or music, or both, to be combined with fire alarm systems, the wiring shall comply with Article 760 .

Informational Note: See *NFPA 72* -2019, *National Fire Alarm and Signaling Code* , and NFPA *101* -2021, *Life Safety Code* , for installation requirements for such combination systems.

(L) Antennas.

Equipment used in audio systems that contain an audio or video tuner and an antenna input shall comply with Article 810 . Wiring other than antenna wiring that connects such equipment to other audio equipment shall comply with this article.

(M) Generators.

Generators shall be installed in accordance with 445.10 through 445.12 , 445.14 through 445.16 , and 445.18 . Grounding of portable and vehicle-mounted generators shall be in accordance with 250.34 .

(N) Organ Pipes.

Additions of pipe organ pipes to an electronic organ shall be in accordance with 650.4 through 650.9 .

Statement of Problem and Substantiation for Public Comment

Global FR-9582 created the First Draft text for new Article 722, Cables for Power-Limited Circuits. The

cable installation requirements in Article 725 have been moved to 722.135(B) and the cable substitution requirements in 725.154(A) have been moved to 722.135(E).

The Informational Note in 640.3(D) has been deleted because it is redundant.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 98-NFPA 70-2021 [Section No. 620.21]	Revises references from Article 725 to new Article 722
Public Comment No. 187-NFPA 70-2021 [Section No. 645.3(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 188-NFPA 70-2021 [Section No. 646.3(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 189-NFPA 70-2021 [Section No. 645.10(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 98-NFPA 70-2021 [Section No. 620.21]	
Public Comment No. 187-NFPA 70-2021 [Section No. 645.3(B)]	
Public Comment No. 188-NFPA 70-2021 [Section No. 646.3(B)]	
Public Comment No. 189-NFPA 70-2021 [Section No. 645.10(B)]	

Related Item

• FR-9582 • FR-9211

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: CableSafe, Inc./OFS
Affiliation: PLASTICS (Plastics Industry Association)
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jul 02 15:40:54 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7663-NFPA 70-2021
Statement: The changes made refer to Article 725 which has been changed to Article 722.

Public Comment No. 957-NFPA 70-2021 [Sections 640.3(C), 640.3(D), 640.3(E), 640.3(F), 640.3(G), ...]

Sections
640.3(C), 640.3(D), 640.3(E), 640.3(F), 640.3(G), 640.3(H), 640.3(I), 640.3(J), 640.3(K), 640.3(L),

(C) Communications Cables.

Types CMP, CMR, CMG, and CM communications cables shall be permitted to substitute for Class 2 and Class 3 cables in accordance with 725.154(A).

(D) Cable Trays.

Cable trays and cable tray systems shall be installed in accordance with Part II of Article 392. The installation of Class 2, Class 3, and Type PLTC cables in cable trays shall be in accordance with 725.135(H), 725.136(G), and Table 725.154.

Informational Note: See 725.135(H), 725.136(G), and Table 725.154 for the use of Class 2, Class 3, and Type PLTC cable in cable trays.

(E) Hazardous (Classified) Locations.

Equipment used in hazardous (classified) locations shall comply with the applicable requirements of Chapter 5.

(F) Assembly Occupancies.

Equipment used in assembly occupancies shall comply with Article 518.

(G) Theaters, Audience Areas of Motion Picture and Television Studios, and Similar Locations.

Equipment used in theaters, audience areas of motion picture and television studios, and similar locations shall comply with Article 520.

(H) Carnivals, Circuses, Fairs, and Similar Events.

Equipment used in carnivals, circuses, fairs, and similar events shall comply with Article 525.

(I) Motion Picture and Television Studios.

Equipment used in motion picture and television studios shall comply with Article 530.

(J) Swimming Pools, Fountains, and Similar Locations.

Audio equipment used in or near swimming pools, fountains, and similar locations shall comply with Article 680.

(K) Combination Systems.

Where the authority having jurisdiction permits audio systems for paging or music, or both, to be combined with fire alarm systems, the wiring shall comply with Article 760.

Informational Note: See *NFPA 72*-2019, *National Fire Alarm and Signaling Code*, and NFPA *101*-2021, *Life Safety Code*, for installation requirements for such combination systems.

(L) Antennas.

Equipment used in audio systems that contain an audio or video tuner and an antenna input shall comply with Article 810. Wiring other than antenna wiring that connects such equipment to other audio equipment shall comply with this article.

(M) Generators.

Generators shall be installed in accordance with 445.10 through 445.12, 445.14 through 445.16, and 445.18. Grounding of portable and vehicle-mounted generators shall be in accordance with 250.34.

(N) Organ Pipes.

Additions of pipe organ pipes to an electronic organ shall be in accordance with 650.4 through 650.9.

Additional Proposed Changes

File Name	Description	Approved
12_CN_54.pdf	12 CN54	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 54 appeared in the First Draft Report on First Revision No. 9211.

The Correlating Committee directs that FR 9211 (list items (C) and (D), including the informational note) be reviewed for compliance with 4.1.1 of the NEC Style Manual. It is not necessary to repeat requirements in Chapters 1 through 4.

Related Item

• First Revision No. 9211

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 11:58:07 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: A review of 640.3(C) and 640.3(D) shows that these subsections do not repeat any of the requirements in Chapters 1-4.

Correlating Committee Note No. 54-NFPA 70-2021 [Sections 640.3(C), 640.3(D), 640.3(E), 640.3(F), 640.3(G), ...]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:08:02 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that FR 9211 (list items (C) and (D), including the informational note) be reviewed for compliance with 4.1.1 of the NEC Style Manual. It is not necessary to repeat requirements in Chapters 1 through 4.

First Revision No. 9211-NFPA 70-2021 [Sections 640.3(C), 640.3(D), 640.3(E), 640.3(F), 640.3(G), ...]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 958-NFPA 70-2021 [Section No. 645.1]

645.1 Scope.

This article covers equipment, power-supply wiring, equipment interconnecting wiring, and grounding of information technology equipment and systems in an information technology equipment room.

Informational Note: SeeNFPA 75-2020, *Standard for the Fire Protection of Information Technology Equipment*, which covers the requirements for the protection of information technology equipment and information technology equipment areas.

Additional Proposed Changes

File Name	Description	Approved
12_CN_55.pdf	12 CN55	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 55 appeared in the First Draft Report on First Revision No. 9530.

The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

Related Item

• First Revision No. 9530

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 12:01:39 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7667-NFPA 70-2021
Statement: The date in the information note was deleted to align with 90.5.

Correlating Committee Note No. 55-NFPA 70-2021 [Section No. 645.1]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:08:54 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

First Revision No. 9530-NFPA 70-2021 [Section No. 645.1]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1640-NFPA 70-2021 [Section No. 645.3]

645.3 Other Articles.

Circuits and equipment shall comply with 645.3(A) through (I), as applicable.

(A) Spread of Fire or Products of Combustion.

Sections 300.21 , 770.26 , and 800.26 shall apply to penetrations of the fire-resistant room boundary.

(B) Wiring and Cabling in Other Spaces Used for Environmental Air (Plenums).

The following sections and tables shall apply to wiring and cabling in other spaces used for environmental air (plenums) above an information technology equipment room:

(1) Wiring methods: 300.22(C)(1)

(2) Class 2, Class 3, and PLTC cables: 725.135(C) and Table 725.154

(3) Fire alarm systems: 760.53(B)(2) , 760.135(C) , and Table 760.154

(4) Optical fiber cables: 770.113(C) and Table 770.154(a)

(5) Communications circuits: 800.113 (C) and Table 800.154(a)

(6) CATV and radio distribution systems: 800.113 (C) and Table 800.154(a)

(C) Bonding and Grounding.

The non-current-carrying conductive members of optical fiber cables in an information technology equipment room shall be bonded and grounded in accordance with 770.114 .

(D) Electrical Classification of Data Circuits.

Section 725.60(A)(4) shall apply to the electrical classification of listed information technology equipment signaling circuits.

(E) Fire Alarm Cables and Equipment.

Parts I, II, and III of Article 760 shall apply to fire alarm systems cables and equipment installed in an information technology equipment room. Only fire alarm cables listed in accordance with Part IV of Article 760 and listed fire alarm equipment shall be permitted to be installed in an information technology equipment room.

(F) Cable Routing Assemblies, Communications Wires, Cables, Raceways, and Equipment.

Sections 800.110 , 800.113 , and 800.154 shall apply to cable routing assemblies and communications raceways. Parts I, II, III, IV, and V of Articles 800 and 805 shall apply to communications wires, cables, and equipment installed in an information technology equipment room. Only communications wires and cables listed in accordance with 805.179 , cable routing assemblies, and communications raceways listed in accordance with 800.182 , and communications equipment listed in accordance with 800.179 and 805.170 shall be permitted to be installed in an information technology equipment room. Article 645 shall apply to the powering of communications equipment in an information technology equipment room.

Informational Note: See Article 100, Definitions, for a definition of *communications equipment* .

~~**(G)** Community Antenna Television and Radio Distribution Systems Cables and Equipment.~~

~~Parts I, II, III, IV, and V of Articles 800 and 820 shall apply to community antenna television and radio distribution systems cables and equipment installed in an information technology equipment room. Only community antenna television and radio distribution cables listed in accordance with 820.179 and listed CATV equipment shall be permitted to be installed in an information technology equipment room. Article 645 shall apply to the powering of community antenna television and radio distribution systems equipment installed in an information technology equipment room.~~

~~**(H)** Optical Fiber Cables.~~

~~Only optical fiber cables listed in accordance with 770.179 shall be permitted to be installed in an information technology equipment room.~~

~~**(I)** Cables Not in Information Technology Equipment Room.~~

~~Cables extending beyond the information technology equipment room shall be subject to the applicable requirements of this *Code* .~~

Statement of Problem and Substantiation for Public Comment

The committee is correct, Chapter 8 is not subject to the requirements of Chapters 1-7. So why are you talking them in Chapter 6, where they DO NOT apply? If you want Chapter 8 requirements to apply here then you need Article 645 rules in Chapter 8, not the other way around. See 90.3. Nothing in this entire section is needed and is, in fact, a violation of 4.1.1 of the style manual.

Related Item

• PI 546

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Ryan Jackson
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 16 18:58:26 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: Section 90.3 states: "This Code is divided into the introduction and nine chapters, as shown in Figure 90.3. Chapters 1, 2, 3, and 4 apply generally. Chapters 5, 6, and 7 apply to special occupancies, special equipment, or other special conditions and may supplement or modify the requirements in Chapters 1 through 7." In accordance with 90.3, section 645.3 permits Chapter 7 requirements, in Articles 725, 760 & 770 to apply to Article 645 and also refers to parallel requirements in Chapter 8 to enhance usability

Public Comment No. 187-NFPA 70-2021 [Section No. 645.3(B)]

(B) Wiring and Cabling in Other Spaces Used for Environmental Air (Plenums).

The following sections and tables shall apply to wiring and cabling in other spaces used for environmental air (plenums) above an information technology equipment room:

(1) Wiring methods: 300.22(C)(1)

(2) Class 2, Class 3, and PLTC cables: ~~725~~ 722 .135(~~C~~ B) ~~and Table 725.154~~

(3) Fire alarm systems: 760.53(B)(2), 760.135(C), and Table 760.154

(4) Optical fiber cables: 770.113(C) and Table 770.154(a)

(5) Communications circuits: 800.113(C) and Table 800.154(a)

(6) CATV and radio distribution systems: 800.113(C) and Table 800.154(a)

Statement of Problem and Substantiation for Public Comment

Global FR-9582 created the First Draft text for new Article 722, Cables for Power-Limited Circuits. The cable installation requirements in Article 725 have been moved to 722.135(B) and the cable substitution requirements in 725.154(A) have been moved to 722.135(E).

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 98-NFPA 70-2021 [Section No. 620.21]	Revises references from Article 725 to new Article 722
Public Comment No. 100-NFPA 70-2021 [Section No. 640.3]	Revises references from Article 725 to new Article 722
Public Comment No. 188-NFPA 70-2021 [Section No. 646.3(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 189-NFPA 70-2021 [Section No. 645.10(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 98-NFPA 70-2021 [Section No. 620.21]	
Public Comment No. 100-NFPA 70-2021 [Section No. 640.3]	
Public Comment No. 188-NFPA 70-2021 [Section No. 646.3(B)]	
Public Comment No. 189-NFPA 70-2021 [Section No. 645.10(B)]	

Related Item

• FR-9582 • FR-9218

Submitter Information Verification

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

Street Address:
City:
State:
Zip:
Submittal Date: Sat Jul 10 09:26:25 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7669-NFPA 70-2021

Statement: Global FR-9582 created the First Draft text for new Article 722, Cables for Power-Limited Circuits. The cable installation requirements in Article 725 have been moved to 722.135(B) and the cable substitution requirements in 725.154(A) have been moved to 722.135(E). The second draft text correlates with these changes.

