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M E M O R A N D U M

TO: Code-Making Panel 8

FROM: Sarah Caldwell, *Committee Administrator*

DATE: April 15, 2021

SUBJECT: NEC® First Draft Technical Committee FINAL Ballot Results (A22)

According to the final ballot results, all ballot items received the necessary affirmative votes to pass ballot.

13 Members Eligible to Vote

1 Members Not Returned (*Tuzzino*)

The attached report shows the number of affirmative, negative, and abstaining votes as well as the explanation of the vote for each revision.

To pass ballot, each revision requires: (1) a simple majority of those eligible to vote and (2) an affirmative vote of $\frac{2}{3}$ of ballots returned. See Sections 3.3.4.3.(c) and 4.3.10.1 of the *Regulations Governing the Development of NFPA Standards*.



First Revision No. 7501-NFPA 70-2020 [Global Input]

This FR moves all existing definitions under the purview of CMP-8 to Article 100 and revises these definitions for compliance with Section 2.2.2 of the NEC Style Manual. Additionally all definition sections (XXX.2) in the articles under the responsibility of CMP-8 are deleted.

See attached WORD document for relocated definitions.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
NEC_CMP-8_Defs_to_100.docx	Relocated Definitions to Article 100. For staff use	
NEC_CMP-8_Defs_to_100_for_ballot.docx	For ballot	

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Nov 25 11:40:39 EST 2020

Committee Statement

Committee Statement: The definitions for Busway, Cable Tray Systems, Cablebus, Cells, Conduit, Gutters, Headers, Raceways, Tubings, and Wireways were reformatted and relocated from their respective Articles to Article 100 per the 2020 NEC Style Manual Section 2.2.2.

The definitions of Cells and Headers for Articles 372 and 374 were combined into a single definition for clarity. (See PI 3574)

The definitions were revised per Section 2.2.2.3 of the 2020 NEC Style Manual and utilized the "base term" when appropriate.

The Informational Note under Busways was deleted to comply with Section 4.1.4 of the 2020 NEC Style Manual. (See PI 3863)

Response Message: FR-7501-NFPA 70-2020

[Public Input No. 2922-NFPA 70-2020 \[Section No. 370.2\]](#)

[Public Input No. 3544-NFPA 70-2020 \[Section No. 348.2\]](#)

[Public Input No. 3545-NFPA 70-2020 \[Section No. 350.2\]](#)

[Public Input No. 3552-NFPA 70-2020 \[Section No. 356.2\]](#)

[Public Input No. 3863-NFPA 70-2020 \[Definition: Busway.\]](#)

[Public Input No. 2947-NFPA 70-2020 \[Section No. 390.2\]](#)

[Public Input No. 3542-NFPA 70-2020 \[Section No. 344.2\]](#)

[Public Input No. 3584-NFPA 70-2020 \[Section No. 386.2\]](#)