Public Comment No. 230-NFPA 70-2021 [Section No. 645.3(F)]

(F) Cable Routing Assemblies, Communications Wires, Cables, Raceways, and Equipment.

Sections 800.110, 800.113, and 800.154 shall apply to cable routing assemblies and communications raceways. Parts I, II, III, IV, and V of Articles 800 and 805 shall apply to communications wires, cables, and equipment installed in an information technology equipment room. Only communications wires and cables listed in accordance with ~~805~~ 800 .179, cable routing assemblies, and communications raceways listed in accordance with 800.182, and communications equipment listed in accordance with 800.~~179 and 805.170~~ - 171, shall be permitted to be installed in an information technology equipment room. Article 645 shall apply to the powering of communications equipment in an information technology equipment room.

Informational Note: See Article 100, Definitions, for a definition of *communications equipment*.

Statement of Problem and Substantiation for Public Comment

This PC coordinates with PC-205, 208 &209.

Listing requirements for nearly all communications wires and cables are in 800.179 in the First Draft report. PC-208 and PC-209 move the listing requirements for the remaining cables into 800.179.

PC-205 moves the listing requirements for communications equipment to 800.171

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 205-NFPA 70-2021 [Sections Part V., 800.170]	Moves the listing requirements for communications equipment to 800.171
Public Comment No. 208-NFPA 70-2021 [Section No. 800.179]	Clarifies and expands the listing requirements in 800.179
Public Comment No. 209-NFPA 70-2021 [Section No. 805.179]	Deletes 805.179
Public Comment No. 231-NFPA 70-2021 [Section No. 646.3(F)]	Parallel PC for Article 646
Public Comment No. 231-NFPA 70-2021 [Section No. 646.3(F)]	

Related Item

• FR-9218

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: CableSafe, Inc./OFS
Affiliation: PLASTICS (Plastics Industry Association)
Street Address:
City:
State:
Zip:

Submittal Date: Thu Jul 15 05:47:44 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Accepted
Resolution: SR-7673-NFPA 70-2021
Statement: Listing requirements for nearly all communications wires and cables are in 800.179 in the First Draft report. The second draft text correlates with these changes.

Public Comment No. 847-NFPA 70-2021 [Section No. 645.3(F)]

(F) Cable Routing Assemblies, Communications Wires, Cables, Raceways, and Equipment.

Sections 800.110, 800.113, and 800.154 shall apply to cable routing assemblies and communications raceways. Parts I, II, III, IV, and V of Articles 800 and 805 shall apply to communications wires, cables, and equipment installed in an information technology equipment room. Only communications wires and cables listed in accordance with 805.179, cable routing assemblies, and communications raceways listed in accordance with 800.182, and communications equipment listed in accordance with 800.179 and 805.170 shall be permitted to be installed in an information technology equipment room. Article 645 shall apply to the powering of communications equipment in an information technology equipment room.

Informational Note: See Article 100, Definitions, for a definition of *communications equipment*.

Additional Proposed Changes

File Name	Description	Approved
CN_69.pdf	70_CN69	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 69 appeared in the First Draft Report.

The Correlating Committee directs the Panel to review references to entire Articles, or all parts of an Article, in
compliance with 4.1.4 of the NEC Style Manual.

Related Item

• Correlating Note No. 69

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 04 14:29:24 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: CC Note 70 directs review of 645.3(F) for compliance with 4.1.4 of the NEC Style Manual which states: "References to a Part Within an Article. Except for Article 100, references shall not be made to an entire article. References to parts within articles

shall be permitted." A review of 645.3(F) shows that it complies with 4.1.4 by not referring to entire Articles, and referring to parts of Articles as permitted by 4.1.4.

Correlating Committee Note No. 69-NFPA 70-2021 [Section No. 645.3(F)]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Mon May 03 17:53:15 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to review references to entire Articles, or all parts of an Article, in compliance with 4.1.4 of the NEC Style Manual.

Ballot Results

✔ **This item has passed ballot**

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 232-NFPA 70-2021 [Section No. 645.3(G)]

(G) Community Antenna Television and Radio Distribution Systems Cables and Equipment.

Parts I, II, III, IV, and V of Articles 800 and 820 shall apply to community antenna television and radio distribution systems cables and equipment installed in an information technology equipment room. Only community antenna television and radio distribution cables listed in accordance with ~~820~~ 800 .179 and listed CATV equipment shall be permitted to be installed in an information technology equipment room. Article 645 shall apply to the powering of community antenna television and radio distribution systems equipment installed in an information technology equipment room.

Statement of Problem and Substantiation for Public Comment

Listing requirements for CATV type coaxial cables are in 800.179.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 233-NFPA 70-2021 [Section No. 646.3(G)]	Parallel PC for Article 646
Public Comment No. 233-NFPA 70-2021 [Section No. 646.3(G)]	

Related Item

- FR-9218

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: CableSafe, Inc./OFS
Affiliation: PLASTICS (Plastics Industry Association)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jul 15 08:42:09 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Accepted
Resolution: SR-7675-NFPA 70-2021
Statement: Listing requirements for CATV type coaxial cables are in 800.179.

Public Comment No. 849-NFPA 70-2021 [Section No. 645.3(G)]

(G) Community Antenna Television and Radio Distribution Systems Cables and Equipment.

Parts I, II, III, IV, and V of Articles 800 and 820 shall apply to community antenna television and radio distribution systems cables and equipment installed in an information technology equipment room. Only community antenna television and radio distribution cables listed in accordance with 820.179 and listed CATV equipment shall be permitted to be installed in an information technology equipment room. Article 645 shall apply to the powering of community antenna television and radio distribution systems equipment installed in an information technology equipment room.

Additional Proposed Changes

File Name	Description	Approved
CN_70.pdf	70_CN70	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 70 appeared in the First Draft Report.

The Correlating Committee directs the Panel to review references to entire Articles, or all parts of an Article, in
compliance with 4.1.4 of the NEC Style Manual.

Related Item

• Correlating Note No. 70

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 04 14:32:29 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: CC Note 70 directs review of 645.3(G) for compliance with 4.1.4 of the NEC Style Manual which states: "References to a Part Within an Article. Except for Article 100, references shall not be made to an entire article. References to parts within articles shall be permitted." A review of 645.3(G) shows that it complies with 4.1.4 by not referring to entire Articles, and referring to parts of Articles as permitted by 4.1.4.

Correlating Committee Note No. 70-NFPA 70-2021 [Section No. 645.3(G)]

Submitter Information Verification

Committee: NEC-AAC
Submittal Date: Mon May 03 17:55:09 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to review references to entire Articles, or all parts of an Article, in compliance with 4.1.4 of the NEC Style Manual.

Ballot Results

✔ **This item has passed ballot**

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 976-NFPA 70-2021 [Section No. 645.5(B)]

(B) Power-Supply Cords.

Information technology equipment shall be permitted to be connected to branch circuits by power-supply cords that comply with the following:

(1) Power-supply cords shall not exceed 4.5 m (15 ft).

(2) Power-supply cords shall be listed and a type permitted for use on listed information technology equipment or shall be constructed of listed flexible cord and listed attachment plugs and cord connectors of a type permitted for information technology equipment.

(3) Plugs and receptacles used to connect the power-supply cords shall be listed and identified for the system voltage applied.

Informational Note No. 1: See UL 60950-1-2007, *Safety of Information Technology Equipment — Safety — Part 1: General Requirements*; or UL 62368-1-2012, *Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements*, for one method of determining if cords are of a permitted type.

Informational Note No. 2: See ANSI/NEMA WD-6-2016, *Wiring Devices — Dimensional Specifications*, which identifies plug and receptacle configurations L25-30P and L25-30R for 240 Vac and L26-30P and L26-30R for 240/415 Vac.

Additional Proposed Changes

File Name	Description	Approved
12_CN_56.pdf	12 CN56	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 56 appeared in the First Draft Report on First Revision No. 9554.

The Correlating Committee directs the Panel to review list item (3) regarding "system voltage applied", and whether other ratings, such as current, are applicable. Repeating requirements in 110.3(8) is unnecessary. Refer to 4.1.1 of the NEC Style Manual.

Related Item

• First Revision No. 9554

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:42:04 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-7677-NFPA 70-2021
Statement:	The second draft text added “current” in order to improve usability.The dates to references have been deleted so that the most current edition would be applied.

Correlating Committee Note No. 56-NFPA 70-2021 [Section No. 645.5(B)]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:10:51 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to review list item (3) regarding "system voltage applied", and whether other ratings, such as current, are applicable. Repeating requirements in 110.3(B) is unnecessary. Refer to 4.1.1 of the NEC Style Manual.

First Revision No. 9554-NFPA 70-2021 [Section No. 645.5(B)]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 234-NFPA 70-2021 [Section No. 645.5(E)(2)]

(2) Installation Requirements for Power-Supply Cords, Data Cables, Interconnecting Cables, and Grounding Conductors Under a Raised Floor.

The following cords, cables, and conductors shall be permitted to be installed under a raised floor:

(1) Power-supply cords of listed information technology equipment in accordance with 645.5(B).

(2) Interconnecting cables enclosed in a raceway.

(3) Equipment grounding conductors.

(4) Where the air space under a raised floor is protected by an automatic fire suppression system, in addition to wiring installed in compliance with ~~725~~ 722 .135(~~C~~ B), Types CL2R, CL3R, CL2, and CL3 and substitute cables, including CMP, CMR, CM, and CMG, installed in accordance with ~~725~~ 722 .~~154~~ 135 (~~A~~ E) shall be permitted under raised floors.

Informational Note No. 1: Figure 725.154(A) illustrates the cable substitution hierarchy for Class 2 and Class 3 cables.

(5) Where the air space under a raised floor is not protected by an automatic fire suppression system, in addition to wiring installed in compliance with ~~725~~ 722 .135(~~C~~ B), substitute cable Type CMP installed in accordance with ~~725~~ 722 .~~154~~ 135 (~~A~~ E) shall be permitted under raised floors.

(6) Listed Type DP cable having adequate fire-resistant characteristics suitable for use under raised floors of an information technology equipment room.

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 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 “UL Flame Exposure, Vertical Flame Tray Test” in 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 method are not applicable.

Statement of Problem and Substantiation for Public Comment

Global FR-9582 created the First Draft text for new Article 722, Cables for Power-Limited Circuits. The cable installation requirements in Article 725 have been moved to 722.135(B) and the cable substitution requirements in 725.154(A) have been moved to 722.135(E).

Related Item

• FR-9582

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: CableSafe, Inc./OFS
Affiliation: PLASTICS (Plastics Industry Association)
Street Address:
City:
State:

Zip:

Submittal Date: Thu Jul 15 08:58:35 EDT 2021

Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7681-NFPA 70-2021

Statement: Global FR-9582 created the First Draft text for new Article 722, Cables for Power-Limited Circuits. The cable installation requirements in Article 725 have been moved to 722.135(B) and the cable substitution requirements in 725.154(A) have been moved to 722.135(E). The second draft text correlates with these changes. The dates to references have been deleted so that the most current edition would be applied.

Public Comment No. 977-NFPA 70-2021 [Section No. 645.10]

645.10 Disconnecting Means.

An approved means shall be provided to disconnect power to all electronic equipment in the information technology equipment room or in designated zones within the room. There shall also be a similar approved means to disconnect the power to all dedicated HVAC systems serving the room or designated zones and to cause all required fire/smoke dampers to close. The disconnecting means shall comply with either 645.10(A) or (B).

Exception: These requirements shall not apply to installations complying with Article 685.

(A) Remote Disconnect Controls.

(1) Emergency Access.

Remote disconnect controls shall be located at approved locations readily accessible in case of fire to authorized personnel and emergency responders.

(2) Disconnect Identification.

The remote disconnect means for the control of electronic equipment power and HVAC systems shall be grouped and identified. A single means to control both systems shall be permitted.

(3) Fire/Smoke Zone Isolation.

Where multiple zones are created, each zone shall have an approved means to confine fire or products of combustion to within the zone.

(4) System Operation Continuity.

Additional means to prevent unintentional operation of remote disconnect controls shall be permitted.

Informational Note: See NFPA 75-2020, *Standard for the Fire Protection of Information Technology Equipment*, for further information.

(B) Critical Operations Data Systems.

Remote disconnecting controls shall not be required for critical operations data systems when all of the following conditions are met:

(1) An approved procedure has been established and maintained for removing power and air movement within the room or zone.

(2) Qualified personnel are continuously available to advise emergency responders and to instruct them of disconnecting methods.

(3) A smoke-sensing fire detection system is in place.

Informational Note: See *NFPA 72*-2019, *National Fire Alarm and Signaling Code*, for further information.

(4) An approved fire suppression system suitable for the application is in place.

(5) Cables installed under a raised floor, other than branch-circuit wiring, and power cords are installed in compliance with 645.5(E)(2) or (E)(3), or in compliance with Table 645.10(B).

Table 645.10(B) Cables Installed Under Raised Floors

Cable Type	Applicable Sections
Branch circuits under raised floors	645.5(E)(1)
Supply cords of listed information technology equipment	645.5(E)(2)(1), 300.22(C)
Class 2 and Class 3 remote control and PLTC cables in other spaces used for environmental air (plenums)	725.135(C) and Table 725.154
Optical fiber cable in other spaces used for environmental air (plenums)	770.113(C) and Table 770.154(a)
Communications wires and cables, cable routing assemblies, and communications raceways in other spaces used for environmental air (plenums)	800.113(C) and Tables 800.154(a), (b), and (c)
Coaxial CATV and radio distribution cables in other spaces used for environmental air (plenums)	800.113(C) and Table 800.154(a)

Additional Proposed Changes

File Name	Description	Approved
12_CN_57.pdf	12 CN57	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 57 appeared in the First Draft Report on First Revision No. 9236.

The Correlating Committee directs that the exception be revised so as to not refer to an entire article in accordance with 4.1.4 of the NEC Style Manual.

Related Item

• First Revision No. 9236

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:

Zip:

Submittal Date: Thu Aug 05 13:44:32 EDT 2021

Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: CC Note 57 directs review of 645.10 for compliance with 4.1.4 of the NEC Style Manual which states: "References to a Part Within an Article. Except for Article 100, references shall not be made to an entire article. References to parts within articles shall be permitted." A review of 645.10 shows that it complies with 4.1.4 by not referring to entire Articles, only sections and tables.

Correlating Committee Note No. 57-NFPA 70-2021 [Section No. 645.10 [Excluding any Sub-Sections]]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:12:06 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that the exception be revised so as to not refer to an entire article in accordance with 4.1.4 of the NEC Style Manual.

First Revision No. 9236-NFPA 70-2021 [Section No. 645.10 [Excluding any Sub-Sections]]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 189-NFPA 70-2021 [Section No. 645.10(B)]

(B) Critical Operations Data Systems.

Remote disconnecting controls shall not be required for critical operations data systems when all of the following conditions are met:

(1) An approved procedure has been established and maintained for removing power and air movement within the room or zone.

(2) Qualified personnel are continuously available to advise emergency responders and to instruct them of disconnecting methods.

(3) A smoke-sensing fire detection system is in place.

Informational Note: See *NFPA 72-~~2019~~* , *National Fire Alarm and Signaling Code*, for further information.

(4) An approved fire suppression system suitable for the application is in place.

(5) Cables installed under a raised floor, other than branch-circuit wiring, and power cords are installed in compliance with 645.5(E)(2) or (E)(3), or in compliance with Table 645.10(B).

Table 645.10(B) Cables Installed Under Raised Floors

Cable Type	Applicable Sections
Branch circuits under raised floors	645.5(E)(1)
Supply cords of listed information technology equipment	645.5(E)(2)(1), 300.22(C)
Class 2 and Class 3 remote control and PLTC cables in other spaces used for environmental air (plenums)	~~725~~ 722 .135(~~C~~ B) ~~and Table 725.154~~
Optical fiber cable in other spaces used for environmental air (plenums)	770.113(C) and Table 770.154(a)
Communications wires and cables, cable routing assemblies, and communications raceways in other spaces used for environmental air (plenums)	800.113(C) and Tables 800.154(a), (b), and (c)
Coaxial CATV and radio distribution cables in other spaces used for environmental air (plenums)	800.113(C) and Table 800.154(a)

Statement of Problem and Substantiation for Public Comment

Global FR-9582 created the First Draft text for new Article 722, Cables for Power-Limited Circuits. The cable installation requirements in Article 725 have been moved to 722.135(B) and the cable substitution requirements in 725.154(A) have been moved to 722.135(E).

Also the reference to NFPA 72 was simplified by dropping the issue year since it is now understood that the latest issue applies; see 90.5(C), FR-8379.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 98-NFPA 70-2021 [Section No. 620.21]	Revises references from Article 725 to new Article 722
Public Comment No. 100-NFPA 70-2021 [Section No. 640.3]	Revises references from Article 725 to new Article 722

Public Comment No. 187-NFPA 70-2021 [Section No. 645.3(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 188-NFPA 70-2021 [Section No. 646.3(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 98-NFPA 70-2021 [Section No. 620.21]	
Public Comment No. 100-NFPA 70-2021 [Section No. 640.3]	
Public Comment No. 187-NFPA 70-2021 [Section No. 645.3(B)]	
Public Comment No. 188-NFPA 70-2021 [Section No. 646.3(B)]	

Related Item

• FR-8379 • FR-9582 • FR-9275

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
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City:
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Submittal Date: Sat Jul 10 09:38:26 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7683-NFPA 70-2021

Statement: Global FR-9582 created the First Draft text for new Article 722, Cables for Power-Limited Circuits. The cable installation requirements in Article 725 have been moved to 722.135(B) and the cable substitution requirements in 725.154(A) have been moved to 722.135(E). The second draft text correlates with these changes. Also the references to NFPA 72 & 75 were simplified by dropping the issue year since it is now understood that the latest issue applies; see 90.5(C), FR-8379.

Public Comment No. 964-NFPA 70-2021 [Section No. 645.11]

645.11 Uninterruptible Power Supply (UPS).

UPS systems installed within the information technology equipment room and their supply and output circuits shall comply with 645.10, except for the following installations and constructions:

(1) Installations complying with Article 685

(2) Power sources limited to 750 volt-amperes or less derived either from UPS equipment or from battery circuits integral to electronic equipment

The disconnecting means shall also disconnect the battery from its load.

Informational Note: See UL 1778-2014 (R2017), *Uninterruptible Power Systems*, and UL 62368-1-2014, *Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements*, for information on product listings for electronic equipment disconnecting means and backup battery power sources.

Additional Proposed Changes

File Name	Description	Approved
12_CN_58.pdf	12 CN58	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 58 appeared in the First Draft Report on First Revision No. 9242.

The Correlating Committee directs that list item (1) be revised so as to not refer to an entire article in accordance with 4.1.4 of the NEC Style Manual.

Related Item

• First Revision No. 9242

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 12:57:25 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7684-NFPA 70-2021

Statement:	Reference to an entire Article has been revised to align with the style manual. The dates to references have been deleted so that the most current edition would be applied.

Correlating Committee Note No. 58-NFPA 70-2021 [Section No. 645.11]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:16:38 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that list item (1) be revised so as to not refer to an entire article in accordance with 4.1.4 of the NEC Style Manual.

First Revision No. 9242-NFPA 70-2021 [Section No. 645.11]

Ballot Results

✔ **This item has passed ballot**

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1080-NFPA 70-2021 [Section No. 645.18]

645.~~18~~ 18 Transient Overvoltage Protection for Critical Operations Data Systems.

A listed surge protective device (SPD) shall be installed for critical operations data systems in accordance with Part II of Article 242.

Statement of Problem and Substantiation for Public Comment

Not all overvoltage protection circuits provide transient (surge) protection, and not all surge protection circuits provide protection against longer-term overvoltage conditions. The word "transient" should be added to clarify what the required protection is intended to address.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1082-NFPA 70-2021 [Section No. 620.51(E)]	
Public Comment No. 1082-NFPA 70-2021 [Section No. 620.51(E)]	

Related Item

• FR 9238 • FR 9361

Submitter Information Verification

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Submittal Date: Mon Aug 09 10:47:41 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7685-NFPA 70-2021
Statement: The title of 645.18 was revised to align with the title of Part II of Article 242.

Public Comment No. 420-NFPA 70-2021 [New Section after 645.27]

TITLE OF NEW CONTENT

645.28 Cybersecurity, Cyberweapon, Electromagnetic Pulse (EMP), Geomagnetic Disturbance (GMD), and Intentional Electromagnetic Interference (IEMI) Protection. Critical operations data systems shall comply with either of the following:

(1) The system shall be identified for cybersecurity, cyberweapon, EMP, GMD, and IEMI protection.

(2) A cybersecurity, cyberweapon, EMP, GMD, and IEMI protection failure modes effects analysis assessment shall be conducted to determine system vulnerabilities.

The identification or assessment shall be reviewed when the system configuration changes and at not more than 5-year intervals. Documentation of the identification or assessment shall be made available to those authorized to inspect, operate, and maintain the system.

Statement of Problem and Substantiation for Public Comment

This Public Comment is a follow-up to PI 761, PI 3080, FR 8801, PI 768, and PI 4024. It does not require cybersecurity, cyberweapon, EMP, GMD, or IEMI protection, but rather calls for the critical operations data system to be identified for these threats or for a threat assessment to be completed. While the NEC® is not ready to mandate protection requirements, an assessment would show system vulnerabilities. Acceptance of this Public Comment would at least bring the subject to the attention of owners, design engineers, electrical inspectors, and insurance companies, and set the table for requirements in future editions of the NEC® (or other NFPA standards). The format for this Public Comment is based upon the cybersecurity requirements found in FR 8801, which offers an assessment as an alternate for requiring protection.

PI 761 provided technical substantiation to require Electromagnetic Pulse (EMP) Protection for our critical infrastructure. While it appears that the NEC(R) is not ready to actually require EMP protection at this time, the security of our country is at stake. An EMP is fairly well understood as an extremely powerful electromagnetic wave that can impress 50,000 volts per meter on every piece of electrical equipment, destroying everything that is unprotected. An EMP is often associated with a nuclear explosion, but that is not the only cause of electromagnetic damage. A Geomagnetic Disturbance (GMD) is caused by a sunspot. While the EMP would be created by one of our adversaries, the sun spot is an act of God. These types of events can instantly initiate millions of fires in our unprotected electrical systems, overwhelming our fire-fighting capabilities. If millions of fires weren't bad enough, the unprotected electrical equipment would be damaged or completely destroyed, subjecting the country to years of blackout. Government intelligence studies, now unclassified, have predicted that from 66% to 90% of our population would die within one year, due to a lack of food, clean water, and medicine, if a significant EMP or GMD were to occur, while the country's electrical infrastructure remains unprotected. The final threat listed is an Intentional Electromagnetic Interference (IEMI). It is easily created by utilizing off-the-shelf parts, available for purchase on the internet, that will fit into a van. While much less powerful than a significant EMP or GMD, twenty vans, equipped with bench-made IEMI devices and scattered throughout the country, can shut down major industries and major parts of the country for weeks, if not months, through a coordinated attack, similar to 9/11, by targeting key industries/vulnerabilities. In conclusion, these electromagnetic threats to our unprotected electrical infrastructure, and therefor to our entire country, are absolutely real, and must be addressed.

PI 4024 provided significant substantiation for the need to protect critical infrastructure against cyber attack for equipment connected to the internet. However, equipment does not need to be connected to

the internet in order to be damaged or destroyed by cyber threats. Equipment can be damaged by cyber weapons such as malicious computer worms that attack SCADA (control) systems. A great example is the Stuxnet worm that destroyed the centrifuges in Iran. Thus, this Public Comment deletes the PI 4024 reference to the internet and adds cyberweapon to the list of threats that need to be either protected against or assessed.

Related Item											
• PI 768	• PI 3080	• FR 8801	• PI 4024	• PI 3055	• FR 7947	• PI 4026	• FR 8880	• FR 8917	• PI 2888	• FR 8914	• PI 3083

Submitter Information Verification

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Submittal Date: Tue Jul 27 11:28:46 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected
Resolution: Cybersecurity is a major issue that would require Correlating Committee action.