[Public Input No. 3589-NFPA 70-2020 \[Section No. 390.2\]](#)
[Public Input No. 3553-NFPA 70-2020 \[Section No. 358.2\]](#)
[Public Input No. 2945-NFPA 70-2020 \[Section No. 388.2\]](#)
[Public Input No. 3564-NFPA 70-2020 \[Section No. 362.2\]](#)
[Public Input No. 2920-NFPA 70-2020 \[Section No. 366.2\]](#)
[Public Input No. 3549-NFPA 70-2020 \[Section No. 354.2\]](#)
[Public Input No. 3574-NFPA 70-2020 \[Section No. 372.2\]](#)
[Public Input No. 2914-NFPA 70-2020 \[Section No. 355.2\]](#)
[Public Input No. 2906-NFPA 70-2020 \[Section No. 348.2\]](#)
[Public Input No. 3551-NFPA 70-2020 \[Section No. 355.2\]](#)
[Public Input No. 3590-NFPA 70-2020 \[Section No. 392.2\]](#)
[Public Input No. 2908-NFPA 70-2020 \[Section No. 350.2\]](#)
[Public Input No. 2890-NFPA 70-2020 \[New Definition after Definition: Thermally Protected \(as ap...\]](#)
[Public Input No. 3555-NFPA 70-2020 \[Section No. 360.2\]](#)
[Public Input No. 3576-NFPA 70-2020 \[Section No. 374.2\]](#)
[Public Input No. 3547-NFPA 70-2020 \[Section No. 352.2\]](#)
[Public Input No. 2900-NFPA 70-2020 \[New Definition after Definition: Handhole Enclosure.\]](#)
[Public Input No. 2903-NFPA 70-2020 \[Section No. 344.2\]](#)
[Public Input No. 2893-NFPA 70-2020 \[New Definition after Definition: Weatherproof.\]](#)
[Public Input No. 2948-NFPA 70-2020 \[Section No. 392.2\]](#)
[Public Input No. 2898-NFPA 70-2020 \[New Definition after Definition: Cable Routing Assembly.\]](#)
[Public Input No. 2892-NFPA 70-2020 \[New Definition after Definition: Guest Suite.\]](#)
[Public Input No. 3541-NFPA 70-2020 \[Section No. 342.2\]](#)
[Public Input No. 2895-NFPA 70-2020 \[New Definition after Definition: Building.\]](#)
[Public Input No. 2896-NFPA 70-2020 \[New Definition after Definition: Cable Routing Assembly.\]](#)
[Public Input No. 2917-NFPA 70-2020 \[Section No. 360.2\]](#)
[Public Input No. 2910-NFPA 70-2020 \[Section No. 352.2\]](#)
[Public Input No. 2925-NFPA 70-2020 \[Section No. 374.2\]](#)
[Public Input No. 3573-NFPA 70-2020 \[Section No. 370.2\]](#)
[Public Input No. 4344-NFPA 70-2020 \[Definition: Intermediate Metal Conduit \(IMC\).\]](#)
[Public Input No. 4448-NFPA 70-2020 \[New Definition after Definition: Weatherproof.\]](#)
[Public Input No. 3491-NFPA 70-2020 \[Definition: Cell.\]](#)
[Public Input No. 3496-NFPA 70-2020 \[Definition: Cell.\]](#)
[Public Input No. 3548-NFPA 70-2020 \[Section No. 353.2\]](#)
[Public Input No. 3565-NFPA 70-2020 \[Section No. 366.2\]](#)
[Public Input No. 2915-NFPA 70-2020 \[Section No. 356.2\]](#)
[Public Input No. 3581-NFPA 70-2020 \[Section No. 384.2\]](#)
[Public Input No. 2918-NFPA 70-2020 \[Section No. 362.2\]](#)
[Public Input No. 2916-NFPA 70-2020 \[Section No. 358.2\]](#)
[Public Input No. 2889-NFPA 70-2020 \[New Definition after Definition: Conductor, Insulated.\]](#)

[Public Input No. 2927-NFPA 70-2020 \[Section No. 376.2\]](#)

[Public Input No. 2943-NFPA 70-2020 \[Section No. 386.2\]](#)

[Public Input No. 3578-NFPA 70-2020 \[Section No. 378.2\]](#)

[Public Input No. 2921-NFPA 70-2020 \[Section No. 368.2\]](#)

[Public Input No. 2928-NFPA 70-2020 \[Section No. 378.2\]](#)

[Public Input No. 3569-NFPA 70-2020 \[Section No. 368.2\]](#)

[Public Input No. 2911-NFPA 70-2020 \[Section No. 353.2\]](#)

[Public Input No. 3494-NFPA 70-2020 \[Definition: Cell.\]](#)

[Public Input No. 3577-NFPA 70-2020 \[Section No. 376.2\]](#)

[Public Input No. 2902-NFPA 70-2020 \[Section No. 342.2\]](#)

[Public Input No. 2924-NFPA 70-2020 \[Section No. 372.2\]](#)

[Public Input No. 2891-NFPA 70-2020 \[New Definition after Definition: Raceway.\]](#)

[Public Input No. 2912-NFPA 70-2020 \[Section No. 354.2\]](#)

[Public Input No. 2942-NFPA 70-2020 \[Section No. 384.2\]](#)

[Public Input No. 3587-NFPA 70-2020 \[Section No. 388.2\]](#)

[Public Input No. 2897-NFPA 70-2020 \[New Definition after Definition: Cable Routing Assembly.\]](#)

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.

NEC_CMP-8 Definitions moving to Article 100

~~342.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Conduit, Intermediate Metal (Intermediate Metal Conduit) (IMC).

A steel threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings. (CMP-8)

~~344.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Conduit, Rigid Metal (Rigid Metal Conduit) (RMC).

A threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings. (CMP -8)

~~348.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Conduit, Flexible Metal (Flexible Metal Conduit) (FMC).

A raceway of circular cross section made of helically wound, formed, interlocked metal strip. (CMP-8)

~~350.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Conduit, Liquidtight Flexible Metal (Liquidtight Flexible Metal Conduit) (LFMC).

A raceway of circular cross section having an outer liquidtight, nonmetallic, sunlight-resistant jacket over an inner flexible metal core with associated couplings, connectors, and fittings for the installation of electric conductors. (CMP-8)

~~352.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Conduit, Rigid Polyvinyl Chloride (Rigid Polyvinyl Chloride Conduit) (PVC).

A rigid nonmetallic raceway of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables. (CMP-8)

~~353.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Conduit, High Density Polyethylene (High Density Polyethylene Conduit) (HDPE) Conduit.