Public Comment No. 978-NFPA 70-2021 [Article 646]

Article 646 Modular Data Centers

Part I. General

646.1 Scope.

This article covers modular data centers.

Informational Note No. 1: Modular data centers include the installed information technology equipment (ITE) and support equipment, electrical supply and distribution, wiring and protection, working space, grounding, HVAC, and the like, that are located in an equipment enclosure.

Informational Note No. 2: See NFPA 75-2020, *Standard for the Fire Protection of Information Technology Equipment*, which covers the requirements for the protection of information technology equipment and systems in an information technology equipment room.

Informational Note No. 3: See UL 60950-1-2007, *Information Technology Equipment — Safety — Part 1: General Requirements,* and UL 62368-1-2019, *Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements*, for information on listing requirements for both information technology equipment and communications equipment contained within a modular data center.

Informational Note No. 4: *Modular data centers* are sometimes referred to as containerized data centers.

Informational Note No. 5: Equipment enclosures housing only support equipment (e.g., HVAC or power distribution equipment) that are not part of a specific modular data center are not considered a modular data center.

646.3 Other Articles.

Circuits and equipment shall comply with 646.3(A) through (N) as applicable. Wherever the requirements of other articles of this *Code* and Article 646 differ, the requirements of Article 646 shall apply.

(A) Spread of Fire or Products of Combustion.

Sections 300.21, 770.26, and 800.26 shall apply to penetrations of a fire-resistant room boundary, if provided.

(B) Wiring and Cabling in Other Spaces Used for Environmental Air (Plenums).

The following sections and tables shall apply to wiring and cabling in other spaces used for environmental air (plenums) within a modular data center space:

(1) Wiring methods: 300.22(C)(1)

(2) Class 2, Class 3, and PLTC cables: 725.135(C) and Table 725.154

(3) Fire alarm systems: 760.53(B)(2), 760.135(C), and Table 760.154

(4) Optical fiber cables: 770.113(C) and Table 770.154(a)

(5) Communications circuits: 800.113(C) and Table 800.154(a)

(6) CATV and radio distribution systems: 800.113(C) and Table 800.154(a)

Informational Note: Environmentally controlled working spaces, aisles, and equipment areas in an MDC are not considered a plenum.

(C) Grounding.

Grounding and bonding of an MDC shall comply with Parts I through X of Article 250. The non-current-carrying conductive members of optical fiber cables in an MDC shall be grounded in accordance with 770.114. Grounding and bonding of communications protectors, cable shields, and non-current-carrying metallic members of cable shall comply with Part IV of Article 805.

(D) Electrical Classification of Data Circuits.

Section 725.60(A)(4) shall apply to the electrical classification of listed information technology equipment signaling circuits.

(E) Fire Alarm Equipment.

Parts I, II, and III of Article 760 shall apply to fire alarm systems, cables, and equipment installed in an MDC, where provided. Only fire alarm cables listed in accordance with Part IV of Article 760 and listed fire alarm equipment shall be permitted to be installed in an MDC.

(F) Cable Routing Assemblies and Communications Wires, Cables, Raceways, and Equipment.

Sections 800.110, 800.113, and 800.154 shall apply to cable routing assemblies and communications raceways. Parts I, II, III, IV, and V of Articles 800 and 805 shall apply to communications wires, cables, and equipment installed in an MDC. Only communications wires and cables listed in accordance with 805.179, cable routing assemblies and communications raceways listed in accordance with 800.182, and communications equipment listed in accordance with 800.179 and 805.179 shall be permitted to be installed in an MDC.

Informational Note: See Article 100 for a definition of *communications equipment*.

(G) Community Antenna Television and Radio Distribution Systems Cables and Equipment.

Parts I, II, III, IV, and V of Articles 800 and 820 shall apply to community antenna television and radio distribution systems equipment installed in an MDC. Only community antenna television and radio distribution cables listed in accordance with 820.179 and listed CATV equipment shall be permitted to be installed in an MDC.

(H) Storage Batteries.

Installation of storage batteries shall comply with Article 480.

Exception: This requirement shall not apply to batteries that are part of listed and labeled equipment and installed in accordance with the listing requirements.

(I) Surge-Protective Devices (SPDs).

Where provided, surge-protective devices shall be listed and labeled and installed in accordance with Part II of Article 242.

(J) Lighting.

Lighting shall be installed in accordance with Parts I through XIV of Article 410.

(K) Power Distribution Wiring and Wiring Protection.

Power distribution wiring and wiring protection within an MDC shall comply with Parts I, II, and III of Article 210 for branch circuits.

(L) Wiring Methods and Materials.

Wiring methods and materials shall comply with the following:

(1) Unless modified elsewhere in this article, wiring methods and materials for power distribution shall comply with Chapter 3. Wiring shall be suitable for its use and installation and shall be listed and labeled.

Exception: This requirement shall not apply to wiring that is part of listed and labeled equipment.

(2) The following wiring methods shall not be permitted:

a. Integrated gas spacer cable: Type IGS (Article 326)

b. Concealed knob-and-tube wiring (Article 394)

c. Messenger-supported wiring (Article 396)

d. Open wiring on insulators (Article 398)

e. Outdoor overhead conductors over 600 volts (Article 395)

(3) Wiring in areas under a raised floor that are constructed and used for ventilation as described in 645.5(E) shall be permitted to use the wiring methods described in 645.5(E) if the conditions of 645.4 are met.

(4) Installation of wiring for remote-control, signaling, and power-limited circuits shall comply with Part III of Article 725.

(5) Installation of optical fiber cables shall comply with Part V of Article 770.

(6) Alternate wiring methods as permitted by Article 645 shall be permitted for MDCs, provided that all of the conditions of 645.4 are met.

(M) Service Equipment.

For an MDC that is designed such that it can be powered from a separate electrical service, the service equipment for control and protection of services and their installation shall comply with Parts I, V, VI, and VII of Article 230. The service equipment and their arrangement and installation shall permit the installation of the service-entrance conductors in accordance with Parts I and IV of Article 230. Service equipment shall be listed and labeled and marked as being suitable for use as service equipment.

(N) Disconnecting Means.

An approved means shall be provided to disconnect power to all electronic equipment in the MDC in accordance with 645.10. There shall also be a similar approved means to disconnect the power to all dedicated HVAC systems serving the MDC that shall cause all required fire/smoke dampers to close.

646.4 Applicable Requirements.

All MDCs shall be listed and labeled and comply with 646.3(N) and 646.5 through 646.9 or comply with this article.

Informational Note: See UL Subject 2755, *Outline of Investigation for Modular Data Centers*, for information on listing requirements for MDCs.

646.5 Nameplate Data.

A permanent nameplate shall be attached to each equipment enclosure of an MDC and shall be plainly visible after installation. The nameplate shall include the information in 646.5(1) through (6), as applicable:

(1) Supply voltage, number of phases, frequency, and full-load current. The full-load current shown on the nameplate shall not be less than the sum of the full-load currents required for all motors and other equipment that may be in operation at the same time under normal conditions of use. Where unusual type loads, duty cycles, and so forth, require oversized conductors or permit reduced-size conductors, the required capacity shall be included in the marked full-load current. Where more than one incoming supply circuit is to be provided, the nameplate shall state the preceding information for each circuit.

Informational Note No. 1: See 430.22(E) and 430.26 for duty cycle requirements.

Informational Note No. 2: For listed equipment, the full-load current shown on the nameplate may be the maximum, measured, 15-minute, average full-load current.

(2) For MDCs powered by a separate service, the short-circuit current rating of the service equipment provided as part of the MDC.

Informational Note: This rating may be part of the service equipment marking.

(3) For MDCs powered by a separate service, if the required service as determined by Parts III and IV of Article 220 is less than the rating of the service panel used, the required service shall be included on the nameplate.

Informational Note: Branch circuits supplying ITE loads are assumed to be loaded not less than 80 percent of the branch-circuit rating with a 100 percent duty cycle. As an alternative to the feeder and service load calculations required by Parts III and IV of Article 220, feeder and service load calculations for new, future, or existing loads may be permitted to be used if performed by qualified persons under engineering supervision.

(4) Electrical diagram number(s) or the number of the index to the electrical drawings.

(5) For MDC equipment enclosures that are not powered by a separate service, feeder, or branch circuit, a reference to the powering equipment.

(6) Manufacturer's name or trademark.

646.6 Supply Conductors and Overcurrent Protection.

(A) Size.

The size of the supply conductor shall be such as to have an ampacity not less than 125 percent of the full-load current rating.

Informational Note No. 1: See the 0–2000-volt ampacity tables of Article 310 for ampacity of conductors rated 600 V and below.

Informational Note No. 2: See 430.22(E) and 430.26 for duty cycle requirements.

(B) Overcurrent Protection.

Where overcurrent protection for supply conductors is furnished as part of the MDC, overcurrent protection for each supply circuit shall comply with 646.6(B)(1) through (B)(2).

(1) Service Equipment — Overcurrent Protection.

Service conductors shall be provided with overcurrent protection in accordance with 230.90 through 230.95.

(2) Taps and Feeders.

Where overcurrent protection for supply conductors is furnished as part of the MDC as permitted by 240.21, the overcurrent protection shall comply with the following:

(1) The overcurrent protection shall consist of a single circuit breaker or set of fuses.

(2) The MDC shall be marked "OVERCURRENT PROTECTION PROVIDED AT MDC SUPPLY TERMINALS."

(3) The supply conductors shall be considered either as feeders or as taps and be provided with overcurrent protection complying with 240.21.

646.7 Short-Circuit Current Rating.

(A) Service Equipment.

The service equipment of an MDC that connects directly to a service shall have a short-circuit current rating not less than the available fault current of the service.

(B) MDCs Connected to Branch Circuits and Feeders.

Modular data centers that connect to a branch circuit or a feeder circuit shall have a short-circuit current rating not less than the available fault current of the branch circuit or feeder. The short-circuit current rating of the MDC shall be based on the short-circuit current rating of a listed and labeled MDC or the short-circuit current rating established using an approved method.

Exception: This requirement shall not apply to listed and labeled equipment connected to branch circuits located inside of the MDC equipment enclosure.

Informational Note: See UL 508A-2018, *Standard for Industrial Control Panels, Supplement SB*, for an example of an approved method.

(C) MDCs Powered from Separate MDC System Enclosures.

Modular data center equipment enclosures, powered from a separate MDC system enclosure that is part of the specific MDC system, shall have a short-circuit current rating coordinated with the powering module in accordance with 110.10.

Informational Note: See UL 508A-2018, *Standard for Industrial Control Panels, Supplement SB*, for an example of an approved method for determining short-circuit current ratings.

646.8 Field-Wiring Compartments.

A field-wiring compartment in which service or feeder connections are to be made shall be readily accessible and comply with the following:

(1) Permit the connection of the supply wires after the MDC is installed

(2) Permit the connection to be introduced and readily connected

(3) Be located so that the connections may be readily inspected after the MDC is installed

646.9 Flexible Power Cords and Cables for Connecting Equipment Enclosures of an MDC System.

(A) Uses Permitted.

Flexible power cords and cables shall be permitted to be used for connections between equipment enclosures of an MDC system where not subject to physical damage.

Informational Note: One example of flexible power cord usage for connections between equipment enclosures of an MDC system is between an MDC enclosure containing only servers and one containing power distribution equipment.

(B) Uses Not Permitted.

Flexible power cords and cables shall not be used for connection to external sources of power.

Informational Note: Examples of external sources of power are electrical services, feeders, and premises branch circuits.

(C) Listing.

Where flexible power cords or cables are used, they shall be listed as suitable for extra-hard usage. Where used outdoors, flexible power cords and cables shall also be listed as suitable for wet locations and shall be sunlight resistant.

(D) Single-Conductor Cable.

Single-conductor power cable shall be permitted to be used only in sizes 2 AWG or larger.

Part II. Equipment

646.10 Electrical Supply and Distribution.

Equipment used for electrical supply and distribution in an MDC, including fittings, devices, luminaires, apparatus, machinery, and the like, shall comply with Parts I and II of Article 110.

646.11 Distribution Transformers.

(A) Utility-Owned Transformers.

Utility-owned distribution transformers shall not be permitted in an MDC.

(B) Non-Utility-Owned Premises Transformers.

Non-utility-owned premises distribution transformers installed in the vicinity of an MDC shall be of the dry type or the type filled with a noncombustible dielectric medium. Such transformers shall be installed in accordance with Parts I and II of Article 450. Non-utility-owned premises distribution transformers shall not be permitted in an MDC.