A nonmetallic raceway of circular cross section, with associated couplings, connectors, and fittings for the installation of electrical conductors. (CMP-8)

~~354.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Conduit, Nonmetallic Underground Conduit with Conductors (Nonmetallic Underground Conduit with Conductors) (NUCC).

A factory assembly of conductors or cables inside a nonmetallic, smooth wall raceway with a circular cross section. (CMP-8)

~~355.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Conduit, Reinforced Thermosetting Resin (Reinforced Thermosetting Resin Conduit) (RTRC).

A rigid nonmetallic raceway of circular cross section, with integral or associated couplings, connectors, and fittings for the installation of electrical conductors and cables. (CMP-8)

~~356.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Conduit, Liquidtight Flexible Nonmetallic (Liquidtight Flexible Nonmetallic Conduit) (LFNC).

A raceway of circular cross section of various types as follows:

- (1) A smooth seamless inner core and cover bonded together and having one or more reinforcement layers between the core and covers, designated as Type LFNC-A
- (2) A smooth inner surface with integral reinforcement within the raceway wall, designated as Type LFNC-B
- (3) A corrugated internal and external surface without integral reinforcement within the raceway wall, designated as Type LFNC-C

Informational Note: FNMC is an alternative designation for LFNC.

(CMP-8)

~~358.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Tubing, Electrical Metallic (Electrical Metallic Tubing) (EMT).

An unthreaded thinwall raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed utilizing appropriate fittings. (CMP-8)

~~360.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Tubing, Flexible Metallic (Flexible Metallic Tubing) (FMT).

A metal raceway that is circular in cross section, flexible, and liquidtight without a nonmetallic jacket. (CMP-8)

~~362.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Tubing, Electrical Nonmetallic (Electrical Nonmetallic Tubing) (ENT).

A nonmetallic, pliable, corrugated raceway of circular cross section with integral or associated couplings, connectors, and fittings for the installation of electrical conductors. ENT is composed of a material that is resistant to moisture and chemical atmospheres and is flame retardant.

A pliable raceway is a raceway that can be bent by hand with a reasonable force but without other assistance.

(CMP-8)

~~366.2 Definitions.~~

~~The definitions in this section shall apply within this article and throughout the Code.~~

Gutter, Metal Auxiliary (Metal Auxiliary Gutter).

A sheet metal enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system.

(CMP-8)

Gutter, Nonmetallic Auxiliary (Nonmetallic Auxiliary Gutter).

A flame-retardant, nonmetallic enclosure used to supplement wiring spaces at meter centers, distribution centers, switchgear, switchboards, and similar points of wiring systems. The enclosure has hinged or removable covers for housing and protecting electrical wires, cable, and busbars. The enclosure is designed for conductors to be laid or set in place after the enclosures have been installed as a complete system. (CMP-8)

~~368.2—Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Busway.

A raceway consisting of a metal enclosure containing factory-mounted, bare or insulated conductors, which are usually copper or aluminum bars, rods, or tubes. (CMP-8)

~~Informational Note: For cablebus, refer to Article 370.~~

~~370.2—Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Cablebus.

An assembly of units or sections with insulated conductors having associated fittings forming a structural system used to securely fasten or support conductors and conductor terminations in a completely enclosed, ventilated, protective metal housing. This assembly is designed to carry fault current and to withstand the magnetic forces of such current.

Informational Note: Cablebus is ordinarily assembled at the point of installation from the components furnished or specified by the manufacturer in accordance with instructions for the specific job.

(CMP-8)

~~372.2—Definitions.~~

~~The definitions in this section shall apply only within this article.~~

Cell, Raceway (Raceway Cell).

A single, enclosed tubular space in a cellular metal or concrete floor ~~made of precast cellular concrete~~ slab member, the ~~direction axis~~ of the cell being parallel to the ~~direction axis~~ of the floor member.

(CMP-8)

Header.

Transverse metal raceways for electrical conductors, providing access to predetermined cells of a precast cellular concrete floor, thereby permitting the installation of electrical conductors from a distribution center to the floor cells. [\(CMP-8\)](#)

~~374.2 Definitions.~~

~~The definitions in this section shall apply within this article and throughout the Code.~~

Raceway, Cellular Metal Floor (Cellular Metal Floor Raceway).

The hollow spaces of cellular metal floors, together with suitable fittings, that may be approved as enclosed channel for electrical conductors. [\(CMP-8\)](#)

~~Cell.~~

~~A single enclosed tubular space in a cellular metal floor member, the axis of the cell being parallel to the axis of the metal floor member.~~

~~Header.~~

~~A transverse raceway for electrical conductors, providing access to predetermined cells of a cellular metal floor, thereby permitting the installation of electrical conductors from a distribution center to the cells.~~

~~376.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Wireways, Metal (Metal Wireways).

Sheet metal troughs with hinged or removable covers for housing and protecting electrical wires and cable and in which conductors are laid in place after the raceway has been installed as a complete system. [\(CMP-8\)](#)

~~378.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Wireways, Nonmetallic (Nonmetallic Wireways).

Flame-retardant, nonmetallic troughs with removable covers for housing and protecting electrical wires and cables in which conductors are laid in place after the raceway has been installed as a complete system. [\(CMP-8\)](#)

~~384.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Raceway, Strut-Type Channel (Strut-Type Channel Raceway).

A metal raceway that is intended to be mounted to the surface of or suspended from a structure, with associated accessories for the installation of electrical conductors and cables. [\(CMP-8\)](#)

~~386.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Raceway, Surface Metal (Surface Metal Raceway).

A metal raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors. [\(CMP-8\)](#)

~~388.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Raceway, Surface Nonmetallic (Surface Nonmetallic Raceway).

A nonmetallic raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors. (CMP-8)

~~390.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Raceway, Underfloor (Underfloor Raceway).

A raceway and associated components designed and intended for installation beneath or flush with the surface of a floor for the installation of cables and electrical conductors. (CMP-8)

~~392.2 Definition.~~

~~The definition in this section shall apply within this article and throughout the Code.~~

Cable Tray System.

A unit or assembly of units or sections and associated fittings forming a structural system used to securely fasten or support cables and raceways. (CMP-8)

**First Revision No. 7620-NFPA 70-2020 [Global Input]**

See attached WORD document.

Add new Article 369 Insulated Bus Pipe: IBP/ Tubular Covered Conductors: TCC.

Under the purview of CMP-8.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
PI-2589_NEW_ARTICLE_369.docx	New Article 369. For staff use	
NEC_Global_FR-7620_Article_369_NEW_for_ballot.pdf	For ballot	

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 14:46:08 EST 2020

Committee Statement

Committee Statement: This First Revision adds a new article to NFPA 70 to address the installation of Insulated Bus Pipe (IBP), also known as Tubular Covered Conductor (TCC). IBP may achieve listing under the UL category of CVZL using the requirements published in UL 1366 the Outline of Investigation for Insulated Bus Pipe. Therefore, this proposed article requires IBP to be listed, installed, supported, terminated, and tested in accordance with the manufacturer's instructions by qualified persons.

Note: This FR contains the definitions to show the complete article in one location. During the SR stage the definition would then be moved to Article 100.

Response Message: FR-7620-NFPA 70-2020

[Public Input No. 2589-NFPA 70-2020 \[New Article after 368\]](#)

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

11 Affirmative All

1 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.

Affirmative with Comment

Smith, Raymond H

The UL listing to be completed and submitted in time for the committee to review for the Second Revision. The definitions contained in this new article should be moved to Article 100 during the Second Revision.

Article 369 Insulated Bus Pipe (IBP)/Tubular Covered Conductors (TCC)

Part I. General

369.1 Scope.

This article covers the use, installation, and construction specifications for insulated bus pipe (IBP), Type IBP.

Informational Note: IBP is also referred to as tubular covered conductor (TCC).

369.2 Definitions.

Insulated Bus Pipe (IBP), Type IBP.

A cylindrical solid or hollow conductor with a solid insulation system, having conductive grading layers and a grounding layer imbedded in the insulation, and provided with an overall covering of insulating or metallic material

IBP Systems.

An assembly that includes bus pipe, connectors, fittings, mounting structures, and accessories.

369.6 Listing Requirements.

IBP and IBP systems shall be listed.

369.8 Reconditioning.

IBP and IBP systems shall not be permitted to be reconditioned.

Part II. Installation

369.10 Uses Permitted.

IBP shall be permitted for use on power systems in accordance with the following:

- (1) IBP shall be permitted as exposed runs in accordance with 300.37.
- (2) IBP shall be permitted to be installed in wet or damp locations only when listed for such use.
- (3) IBP shall be permitted to be installed through walls, in unbroken lengths. Where IBP penetrates an exterior wall, the entire length that penetrates the wall shall be listed for outdoor use, and the opening in the wall shall be sealed by an approved method.
- (4) IBP shall be permitted to be extended vertically through dry floors if totally enclosed in metal where passing through the floor and for a minimum distance of 1.8 m (6 ft) above the floor to provide protection from physical damage.
- (5) IBP shall be permitted for voltages up to and including 35,000 ac volts, nominal.

369.12 Uses Not Permitted.

IBP shall not be used under the following conditions:

(1) In any hazardous (classified) location except as permitted by other articles in this Code

(2) For the support of luminaires or other equipment

(3) Where concealed by the building structure

(4) Where accessible to unqualified persons

369.14 Installation.

IBP shall be installed, supported, terminated, and tested in accordance with the manufacturer's instructions by qualified persons.