(C) Power Transformers.

Power transformers that supply power only to the MDC shall be permitted to be installed in the MDC equipment enclosure. Only dry-type transformers shall be permitted to be installed in the MDC equipment enclosure. Such transformers shall be installed in accordance with Parts I, II, and III of Article 450.

646.12 Receptacles.

At least one 125-volt ac, 15- or 20-ampere-rated duplex convenience outlet shall be provided in each work area of the MDC to facilitate the powering of test and measurement equipment that may be required during routine maintenance and servicing, without having to route flexible power cords through or across doorways or around line-ups of equipment, or the like.

646.13 Other Electrical Equipment.

Electrical equipment that is an integral part of the MDC, including information technology equipment, lighting, control, power, HVAC (heating, ventilation, and air-conditioning), emergency lighting, alarm circuits, and so forth, shall comply with the requirements for its use and installation and shall be listed and labeled.

646.14 Installation and Use.

Listed and labeled equipment shall be installed and used in accordance with any instructions or limitations included in the listing.

Part III. Lighting

646.15 General Illumination.

Illumination shall be provided for all workspaces and areas that are used for exit access and exit discharge. The illumination shall be arranged so that the failure of any single lighting unit does not result in a complete loss of illumination.

Informational Note: See NFPA *101*-2018, *Life Safety Code*, Section 7.8, for information on illumination of means of egress.

646.16 Emergency Lighting.

Areas that are used for exit access and exit discharge shall be provided with emergency lighting. Emergency lighting systems shall be listed and labeled equipment installed in accordance with the manufacturer's instructions.

Informational Note: See NFPA *101*-2018, *Life Safety Code,* Section 7.9, for information on emergency lighting.

646.17 Emergency Lighting Circuits.

No appliances or lamps, other than those specified as required for emergency use, shall be supplied by emergency lighting circuits. Branch circuits supplying emergency lighting shall be installed to provide service from storage batteries, generator sets, UPS, separate service, fuel cells, or unit equipment. No other equipment shall be connected to these circuits unless the emergency lighting system includes a backup system where only the lighting is supplied by battery circuits under power failure conditions. All boxes and enclosures (including transfer switches, generators, and power panels) for emergency circuits shall be marked to identify them as components of an emergency circuit or system.

Part IV. Workspace

646.18 General.

Space about electrical equipment shall comply with 110.26.

646.19 Entrance to and Egress from Working Space.

For equipment over 1.8 m (6 ft) wide or deep, there shall be one entrance to and egress from the required working space not less than 610 mm (24 in.) wide and 2.0 m (6 ½ ft) high at each end of the working space. Doors shall open at least 90 degrees in the direction of egress and be equipped with listed panic hardware or listed fire exit hardware. A single entrance to and egress from the required working space shall be permitted where either of the conditions in 646.19(A) or (B) is met.

(A) Unobstructed Egress.

Where the location permits a continuous and unobstructed way of egress travel, a single entrance to the working space shall be permitted.

(B) Extra Working Space.

Where the depth of the working space is twice that required by 110.26(A)(1), a single entrance shall be permitted. It shall be located such that the distance from the equipment to the nearest edge of the entrance is not less than the minimum clear distance specified in Table 110.26(A)(1) for equipment operating at that voltage and in that condition.

646.20 Working Space for ITE.

(A) Low-Voltage Circuits.

The working space about ITE where any live parts that may be exposed during routine servicing operate at not greater than 30 volts rms, 42 volts peak, or 60 volts dc shall not be required to comply with the workspace requirements of 646.19.

(B) Other Circuits.

Any areas of ITE that require servicing of parts that are greater than 30 volts rms, 42 volts peak, or 60 volts dc shall comply with the workspace requirements of 646.19.

Informational Note No. 1: For example, field-wiring compartments for ac mains connections, power distribution units, and so forth.

Informational Note No. 2: It is assumed that ITE operates at voltages not exceeding 1000 volts.

646.21 Work Areas and Working Space About Batteries.

Working space about a battery system shall comply with 110.26. Working space shall be measured from the edges of the battery racks, cabinets, or trays.

646.22 Workspace for Routine Service and Maintenance.

Workspace shall be provided to facilitate routine servicing and maintenance (those tasks involving operations that can be accomplished by employees and where extensive disassembly of equipment is not required). Routine servicing and maintenance shall be able to be performed without exposing the worker to a risk of electric shock or personal injury.

Informational Note: An example of such routine maintenance is cleaning or replacing an air filter.

Additional Proposed Changes

File Name	Description	Approved
12_CN_59_Detail.pdf	12 CN59	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 59 appeared in the First Draft Report on First Revision Nos. 9597 and 9257.

The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

Related Item

• First Revision No. 9597 • First Revision No. 9257

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:47:30 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7687-NFPA 70-2021
Statement: The dates to references have been deleted so that the most current edition would be applied.

Correlating Committee Note No. 59-NFPA 70-2021 [Detail]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:19:34 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

First Revision No. 9597-NFPA 70-2021 [Detail]

First Revision No. 9257-NFPA 70-2021 [Section No. 646.1]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 188-NFPA 70-2021 [Section No. 646.3(B)]

(B) Wiring and Cabling in Other Spaces Used for Environmental Air (Plenums).

The following sections and tables shall apply to wiring and cabling in other spaces used for environmental air (plenums) within a modular data center space:

(1) Wiring methods: 300.22(C)(1)

(2) Class 2, Class 3, and PLTC cables: ~~725~~ 722 .135(~~C~~ B) ~~and Table 725.154~~

(3) Fire alarm systems: 760.53(B)(2), 760.135(C), and Table 760.154

(4) Optical fiber cables: 770.113(C) and Table 770.154(a)

(5) Communications circuits: 800.113(C) and Table 800.154(a)

(6) CATV and radio distribution systems: 800.113(C) and Table 800.154(a)

Informational Note: Environmentally controlled working spaces, aisles, and equipment areas in an MDC are not considered a plenum.

Statement of Problem and Substantiation for Public Comment

Global FR-9582 created the First Draft text for new Article 722, Cables for Power-Limited Circuits. The cable installation requirements in Article 725 have been moved to 722.135(B) and the cable substitution requirements in 725.154(A) have been moved to 722.135(E).

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 98-NFPA 70-2021 [Section No. 620.21]	Revises references from Article 725 to new Article 722
Public Comment No. 100-NFPA 70-2021 [Section No. 640.3]	Revises references from Article 725 to new Article 722
Public Comment No. 187-NFPA 70-2021 [Section No. 645.3(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 189-NFPA 70-2021 [Section No. 645.10(B)]	Revises references from Article 725 to new Article 722
Public Comment No. 98-NFPA 70-2021 [Section No. 620.21]	
Public Comment No. 100-NFPA 70-2021 [Section No. 640.3]	
Public Comment No. 187-NFPA 70-2021 [Section No. 645.3(B)]	
Public Comment No. 189-NFPA 70-2021 [Section No. 645.10(B)]	

Related Item

• FR-9582 • FR-9276

Submitter Information Verification

Submitter Full Name: Stanley Kaufman

Organization:	CableSafe, Inc./OFS
Affiliation:	PLASTICS (Plastics Industry Association)
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Sat Jul 10 09:35:51 EDT 2021
Committee:	NEC-P12

Committee Statement

Committee Action:	Accepted
Resolution:	SR-7688-NFPA 70-2021
Statement:	Global FR-9582 created the First Draft text for new Article 722, Cables for Power-Limited Circuits. The cable installation requirements in Article 725 have been moved to 722.135(B) and the cable substitution requirements in 725.154(A) have been moved to 722.135(E). The second draft text correlates with these changes.

Public Comment No. 966-NFPA 70-2021 [Section No. 646.3(C)]

(C) Grounding.

Grounding and bonding of an MDC shall comply with Parts I through X of Article 250. The non-current-carrying conductive members of optical fiber cables in an MDC shall be grounded in accordance with 770.114. Grounding and bonding of communications protectors, cable shields, and non-current-carrying metallic members of cable shall comply with Part IV of Article 805.

Additional Proposed Changes

File Name	Description	Approved
12_CN_60.pdf	12 CN60	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 60 appeared in the First Draft Report on First Revision No. 9270.

The Correlating Committee directs that FR 9270, and the reference to Article 250, be reviewed for compliance with 4.1.1 of the NEC Style Manual. It is not permissible to repeat requirements in Chapters 1 through 4.

Related Item

• First Revision No. 9270

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:10:11 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7689-NFPA 70-2021
Statement: The second draft text eliminates redundant reference to Article 250 in order to comply with 4.1.1 of the NEC Style Manual. The title of the subsection was revised to add “bonding” to improve clarity.

Correlating Committee Note No. 60-NFPA 70-2021 [Section No. 646.3(C)]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:21:47 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that FR 9270, and the reference to Article 250, be reviewed for compliance with 4.1.1 of the NEC Style Manual. It is not permissible to repeat requirements in Chapters 1 through 4.

First Revision No. 9270-NFPA 70-2021 [Section No. 646.3(C)]

Ballot Results

✔ **This item has passed ballot**

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 231-NFPA 70-2021 [Section No. 646.3(F)]

(F) Cable Routing Assemblies and Communications Wires, Cables, Raceways, and Equipment.

Sections 800.110, 800.113, and 800.154 shall apply to cable routing assemblies and communications raceways. Parts I, II, III, IV, and V of Articles 800 and 805 shall apply to communications wires, cables, and equipment installed in an MDC. Only communications wires and cables listed in accordance with ~~805~~ 800 .179, cable routing assemblies and communications raceways listed in accordance with 800.182, and communications equipment listed in accordance with 800.~~179 and 805.179~~ 171 shall be permitted to be installed in an MDC.

Informational Note: See Article 100 for a definition of *communications equipment*.

Statement of Problem and Substantiation for Public Comment

This PC coordinates with PC-205, 208, 209 & 230.

Listing requirements for nearly all communications wires and cables are in 800.179 in the First Draft report. PC-208 and PC-209 move the listing requirements for the remaining cables into 800.179.

PC-205 moves the listing requirements for communications equipment to 800.171

PC-233 makes similar changes to 645,3(F).

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 205-NFPA 70-2021 [Sections Part V., 800.170]	Moves the listing requirements for communications equipment to 800.171
Public Comment No. 208-NFPA 70-2021 [Section No. 800.179]	Clarifies and expands the listing requirements in 800.179
Public Comment No. 209-NFPA 70-2021 [Section No. 805.179]	Deletes 805.179
Public Comment No. 230-NFPA 70-2021 [Section No. 645.3(F)]	Parallel PC for Article 645
Public Comment No. 230-NFPA 70-2021 [Section No. 645.3(F)]	

Related Item

• FR-9251

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: CableSafe, Inc./OFS
Affiliation: PLASTICS (Plastics Industry Association)
Street Address:
City:
State:

Zip:

Submittal Date: Thu Jul 15 06:06:54 EDT 2021

Committee: NEC-P12

Committee Statement

Committee Action: Accepted

Resolution: SR-7691-NFPA 70-2021

Statement: Listing requirements for nearly all communications wires and cables are in 800.179 in the First Draft report. The second draft text correlates with these changes.

Public Comment No. 973-NFPA 70-2021 [Section No. 646.3(F)]

(F) Cable Routing Assemblies and Communications Wires, Cables, Raceways, and Equipment.

Sections 800.110, 800.113, and 800.154 shall apply to cable routing assemblies and communications raceways. Parts I, II, III, IV, and V of Articles 800 and 805 shall apply to communications wires, cables, and equipment installed in an MDC. Only communications wires and cables listed in accordance with 805.179, cable routing assemblies and communications raceways listed in accordance with 800.182, and communications equipment listed in accordance with 800.179 and 805.179 shall be permitted to be installed in an MDC.

Informational Note: See Article 100 for a definition of *communications equipment*.

Additional Proposed Changes

File Name	Description	Approved
12_CN_66.pdf	12 CN66	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 66 appeared in the First Draft Report on First Revision No. 9251.

The Correlating Committee directs the Panel to review references to entire Articles, or all parts of an Article, in compliance with 4.1.4 of the NEC Style Manual.

Related Item

• First Revision No. 9251

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:28:02 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: CC Note 66 directs review of 645.3(F) for compliance with 4.1.4 of the NEC Style Manual which states: "References to a Part Within an Article. Except for Article 100, references shall not be made to an entire article. References to parts within articles shall be permitted." A review of 645.3(F) shows that it complies with 4.1.4 by not referring to entire Articles, only sections and tables.