369.20 Termination.

Manufacturer's supplied terminating means shall be used for IBP connections.

Informational Note No. 1: See 110.14(C) for conductor temperature limitations due to termination provisions for installations up to and including 2000 volts.

Informational Note 2: See 110.40 for conductor temperature limitations due to termination provisions for installations 2001 volts to 35,000 volts.

Informational Note No. 3: Where practicable, connections made up employing dissimilar metals in connections shall be avoided to eliminate the possibility of galvanic action.

369.80 Ampacity.

IBP shall be used within the marked ampacity of the IBP.

369.90 Temperature Rating.

IBP shall be used within the maximum rated conductor temperature.

Part III. Construction Specifications

369.100 Construction.

The IBP conductor shall be aluminum or copper. The bus pipe shall be permitted to be solid or hollow.

369.110 Barriers.

Fire barriers shall be provided where fire walls, floors, or ceilings are penetrated.

Note: See 300.21 for information concerning the spread of fire or products of combustion.

Fire barriers shall be provided where fire walls, floors, or ceilings are penetrated.

Note: See 300.21 for information concerning the spread of fire or products of combustion.

369.120 Marking.

All IBP shall be marked to indicate the following information:

(1) The maximum rated voltage phase-to-phase or phase-to-ground

(2) The maximum rated ampacity

(3) The manufacturer's name, trademark, or other distinctive marking by which the organization responsible for the product can be readily identified

- (4) The equivalent AWG size or circular mil area of the conductor
- (5) The maximum rated conductor temperature
- (6) The rated peak withstand current rating in rms symmetrical amperes or kA
- (7) Enclosure type designation, if other than Type 1
- (8) Rated short-time withstand current and duration if greater than 2 seconds

**First Revision No. 7621-NFPA 70-2020 [Global Input]**

See attached WORD document.

Create new Article 371 Flexible Bus Systems.

Under purview of CMP-8.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
PI-3616_New_Article_371.docx	New Article 371. For staff use	
NEC_Global_FR-7621_Article_371_NEW_for_ballot.pdf	For ballot	

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 14:51:46 EST 2020

Committee Statement

Committee Statement: This First Revision creates a proposed new article for flexible bus systems. CMP-8 recognizes that, while this proposed new article contains a listing requirement, neither the associated product standard nor outline of investigation exists yet.

Based on the substantiation provided in PI 3616 and the presentation made to CMP-8 it is understood that the associated product standard and outline of investigation is being developed. It is further understood that the associated product standard or outline of investigation will be available prior to public comment closing date for the 2023 NEC to allow adequate opportunity for public review of the standard and submittal of public comments on this proposed new article.

Note: Definitions and MV material included here for completeness, needs to be relocated.

Response Message: FR-7621-NFPA 70-2020

[Public Input No. 3616-NFPA 70-2020 \[Global Input\]](#)

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

11 Affirmative All

1 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.

Affirmative with Comment

Smith, Raymond H

The product investigation needs to be completed and submitted in time for the committee to review for the Second Revision. The definitions contained in this new article should be moved to Article 100 during the Second Revision.

Article 371 Flexible Bus Systems

Part I. General

371.1 Scope.

This article covers the use and installation requirements of flexible bus systems and associated fittings.

371.2 Definitions.

The definitions in this section shall apply within this article and throughout the *Code*.

Flexible Bus Systems.

An assembly of flexible insulated bus, with a system of associated fittings used to secure, support, and terminate the bus.

Informational Note: Flexible bus systems are engineered systems for a specific site location and are ordinarily assembled at the point of installation from the components furnished or specified by the manufacturer.

Flexible Insulated Bus.

A flexible rectangular conductor with an overall insulation.

371.6 Listing Requirements.

Flexible bus systems shall be listed.

Part II. Installation

371.10 Uses Permitted.

Flexible bus systems shall be permitted for the following:

- (1) Services, feeders, and branch circuits
- (2) Indoors
- (3) Outdoors where identified for outdoor use
- (4) Installed in corrosive, wet, or damp locations where identified for use
- (5) Exposed
- (6) Behind access panels where the space behind the access panel is not used for air-handling purposes
- (7) To penetrate through walls and floors in accordance with 371.18

371.12 Uses Not Permitted.

Flexible bus systems shall not be permitted to be installed in the following:

- (1) Hoistways
- (2) Where exposed to severe physical damage
- (3) Hazardous (classified) locations, unless specifically permitted in Chapter

(4) Air-handling spaces

371.14 Engineering Supervision.

Flexible bus systems shall be designed and specified for specific installation site applications under engineering supervision.

371.17 Overcurrent Protection.

Overcurrent protection shall be provided in accordance with 371.17(A) through (G).

(A) Rating of Overcurrent Protection — Services.

Flexible bus systems installed for services shall be protected against overcurrent in accordance with 230.90.