Correlating Committee Note No. 66-NFPA 70-2021 [Section No. 646.3(F)]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 17:42:14 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to review references to entire Articles, or all parts of an Article, in compliance with 4.1.4 of the NEC Style Manual.

First Revision No. 9251-NFPA 70-2021 [Section No. 646.3(F)]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 233-NFPA 70-2021 [Section No. 646.3(G)]

(G) Community Antenna Television and Radio Distribution Systems Cables and Equipment.

Parts I, II, III, IV, and V of Articles 800 and 820 shall apply to community antenna television and radio distribution systems equipment installed in an MDC. Only community antenna television and radio distribution cables listed in accordance with ~~820~~ 800 .179 and listed CATV equipment shall be permitted to be installed in an MDC.

Statement of Problem and Substantiation for Public Comment

Listing requirements for CATV type coaxial cables are in 800.179.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 232-NFPA 70-2021 [Section No. 645.3(G)]	Paraell comment for Article 645
Public Comment No. 232-NFPA 70-2021 [Section No. 645.3(G)]	

Related Item

- FR-9252

Submitter Information Verification

Submitter Full Name: Stanley Kaufman
Organization: CableSafe, Inc./OFS
Affiliation: PLASTICS (Plastics Industry Association)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jul 15 08:48:35 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Accepted
Resolution: SR-7693-NFPA 70-2021
Statement: Listing requirements for CATV type coaxial cables are in 800.179.

Public Comment No. 969-NFPA 70-2021 [Section No. 646.3(H)]

(H) Storage Batteries.

Installation of storage batteries shall comply with Article 480.

Exception: This requirement shall not apply to batteries that are part of listed and labeled equipment and installed in accordance with the listing requirements.

Additional Proposed Changes

File Name	Description	Approved
12_CN_61.pdf	12 CN61	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 61 appeared in the First Draft Report on First Revision No. 9259.

The Correlating Committee directs the Panel to revise 646.3(H) to refer to a section not the entire Article 480 to comply with 4.1.4 of the NEC Style Manual. The Panel is also advised that the title of Article 480 has been changed to “Stationary Standby Batteries”, and directs the Panel to review the requirement to ensure it’s correlated with this new article title. The Correlating Committee directs the Panel to review the statement regarding "installed in accordance with the listing requirements", noting that it is not necessary to repeat requirements in Chapters 1 - 4.

Related Item

• First Revision No. 9259

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:13:55 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7694-NFPA 70-2021
Statement: Section 646.3(H) is redundant; it is eliminated to comply with 4.1.4 of the NEC Style Manual. Re-letter subsequent sections.

Correlating Committee Note No. 61-NFPA 70-2021 [Section No. 646.3(H)]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 16:54:02 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to revise 646.3(H) to refer to a section not the entire Article 480 to comply with 4.1.4 of the NEC Style Manual. The Panel is also advised that the title of Article 480 has been changed to “Stationary Standby Batteries”, and directs the Panel to review the requirement to ensure it’s correlated with this new article title. The Correlating Committee directs the Panel to review the statement regarding "installed in accordance with the listing requirements", noting that it is not necessary to repeat requirements in Chapters 1 - 4.

First Revision No. 9259-NFPA 70-2021 [Section No. 646.3(H)]

Ballot Results

✔ **This item has passed ballot**

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 827-NFPA 70-2021 [Section No. 646.5]

646.5 Nameplate Data.

A permanent nameplate shall be attached to each equipment enclosure of an MDC and shall be plainly visible after installation. The nameplate shall include the information in 646.5(1) through (6), as applicable:

(1) Supply voltage, number of phases, frequency, and full-load current. The full-load current shown on the nameplate shall not be less than the sum of the full-load currents required for all motors and other equipment that may be in operation at the same time under normal conditions of use. Where unusual type loads, duty cycles, and so forth, require oversized conductors or permit reduced-size conductors, the required capacity shall be included in the marked full-load current. Where more than one incoming supply circuit is to be provided, the nameplate shall state the preceding information for each circuit.

Informational Note No. 1: See 430.22(E) and 430.26 for duty cycle requirements.

Informational Note No. 2: For listed equipment, the full-load current shown on the nameplate may be the maximum, measured, 15-minute, average full-load current.

(2) For MDCs powered by a separate service, the short-circuit current rating of the service equipment provided as part of the MDC.

Informational Note: This rating may be part of the service equipment marking.

(3) For MDCs powered by a separate service, if the required service as determined by Parts III and IV of Article 220 is less than the rating of the service panel used, the required service shall be included on the nameplate.

Informational Note: Branch circuits supplying ITE loads are assumed to be loaded not less than 80 percent of the branch-circuit rating with a 100 percent duty cycle. As an alternative to the feeder and service load calculations required by Parts III and IV of Article 220, feeder and service load calculations for new, future, or existing loads may be permitted to be used if performed by qualified persons under engineering supervision.

(4) Electrical diagram number(s) or the number of the index to the electrical drawings.

(5) For MDC equipment enclosures that are not powered by a separate service, feeder, or branch circuit, a reference to the powering equipment.

(6) Manufacturer's name or trademark.

Additional Proposed Changes

File Name	Description	Approved
CN_68.pdf	70_CN68	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 68 appeared in the First Draft Report.

The Correlating Committee directs the Panel to review the Informational Note in relation to 3.1.2 and 3.1.3 of the NEC
Style Manual relative to permissive language in an Informational Note.

Related Item

• Correlating Note No. 68

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 04 13:03:52 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7794-NFPA 70-2021
Statement: Statement: The second draft text removes mandatory requirements from informational notes (Style Manual violation, 3.1.2 & 3.1.3) and changes the mandatory text to add these requirements.

Public Comment No. 1100-NFPA 70-2021 [Section No. 646.19 [Excluding any Sub-Sections]]

For equipment over 1.8 m (6 ft) wide or deep, there shall be one entrance to and egress from the required working space not less than 610 mm (24 in.) wide and 2.0 m (6 ½ ft) high at each end of the working space._ Doors shall open ~~at least 90 degrees in the direction of egress and be equipped with listed~~ to the full extent of their designed egress opening and be equipped with panic hardware or ~~listed~~ fire exit hardware that is listed for use with that door type ._ A single entrance to and egress from the required working space shall be permitted where either of the conditions in 646.19(A) or (B) is met.

Statement of Problem and Substantiation for Public Comment

Not all utility room doors are swing-type. Some locations use roll-up doors, and other locations use sliding-type doors (door rolls sideways on a track similar to barn doors or pocket doors). The proposed language should cover all door types currently in use.

Related Item

• FR 9255

Submitter Information Verification

Submitter Full Name: Karl Reighard
Organization: Delmarva Power And Light
Affiliation: -self-
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 09 14:49:33 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7699-NFPA 70-2021
Statement: Not all utility room doors are swing-type. Some locations use roll-up doors, and other locations use sliding type doors (door rolls sideways on a track similar to barn doors or pocket doors).

Public Comment No. 432-NFPA 70-2021 [New Section after 646.22]

TITLE OF NEW CONTENT

646.23 Cybersecurity, Cyberweapon, Electromagnetic Pulse (EMP), Geomagnetic Disturbance (GMD), and Intentional Electromagnetic Interference (IEMI) Protection. Modular data centers shall comply with either of the following:

(1) The modular data center shall be identified for cybersecurity, cyberweapon, EMP, GMD, and IEMI protection.

(2) A cybersecurity, cyberweapon, EMP, GMD, and IEMI protection failure modes effects analysis assessment shall be conducted to determine modular data center vulnerabilities.

The identification or assessment shall be reviewed when the system configuration changes and at not more than 5-year intervals. Documentation of the identification or assessment shall be made available to those authorized to inspect, operate, and maintain the system.

Statement of Problem and Substantiation for Public Comment

This Public Comment is a follow-up to PI 761, PI 3080, FR 8801, PI 772, and PI 4024. It does not require cybersecurity, cyberweapon, EMP, GMD, or IEMI protection, but rather calls for the modular data center to be identified for these threats or for a threat assessment to be completed. While the NEC® is not ready to mandate protection requirements, an assessment would show system vulnerabilities. Acceptance of this Public Comment would at least bring the subject to the attention of owners, design engineers, electrical inspectors, and insurance companies, and set the table for requirements in future editions of the NEC® (or other NFPA standards). The format for this Public Comment is based upon the cybersecurity requirements found in FR 8801, which offers an assessment as an alternate for requiring protection.

PI 761 provided technical substantiation to require Electromagnetic Pulse (EMP) Protection for our critical infrastructure. While it appears that the NEC(R) is not ready to actually require EMP protection at this time, the security of our country is at stake. An EMP is fairly well understood as an extremely powerful electromagnetic wave that can impress 50,000 volts per meter on every piece of electrical equipment, destroying everything that is unprotected. An EMP is often associated with a nuclear explosion, but that is not the only cause of electromagnetic damage. A Geomagnetic Disturbance (GMD) is caused by a sunspot. While the EMP would be created by one of our adversaries, the sun spot is an act of God. These types of events can instantly initiate millions of fires in our unprotected electrical systems, overwhelming our fire-fighting capabilities. If millions of fires weren't bad enough, the unprotected electrical equipment would be damaged or completely destroyed, subjecting the country to years of blackout. Government intelligence studies, now unclassified, have predicted that from 66% to 90% of our population would die within one year, due to a lack of food, clean water, and medicine, if a significant EMP or GMD were to occur, while the country's electrical infrastructure remains unprotected. The final threat listed is an Intentional Electromagnetic Interference (IEMI). It is easily created by utilizing off-the-shelf parts, available for purchase on the internet, that will fit into a van. While much less powerful than a significant EMP or GMD, twenty vans, equipped with bench-made IEMI devices and scattered throughout the country, can shut down major industries and major parts of the country for weeks, if not months, through a coordinated attack, similar to 9/11, by targeting key industries/vulnerabilities. In conclusion, these electromagnetic threats to our unprotected electrical infrastructure, and therefor to our entire country, are absolutely real, and must be addressed.

PI 4024 provided significant substantiation for the need to protect critical infrastructure against cyber

attack for equipment connected to the internet. However, equipment does not need to be connected to the internet in order to be damaged or destroyed by cyber threats. Equipment can be damaged by cyber weapons such as malicious computer worms that attack SCADA (control) systems. A great example is the Stuxnet worm that destroyed the centrifuges in Iran. Thus, this Public Comment deletes the PI 4024 reference to the internet and adds cyberweapon to the list of threats that need to be either protected against or assessed.

Related Item											
• PI 772	• PI 3080	• FR 8801	• PI 4024	• PI 3055	• FR 7947	• PI 4026	• FR 8880	• FR 8917	• PI 2888	• FR 8914	• PI 3083

Submitter Information Verification

Submitter Full Name: Vincent Saporita
Organization: Saporita Consulting
Affiliation: Saporita Consulting
Street Address:
City:
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Zip:
Submittal Date: Tue Jul 27 15:10:12 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected
Resolution: Cybersecurity is a major issue that would require Correlating Committee action.

Public Comment No. 970-NFPA 70-2021 [Section No. 660.47(A)]

(A) Medium-Voltage and High-Voltage Parts.

All medium-voltage and high-voltage parts, including X-ray tubes, shall be mounted within grounded enclosures. Air, oil, gas, or other suitable insulating media shall be used to insulate the high voltage from the grounded enclosure. The connection from the high-voltage equipment to X-ray tubes and other high-voltage components shall be made with high-voltage shielded cables.

Additional Proposed Changes

File Name	Description	Approved
12_CN_62.pdf	12 CN62	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 62 appeared in the First Draft Report on First Revision No. 9513.

PI 1718, which would have added a definition for “Medium Voltage”, was resolved by CMP 1; therefore, the Correlating Committee directs the Panel to revise the title of 660.47(A) and remove “medium voltage” since this term was not added to Article 100.

Related Item

• First Revision No. 9513

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:16:30 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7597-NFPA 70-2021
Statement: The title and wording in section 660.47(A) were revised to remove medium voltage per correlating committee guidance.

Correlating Committee Note No. 62-NFPA 70-2021 [Section No. 660.47(A)]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 17:01:18 EDT 2021

Committee Statement

Committee Statement: PI 1718, which would have added a definition for “Medium Voltage”, was resolved by CMP 1; therefore, the Correlating Committee directs the Panel to revise the title of 660.47(A) and remove “medium voltage” since this term was not added to Article 100.

First Revision No. 9513-NFPA 70-2021 [Section No. 660.47(A)]

Ballot Results

✔ **This item has passed ballot**

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1564-NFPA 70-2021 [Section No. 665.4]

~~**665.4** Hazardous (Classified) Locations.~~

~~Heating equipment shall not be installed in hazardous (classified) locations as defined in Article 500 unless the equipment and wiring are designed and approved for the hazardous (classified) locations.~~

Statement of Problem and Substantiation for Public Comment

Satisfying the requirements for classified location installations is much more involved than just using "equipment and wiring" that are approved. Furthermore, the reference to Article 500 violates the style manual and omits the use the zone method of area classification.

Related Item

• PI 3327 (global)

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Ryan Jackson
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 16 14:13:14 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Accepted
Resolution: SR-7599-NFPA 70-2021
Statement: Section 665.4 was removed as it is redundant according to 90.3. The requirements for allowable equipment in hazardous locations are contained in chapter 5 and should be used for determination of suitability for heating equipment.

Public Comment No. 971-NFPA 70-2021 [Section No. 668.1]

668.1 Scope.

This article applies to the installation of the electrical components and accessory equipment of electrolytic cells, electrolytic cell lines, and process power supply for the production of aluminum, cadmium, chlorine, copper, fluorine, hydrogen peroxide, magnesium, sodium, sodium chlorate, and zinc.

Not covered by this article are cells used as a source of electric energy and for electroplating processes and cells used for the production of hydrogen.

Informational Note No. 1: In general, any cell line or group of cell lines operated as a unit for the production of a particular metal, gas, or chemical compound may differ from any other cell lines producing the same product because of variations in the particular raw materials used, output capacity, use of proprietary methods or process practices, or other modifying factors to the extent that detailed *Code* requirements become overly restrictive and do not accomplish the stated purpose of this *Code*.

Informational Note No. 2: See IEEE 463-2013, *Standard for Electrical Safety Practices in Electrolytic Cell Line Working Zones*, for further information.

Additional Proposed Changes

File Name	Description	Approved
12_CN_63.pdf	12_CN63	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 63 appeared in the First Draft Report on First Revision No. 9577.

The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

Related Item

• First Revision No. 9577

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:18:20 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution:	No action was required.

Correlating Committee Note No. 63-NFPA 70-2021 [Section No. 668.1]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 17:02:15 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

First Revision No. 9577-NFPA 70-2021 [Section No. 668.1]

Ballot Results

✔ **This item has passed ballot**

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 979-NFPA 70-2021 [Section No. 670.1]

670.1 Scope.

This article covers the definition of, the nameplate data for, and the size and overcurrent protection of supply conductors to industrial machinery.

Informational Note No. 1: See NFPA 79-2021, *Electrical Standard for Industrial Machinery*, for further information.

Informational Note No. 2: See 110.26 for information on the workspace requirements for equipment containing supply conductor terminals.

Informational Note No. 3: See NFPA 79-2021, *Electrical Standard for Industrial Machinery*, for information on the workspace requirements for machine power and control equipment.

Additional Proposed Changes

File Name	Description	Approved
12_CN_64.pdf	12 CN64	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 64 appeared in the First Draft Report on First Revision No. 9528.

The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and directs the Panel to review the scope of Article 670 as the requirements appear to exceed the current scope, giving deference to Section 1.4 of NFPA 79. The Correlating Committee also directs the Panel review the two Informational Notes referencing NFPA 79 for repetition.

Related Item

• First Revision No. 9528

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:49:50 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7648-NFPA 70-2021

Statement: The scope in 670.1 is proposed to be revised to include overvoltage protection as pointed out by the correlating committee. Not all machinery is designed to NFPA 79, however overvoltage protection is necessary for all industrial machinery with safety circuits as substantiated by the NFPA research report “Data Assessment for Electrical Surge Protective Devices” commissioned by the Fire Protection Research Foundation, 1 Batterymarch Park, Quincy, MA 02169-7471. The informational notes each have a separate purpose. Informational note 1 points the user to NFPA 79 for constructions requirements for machinery. Informational notes 2 and 3 point the user to the proper workspace requirements and were purposefully placed in the scope by a joint NEC/NFPA 79 task group to clarify where the user should go for workspace clearances.

Correlating Committee Note No. 64-NFPA 70-2021 [Section No. 670.1]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 17:02:56 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and directs the Panel to review the scope of Article 670 as the requirements appear to exceed the current scope, giving deference to Section 1.4 of NFPA 79. The Correlating Committee also directs the Panel review the two Informational Notes referencing NFPA 79 for repetition.

First Revision No. 9528-NFPA 70-2021 [Section No. 670.1]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1956-NFPA 70-2021 [Section No. 670.4(B)]

(B) Disconnecting Means.

A machine shall be considered as an individual unit and therefore shall be provided with disconnecting means. The disconnecting means shall be permitted to be supplied by branch circuits protected by either fuses or circuit breakers. The disconnecting means shall not be required to incorporate overcurrent protection.

Informational Note: See NFPA *70E* -2021, *Standard for Electrical Safety in the Workplace* , which provides guidance for safely verifying the absence of voltage

~~. A permanently mounted absence of voltage tester (AVT) is an example of an approved method per NFPA *70E* .~~

Statement of Problem and Substantiation for Public Comment

If we are going to have something stating this, we should also include the other approved means. I think it would be better to strike this note all together, but if we are to keep it, we should be fair and include other approved methods of testing for a de-energized circuit. These testers have their limits in usefulness or on their impact on safety. They are not a substitute for qualified people. Also, there is no reason why the NEC should promote them above that of the other 70E required or allowed means.

I do not believe the statements given in the public input that created this constitute substantiation. We should be using the NEC to drive safety, not sales of products. This is one of multiple ways to test for absence of voltage, thus it shouldn't have its own informational note to elevate it above others. A public input to require or to discuss these devices was submitted for many articles, and in most other cases, rejected.

Here's why I don't believe there is substantiation given in the public input:

Example 1:
The author mentions some instances of improper manufacture of disconnects that lead to incidents. Such a thing is possible with these relatively new devices as well.
Example 2:
The author mentions some instances of improper manufacture of disconnects that lead to incidents. Such a thing is possible with these relatively new devices as well.
Example 3:
The author mentions more issues with manufacturing and/or installation. This time, toggle or drum switches. In this case it's not clear if these were toggle switches controlling utilization loads or a contactor. If the latter, it goes to illustrate how an improper install of a multi-component system (including one with absence of voltage testers) can lead to a hazardous situation. Again, no evidence that these components can't be faultily manufactured or applied just like the case of these drum/toggle switches.

1. Report ID: 0728900
From the information in the public input, it can not be determined that if the disconnect (normally not located on the equipment) had been off, locked out, and verified de-energized with one of these absence of voltage testers, that the employee would not have been able to be injured by contact with the capacitor.
2. Report ID: 0420600
Again like above here, no evidence is given in the public input that the capacitor would have been discharged, had the absence of voltage tester been on the disconnect. Many times, it wouldn't have been. It could be downstream of the disconnect with the tester and on the load side of a contactor,

such that the absence of voltage tester wouldn't have seen it. In both this and the case above, the narrative in the report doesn't support even an idea that had the employee locked out the disconnect and tested it (with or without the absence of voltage tester), that the hazard caused by the capacitor wouldn't have presented itself.
3. Report ID: 0316300
In this case, an employee had a possibly untrained helper shut off a breaker. Report doesn't say if said breaker is at the equipment or in a panelboard (which might be seperate from the purview of this article). Regardless, the employee failed to verify a de-energized condition. The narrative that had the tester device been present, the unqualified person would have known what it meant and would have told the other worker may be incorrect. These devices are only helpful to qualified persons.
4. Report ID: 0452110
From the text given in the public input, we can not determine that an absence of voltage tester would have mitigated this tragedy. It involved an unlabeled breaker, and an assumption someone shouldn't have made. The absense of voltage tester can present the same hazards if improperly applied or maintained. Furthermore, even if the absense of voltage tester had been properly installed at the panelboard, it would still be hazardous to rely on it meaning a wire in the junction box is safe to work on for the same reason. Someone relying on one of these devices located in a breaker panel to clearly indicate that a wire in a multi circuit junction box far from it is de-energized would be hazardous for a number of reasons. If anything, this would be a cautionary tale of the dangers of over-applying these devices.
5. Report ID 0522300
This one doesn't indicate at all that an absence of voltage tester would have prevented this incident. It seems there was no regard for shutting off the equipment at all. The device only works if someone cares to shut the equipment off.
6. Report ID 0729700
Again, another tragedy caused by improper workmanship and improper work practices. From the text of the report in this public input, we see nothing to conclude that had one of these been installed, that the wiring that was associated with another circuit would have been detected.

These devices don't replace qualified people – in most cases they only indicate what part of a piece of equipment are de-energized, and thus they are only useful to qualified persons. They could create greater hazards to unqualified persons.

These devices are only accurate if installed on the correct location of a circuit. In some industrial facilities, there may be stickers indicating the one line throughout the switch gear. These facilities take great care to document and properly install their equipment. In these facilities, one might be able to trust that one of these is properly installed, and usable to a qualified person. In other facilities, these devices may be improperly interpreted as to what points of a circuit are deenergizd when they indicate a de-energized position. Thus, these devices have their limits and risks.

These devices may be best used by facility owners who have the confidence in the work they did to install and maintain them, in order to allow their employees to rely on them. Installing them on every piece of equipment may not help safety due to both possible improper install, neglect, improper interpretation of what they indicate. The idea that these will improve safety across the board would have to be routed in an idea that they are a replacement for qualified people, when they aren't.

These very useful devices will continue to have a positive impact on the industry. Requiring them everywhere, and putting notes about them in the NEC may not promote safety, however, for the reasons stated above.

Related Item

• Public Input No. 4000-NFPA 70-2020 [Section No. 670.4(B)]

• First Revision No. 9522-NFPA 70-2021 [Section No. 670.4(B)]

Submitter Information Verification

Submitter Full Name: Josh Weaver
Organization: [Not Specified]
Street Address:

City:
State:
Zip:
Submittal Date: Wed Aug 18 20:09:01 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7654-NFPA 70-2021
Statement: The second sentence of the informational note in 670.4(B) was deleted as there are multiple methods of verifying absence of voltage and the pointer to NFPA 70E is all that is necessary. The informational note was revised to clarify the application of NFPA 70E.

Public Comment No. 1957-NFPA 70-2021 [Section No. 670.4(B)]

(B) Disconnecting Means.

A machine shall be considered as an individual unit and therefore shall be provided with disconnecting means. The disconnecting means shall be permitted to be supplied by branch circuits protected by either fuses or circuit breakers. The disconnecting means shall not be required to incorporate overcurrent protection.

Informational Note: See NFPA *70E*-2021, *Standard for Electrical Safety in the Workplace*, which provides guidance for safely verifying the absence of voltage. ~~A~~ Testing with a calibrated meter on known live circuit, then the presumed de-energized circuit, then a known live circuit, as well as a qualified person relying on a properly installed and maintained, permanently mounted absence of voltage tester (AVT) ~~is an example of an approved method~~ are approved methods per NFPA *70E*.

Statement of Problem and Substantiation for Public Comment

If we are going to have something stating this, we should also include the other approved means. I think it would be better to strike this note all together, but if we are to keep it, we should be fair and include other approved methods of testing for a de-energized circuit. These testers have their limits in usefulness or on their impact on safety. They are not a substitute for qualified people. Also, there is no reason why the NEC should promote them above that of the other 70E required or allowed means.

I do not believe the statements given in the public input that created this constitute substantiation. We should be using the NEC to drive safety, not sales of products. This is one of multiple ways to test for absence of voltage, thus it shouldn't have its own informational note to elevate it above others. A public input to require or to discuss these devices was submitted for many articles, and in most other cases, rejected.

Here's why I don't believe there is substantiation given in the public input:

Example 1:
The author mentions some instances of improper manufacture of disconnects that lead to incidents. Such a thing is possible with these relatively new devices as well.
Example 2:
The author mentions some instances of improper manufacture of disconnects that lead to incidents. Such a thing is possible with these relatively new devices as well.
Example 3:
The author mentions more issues with manufacturing and/or installation. This time, toggle or drum switches. In this case it's not clear if these were toggle switches controlling utilization loads or a contactor. If the latter, it goes to illustrate how an improper install of a multi-component system (including one with absence of voltage testers) can lead to a hazardous situation. Again, no evidence that these components can't be faultily manufactured or applied just like the case of these drum/toggle switches.