(B) Rating of Overcurrent Protection — Feeders.

Flexible bus systems installed as feeders shall be protected against overcurrent in accordance with 215.3.

Exception: The applicable requirements of 240.4 shall be permitted.

(C) Rating of Overcurrent Protection — Branch Circuits.

Flexible bus systems installed as branch circuits shall be protected against overcurrent in accordance with 210.20.

Exception: The applicable requirements of 240.4 shall be permitted.

(D) Transformer Secondary Flexible Bus Systems.

Flexible bus systems installed on a transformer secondary to the disconnect and overcurrent protection device shall be protected from overcurrent in accordance with 240.21(C).

(E) Flexible Bus Systems from Generator Terminals.

Flexible bus systems installed from generator terminals that meet the size requirement in 445.13 shall be permitted to be protected against overload by the generator overload protective device(s) required by 445.12.

(F) Flexible Bus Systems from Battery Terminals.

Flexible bus systems installed for battery systems shall be protected from overcurrent in accordance with 240.21(H).

(G) Reduction in Size of Flexible Bus Systems.

Overcurrent protection shall be required at the point where flexible bus systems are reduced in size.

Exception: For industrial establishments only, omission of overcurrent protection shall be permitted at points where a flexible bus system is reduced in size, provided that the length of the flexible bus system having a reduced size does not exceed 15 m (50 ft) and has a current rating at least equal to one-third the rating or setting of the overcurrent device ahead of the point of connection and provided that such a flexible bus system is free from contact with combustible material.

371.18 Flexible Bus Systems Installation.

Installation of flexible bus systems shall comply with 371.18(A) through (E).

(A) Manufacturer's Installation Instructions.

Flexible bus systems shall be installed under engineering supervision and in accordance with the manufacturer's instructions including supporting and securing. All documentation shall be available to the authority having jurisdiction.

(B) Physical Damage.

Flexible bus systems subject to physical damage shall have approved protective means installed.

Infomational Note: Typical methods of protecting flexible bus systems from physical damage include suitable barriers, guards, or elevation.

(C) Transversely Routed.

Flexible bus systems shall be permitted to extend transversely through partitions or walls if the section within the wall is continuous and protected against physical damage. Where the flexible bus systems penetrate a fire-resistant-rated wall or partition, the installation shall be made in accordance with 300.21.

(D) Through Dry Floors and Platforms.

Flexible bus systems shall be permitted to extend vertically through dry floors and platforms. Where the flexible bus systems penetrate a fire-resistant-rated floor or ceiling, the installation shall be made in accordance with 300.21.

(E) Through Floors and Platforms in Wet Locations.

Flexible bus systems shall be permitted to extend vertically through floors and platforms in wet locations as follows:

- (1) Where there are curbs or other suitable means to prevent waterflow through the floor or platform opening
- (2) Where the flexible bus system provides a means to seal the floor penetration

Where the flexible bus systems penetrate a fire-resistant-rated floor or ceiling, the installation shall be made in accordance with 300.21.

371.20 Terminations.

Flexible bus systems shall be terminated with fittings or devices listed for flexible bus systems.

371.30 Securing and Supporting.

Flexible insulated bus conductors shall be supported on identified mounting means at intervals not greater than 900 mm (3 ft) for horizontal runs and 450 mm (1 1/2 ft) for vertical runs unless otherwise permitted by the product listing. Flexible bus systems shall be secured and supported by listed associated fittings in accordance with 371.30(A) through (C).

(A) Associated Fittings.

Associated fittings shall be part of a listed flexible bus system.

(B) Support Brackets.

The support brackets for flexible bus systems shall be secured to the building structure or to other associated fittings that are secured to the building structure.

(C) Support Tray.

Flexible bus systems shall be permitted to be installed in support trays supplied as associated fittings for the listed flexible bus system. Support trays shall not be required to be continuous.

371.40 Short Circuit Current Rating.

Flexible bus systems shall have a short circuit current rating sufficient for the available fault current.

371.60 Grounding.

Conductive associated fitting supports for flexible bus systems shall be bonded together and grounded.

Part III. Construction Specifications

371.120 Marking.

Each section of flexible bus systems shall be marked with the manufacturer's name or trade designation, voltage rating, and current rating. Markings shall be located so as to be visible after installation.

(A) System Nameplate.

A system nameplate shall contain the manufacturer's name or trademark and the flexible bus system ratings. The ratings shall include the voltage, phase, current rating, short circuit current rating, and applicable environmental ratings. The nameplate shall be installed at each end of the flexible bus system. The nameplate shall be visible after installation.

(B) Associated Fittings.

Associated fittings shall be marked as suitable for flexible bus systems.

(C) Flexible Insulated Bus.