1. Report ID: 0728900
From the information in the public input, it can not be determined that if the disconnect (normally not located on the equipment) had been off, locked out, and verified de-energized with one of these absence of voltage testers, that the employee would not have been able to be injured by contact with the capacitor.
2. Report ID: 0420600
Again like above here, no evidence is given in the public input that the capacitor would have been discharged, had the absence of voltage tester been on the disconnect. Many times, it wouldn't have been. It could be downstream of the disconnect with the tester and on the load side of a contactor,

such that the absence of voltage tester wouldn't have seen it. In both this and the case above, the narrative in the report doesn't support even an idea that had the employee locked out the disconnect and tested it (with or without the absence of voltage tester), that the hazard caused by the capacitor wouldn't have presented itself.
3. Report ID: 0316300
In this case, an employee had a possibly untrained helper shut off a breaker. Report doesn't say if said breaker is at the equipment or in a panelboard (which might be seperate from the purview of this article). Regardless, the employee failed to verify a de-energized condition. The narrative that had the tester device been present, the unqualified person would have known what it meant and would have told the other worker may be incorrect. These devices are only helpful to qualified persons.
4. Report ID: 0452110
From the text given in the public input, we can not determine that an absence of voltage tester would have mitigated this tragedy. It involved an unlabeled breaker, and an assumption someone shouldn't have made. The absense of voltage tester can present the same hazards if improperly applied or maintained. Furthermore, even if the absense of voltage tester had been properly installed at the panelboard, it would still be hazardous to rely on it meaning a wire in the junction box is safe to work on for the same reason. Someone relying on one of these devices located in a breaker panel to clearly indicate that a wire in a multi circuit junction box far from it is de-energized would be hazardous for a number of reasons. If anything, this would be a cautionary tale of the dangers of over-applying these devices.
5. Report ID 0522300
This one doesn't indicate at all that an absence of voltage tester would have prevented this incident. It seems there was no regard for shutting off the equipment at all. The device only works if someone cares to shut the equipment off.
6. Report ID 0729700
Again, another tragedy caused by improper workmanship and improper work practices. From the text of the report in this public input, we see nothing to conclude that had one of these been installed, that the wiring that was associated with another circuit would have been detected.

These devices don't replace qualified people – in most cases they only indicate what part of a piece of equipment are de-energized, and thus they are only useful to qualified persons. They could create greater hazards to unqualified persons.

These devices are only accurate if installed on the correct location of a circuit. In some industrial facilities, there may be stickers indicating the one line throughout the switch gear. These facilities take great care to document and properly install their equipment. In these facilities, one might be able to trust that one of these is properly installed, and usable to a qualified person. In other facilities, these devices may be improperly interpreted as to what points of a circuit are deenergizd when they indicate a de-energized position. Thus, these devices have their limits and risks.

These devices may be best used by facility owners who have the confidence in the work they did to install and maintain them, in order to allow their employees to rely on them. Installing them on every piece of equipment may not help safety due to both possible improper install, neglect, improper interpretation of what they indicate. The idea that these will improve safety across the board would have to be routed in an idea that they are a replacement for qualified people, when they aren't.

These very useful devices will continue to have a positive impact on the industry. Requiring them everywhere, and putting notes about them in the NEC may not promote safety, however, for the reasons stated above.

Related Item

- Public Input No. 4000-NFPA 70-2020 [Section No. 670.4(B)]
- First Revision No. 9522-NFPA 70-2021 [Section No. 670.4(B)]

Submitter Information Verification

Submitter Full Name: Josh Weaver
Organization: [Not Specified]
Street Address:

City:
State:
Zip:
Submittal Date: Wed Aug 18 20:10:02 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7654-NFPA 70-2021

Statement: The second sentence of the informational note in 670.4(B) was deleted as there are multiple methods of verifying absence of voltage and the pointer to NFPA 70E is all that is necessary. The informational note was revised to clarify the application of NFPA 70E.

Public Comment No. 2036-NFPA 70-2021 [Section No. 670.4(B)]

(B) Disconnecting Means.

A machine shall be considered as an individual unit and therefore shall be provided with disconnecting means. The disconnecting means shall be permitted to be supplied by branch circuits protected by either fuses or circuit breakers. The disconnecting means shall not be required to incorporate overcurrent protection.

Informational Note: See NFPA *70E*-2021, *Standard for Electrical Safety in the Workplace*, which provides guidance for ~~safely verifying the absence of voltage. A permanently mounted absence of voltage tester (AVT) is an example of an approved method per NFPA *70E*~~ . creating an electrically safe work condition for performing maintenance or other work on the machine.

Statement of Problem and Substantiation for Public Comment

The First Draft language provided guidance through the Informational Note that AVTs had been approved for use by NFPA 70E as one of multiple methods to verify the absence of voltage. This is problematic for Article 670 of NFPA 70 for two reasons, based on each of the locations where such devices would need to be installed to provide their intended information.

The first of these two locations would be within the machine itself, likely somewhere on or near the control panel that houses the power mains for the machine. If installed within the machine itself then they would be out of scope of Article 670. Devices installed within industrial machinery would need to be addressed through NFPA 79, if anywhere.

The second, and only other location in which they could provide their intended information, would be within the disconnecting device for the machine. Such disconnects are typically a self-contained switch assembly of some sort, and those are Listed products. Altering a Listed product by mounting additional devices inside it, adding additional holes in the enclosure, or having multiple additional conductors inside the enclosure that are not part of those needed for the designed purpose of the device voids the listing, unless the disconnect is listed for use with those specific additional devices installed in a specific manner. Therefore the addition of AVTs to Listed disconnect devices whose listing does not include that specific AVT and installation method should not be allowed.

For the second reason above I would also suggest that the good folks wo provide a valuable service by maintaining the language of NFPA 70E may want to consider restricting AVTs to installations outside of Listed disconnecting devices unless they have been specifically included in the listing.

Related Item

• FR 9522

Submitter Information Verification

Submitter Full Name: Karl Reighard
Organization: Delmarva Power And Light
Affiliation: -self-
Street Address:
City:
State:
Zip:

Submittal Date: Thu Aug 19 08:54:10 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7654-NFPA 70-2021
Statement: The second sentence of the informational note in 670.4(B) was deleted as there are multiple methods of verifying absence of voltage and the pointer to NFPA 70E is all that is necessary. The informational note was revised to clarify the application of NFPA 70E.

Public Comment No. 1129-NFPA 70-2021 [Section No. 670.6]

~~**670.6** Overvoltage Protection.~~

~~Industrial machinery with safety circuits shall have overvoltage protection installed. If a surge protective device is used, it shall be listed and installed in accordance with Part II of Article 242.~~

Statement of Problem and Substantiation for Public Comment

Delete this requirement, it is redundant and unnecessary. Protection against overvoltage for industrial machinery is already addressed by NFPA 79 in Section 7.8. The 2020 NEC states in 670.1 “This Article covers the definition of, the nameplate data for, and the size and overcurrent protection of supply conductors to industrial machinery”. Based on the words in this statement overvoltage protection is clearly not within the scope of Article 670. Requiring overvoltage protection in the circuit from the supply to the point of connection to the electrical equipment of the machine could result in redundant protection where such protection would also be provided in the machine as required by NFPA 79. The result is overvoltage protection in the supply circuit to the machine and the machine itself. This “belt and suspenders” approach creates an unnecessary burden on machine installations.

Further comments;
The language in 670.6 is very subjective and unenforceable. How does an AHJ determine that industrial machinery incorporates safety circuits. It is a leap of faith to expect that this can be verified. There is no mechanism in place to assist the AHJ in making this determination. Industrial machines are not provided with any information that would assist them in determining compliance with this requirement. The proposed language will result in some AHJ's requiring overvoltage protection for machines that do not require it in order to avoid noncompliance of a requirement that they cannot interpret and apply properly. This is an unintended consequence and should not exist. Forcing users to install equipment that is not necessary is not the intent of the code. The selection and use of overvoltage protection for industrial machinery is best left to the manufacturer, not the installer of the machine.

Related Item

• Public Input No. 4581

Submitter Information Verification

Submitter Full Name: John Kovacik
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 09 17:33:47 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: Overvoltage protection is required for all industrial machinery with safety circuits regardless of whether or not they are designed to NFPA79. Not all machinery is designed to NFPA79 however overvoltage protection is necessary for all industrial machinery with safety circuits as substantiated by the NFPA research report “Data Assessment for Electrical Surge Protective Devices” commissioned by the Fire Protection Research Foundation, 1 Batterymarch Park, Quincy, MA 02169-7471.

Public Comment No. 1169-NFPA 70-2021 [Section No. 670.6]

~~**670.6** Overvoltage Protection.~~

~~Industrial machinery with safety circuits shall have overvoltage protection installed. If a surge protective device is used, it shall be listed and installed in accordance with Part II of Article 242.~~

Statement of Problem and Substantiation for Public Comment

670.6 is out of scope of Article 670, which I include here for reference:

670.1 Scope.
This article covers the definition of, the nameplate data for, and the size and overcurrent protection of supply conductors to industrial
machinery.
Informational Note No. 1: See NFPA 79-2021, Electrical Standard for Industrial Machinery, for further information.
Informational Note No. 2: See 110.26 for information on the workspace requirements for equipment containing supply conductor
terminals.
Informational Note No. 3: See NFPA 79-2021, Electrical Standard for Industrial Machinery, for information on the workspace
requirements for machine power and control equipment.

NFPA 79 would be the proper place to include this requirement, if not already covered in any applicable product standards.

It is also important to note that having transient overvoltage protection at the supply connection for many industrial machines, especially those with multiple large motors or inductive devices that operate on a momentary or cyclical basis, is not an effective method of protection for the internal control or safety circuits of those machines. Most of the electrical noise or surges that cause improper operation or failure of control circuits are generated within the machine itself and transmitted through direct, inductive, or capacitive means to the control wiring. Transient protection devices or circuits located internally within the machine itself, directly at the machine control boards, is the most effective means to provide this protection, and those devices or circuits would clearly be outside of the scope of NFPA 70.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 1185-NFPA 70-2021 [Definition: Safety Circuit.]	
Public Comment No. 1185-NFPA 70-2021 [Definition: Safety Circuit.]	

Related Item

• FR 9578 • FR 9518

Submitter Information Verification

Submitter Full Name: Karl Reighard
Organization: Delmarva Power And Light
Affiliation: -self-
Street Address:

City:
State:
Zip:
Submittal Date: Tue Aug 10 13:42:57 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected

Resolution: Overvoltage protection is required for all industrial machinery with safety circuits regardless of whether or not they are designed to NFPA79. Not all machinery is designed to NFPA79 however overvoltage protection is necessary for all industrial machinery with safety circuits as substantiated by the NFPA research report “Data Assessment for Electrical Surge Protective Devices” commissioned by the Fire Protection Research Foundation, 1 Batterymarch Park, Quincy, MA 02169-7471.

Public Comment No. 972-NFPA 70-2021 [Section No. 670.6]

670.6 Overvoltage Protection.

Industrial machinery with safety circuits shall have overvoltage protection installed. If a surge protective device is used, it shall be listed and installed in accordance with Part II of Article 242.

Additional Proposed Changes

File Name	Description	Approved
12_CN_65.pdf	12 CN65	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 65 appeared in the First Draft Report on First Revision No. 9578.

The Correlating Committee directs that FR 9578 be reviewed for compliance with 4.1.1 of the NEC Style Manual. Specifying that “surge protection” is required to be listed is covered in Section 242.8, and it is not necessary to repeat requirements in Chapters 1 through 4.

Related Item

• First Revision No. 9578

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:24:35 EDT 2021
Committee: NEC-P12

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7644-NFPA 70-2021
Statement: The last sentence of 670.6 was deleted as article 242 already requires listing and the requirements of Ch 1-4 are not necessary to repeat per the NEC Style manual 4.1.1.

Correlating Committee Note No. 65-NFPA 70-2021 [Section No. 670.6]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Mon May 03 17:22:01 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that FR 9578 be reviewed for compliance with 4.1.1 of the NEC Style Manual. Specifying that "surge protection" is required to be listed is covered in Section 242.8, and it is not necessary to repeat requirements in Chapters 1 through 4.

First Revision No. 9578-NFPA 70-2021 [Section No. 670.6]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.