The flexible insulated bus shall be marked along the insulation with the manufacturer's name or trademark, voltage, current rating, and insulation temperature ratings.

Part IV. Requirements for Over 1000 Volts, Nominal

371.214 Adjacent and Supporting Structures.

Flexible bus systems shall be installed so that temperature rise from induced circulating currents in adjacent ferrous metal parts will not be hazardous to personnel or constitute a fire hazard.

371.216 Neutral Conductor.

The neutral bus of a flexible bus system, where required, shall be sized to carry all neutral load current, including harmonic currents, and shall have adequate momentary and short-circuit current ratings consistent with system requirements.

**First Revision No. 7642-NFPA 70-2020 [Detail]**

Revise Annex C Table C.1 Per Attached Word Document.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
70-2020_Informative_Annex_C-1.doc.docx	Revised Table C.1. For staff use	
70-2020_Informative_Annex_C-1.Detail_FR-7642_for_ballot.pdf	For ballot	

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Thu Dec 03 10:56:47 EST 2020

Committee Statement

Committee Statement: New column data was added to Table C.1 of appendix C to address the new sizes 5 and 6 inch EMT.

Response Message: FR-7642-NFPA 70-2020

Public Input No. 2427-NFPA 70-2020 [Section No. Table]

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

10 Affirmative All

1 Affirmative with Comments

0 Negative with Comments

1 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal
Kendall, David H.
Martin, Michael C.
Myers, Paul W.
Roe, Rhett A.
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.

Affirmative with Comment

Smith, Raymond H

Prior to the Second Revision meetings, the EMT manufacturers need to submit accurate dimensional information for 5" and 6" so the wire fill calculations in these tables can be confirmed.

Abstention

Burris, Jay

The Steel Tube Institute could not reach a consensus on this first revision.

**First Revision No. 7643-NFPA 70-2020 [Detail]**

Revise Annex C Table C.1(A) Per Attached Word Document.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
70-2020_Informative_Annex_C_-_Table_C1A.doc.docx	Revised Table C.1(A). For staff use	
70-2020_Informative_Annex_C_-_Table_C1A.Detail_FR-7643_for_ballot.pdf	For ballot	

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Thu Dec 03 11:46:59 EST 2020

Committee Statement

Committee Statement: New column data was added to Table C.1(A) of appendix C to address the new sizes 5 and 6 inch EMT.
Response Message: FR-7643-NFPA 70-2020

Public Input No. 2673-NFPA 70-2020 [Section No. Table]

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

10 Affirmative All

1 Affirmative with Comments

0 Negative with Comments

1 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal
Kendall, David H.
Martin, Michael C.
Myers, Paul W.
Roe, Rhett A.
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.

Affirmative with Comment

Smith, Raymond H

Prior to the Second Revision meetings, the EMT manufacturers need to submit accurate dimensional information for 5" and 6" so the wire fill calculations in these tables can be confirmed.

Abstention

Burris, Jay

The Steel Tube Institute could not reach a consensus on this first revision.

**First Revision No. 7644-NFPA 70-2020 [Detail]**

Revise Annex C Table C.14 Per Attached Word Document (Reference Updates Only).

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
70-2020_Informative_Annex_C_-_Table_C14.doc.docx	Revised References For Table C.14. For staff use	
70-2020_Informative_Annex_C_-_Table_C14.Detail_FR-7644_for_ballot.pdf	For ballot	

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Thu Dec 03 12:01:57 EST 2020

Committee Statement

Committee Statement: The references for Multiconductor MC Cable fill references were corrected to the correct Section and table numbers.

Response Message: FR-7644-NFPA 70-2020

[Public Input No. 1284-NFPA 70-2020 \[Section No. Table\]](#)

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7582-NFPA 70-2020 [Section No. 342.10(B)]

(B) Corrosion Environments.

IMC, elbows, couplings, and fittings shall be permitted to be installed in concrete, in direct contact with the earth, in direct burial applications, or in areas subject to severe corrosive influences where protected by corrosion protection approved for the condition.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 16:12:56 EST 2020

Committee Statement

Committee Statement: Additional text was added to 342.10(B) to clarify that IMC is permitted to be used in direct burial applications.

Response Message: FR-7582-NFPA 70-2020

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7583-NFPA 70-2020 [Sections 342.24, 342.26]

342.24 Bends — How Made .

~~Bends of IMC shall be so made that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. The radius of the curve of any field bend to the centerline of the conduit shall not be less than indicated in Table 2, Chapter 9 .~~

(A) How Made.

Bends of IMC shall be so made that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. The radius of the curve of any field bend to the centerline of the conduit shall not be less than indicated in Table 2, Chapter 9.

(B) Number in One Run.

~~There The total degrees of bends in a conduit run shall not be more than the equivalent of four quarter bends (exceed 360 degrees total) between pull points, for example, conduit bodies and boxes .~~

~~**342.26** Bends — Number in One Run.~~

~~There shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points, for example, conduit bodies and boxes.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 16:19:13 EST 2020

Committee Statement

Committee Statement: This First Revision combines Sections 342.24 and 342.26 into a single Section for clarity and usability and clarifies the total degrees of bends permitted to be used in a conduit run between pull points

Response Message: FR-7583-NFPA 70-2020

Public Input No. 1274-NFPA 70-2020 [Sections 342.24, 342.26]

Public Input No. 3270-NFPA 70-2020 [Section No. 342.26]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7584-NFPA 70-2020 [Section No. 342.30(A)]

(A) Securely Fastened.

IMC shall be secured in accordance with one of the following:

- (1) IMC shall be securely fastened within 900 mm (3 ft) of each outlet box, junction box, device box, cabinet, conduit body, or other conduit termination.
- (2) Where structural members do not readily permit fastening within 900 mm (3 ft), fastening shall be permitted to be increased to a distance of 1.5 m (5 ft).
- (3) Where approved, conduit shall not be required to be securely fastened within 900 mm (3 ft) of the service head for above-the-roof termination of a mast.

Exception: For concealed work in finished buildings or prefinished wall panels where such securing is impracticable, unbroken lengths (without coupling) of IMC shall be permitted to be fished.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 16:25:58 EST 2020

Committee Statement

Committee Statement: Where securing for concealed work in finished buildings or prefinished walls is impracticable, EMT and flexible conduits are permitted to be fished. This same practice would be acceptable for IMC.

Response Message: FR-7584-NFPA 70-2020

Public Input No. 2581-NFPA 70-2020 [Section No. 342.30(A)]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay
Campbell, David M.
Gerstetter, David A.
Hofkin, Michal
Kendall, David H.
Martin, Michael C.
Myers, Paul W.
Roe, Rhett A.
Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7586-NFPA 70-2020 [Section No. 344.10(A)(2)]

(2) Aluminum RMC.

Aluminum RMC shall be permitted to be installed where approved for the environment. ~~Rigid aluminum conduit encased in concrete or in direct contact with the earth shall be provided with approved supplementary corrosion protection.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 16:54:58 EST 2020

Committee Statement

Committee Statement: The requirements for supplementary corrosion protection are addressed under 344.10(B)(2) and should not be included under 344.10(A)(2)
Response Message: FR-7586-NFPA 70-2020

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7585-NFPA 70-2020 [Section No. 344.10(B)]

(B) Corrosive Environments.

(1) Galvanized Steel, Stainless Steel, and Red Brass RMC, Elbows, Couplings, and Fittings.

Galvanized steel, stainless steel, and red brass RMC, elbows, couplings, and fittings shall be permitted to be installed in concrete, in direct contact with the earth, in direct burial applications, or in areas subject to severe corrosive influences where protected by corrosion protection approved for the condition.

(2) Supplementary Protection of Aluminum RMC.

Aluminum RMC shall be provided with approved supplementary corrosion protection where encased in concrete or in direct contact with the earth, or in direct burial applications where identified for the application.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 16:47:26 EST 2020

Committee Statement

Committee Statement: Additional text was added to 344.10(B)(1) and 344.10(B)(2) to clarify that RMC is permitted to be used in direct burial applications.

A comma was added after red brass RMC to make it clear that the uses permitted was not meant to apply to red brass elbows only.

Response Message: FR-7585-NFPA 70-2020

[Public Input No. 1282-NFPA 70-2020 \[Section No. 344.10\]](#)

[Public Input No. 857-NFPA 70-2020 \[Section No. 344.10\(B\)\(1\)\]](#)

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7654-NFPA 70-2020 [Section No. 344.20(A)]

(A) Minimum.

RMC smaller than metric designator 16 (trade size $\frac{1}{2}$) shall not be used.

Exception: ~~For~~ Metric designator 12 (trade size $\frac{3}{8}$) shall be permitted for enclosing the leads of motors as permitted in 430.245(B).

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Thu Dec 03 14:49:32 EST 2020

Committee Statement

Committee Statement: The exception was re-written as a complete sentence as required by section 3.1.4.1 of the 2020 NEC Style Manual.

Response Message: FR-7654-NFPA 70-2020

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7588-NFPA 70-2020 [Sections 344.24, 344.26]

344.24 Bends — How Made .

~~Bends of RMC shall be so made that the conduit will not be damaged and so that the internal diameter of the conduit will not be effectively reduced. The radius of the curve of any field bend to the centerline of the conduit shall not be less than indicated in Table 2, Chapter 9 .~~

(A) How Made.

Bends of RMC shall be so made that the conduit will not be damaged and so that the internal diameter of the conduit will not be effectively reduced. The radius of the curve of any field bend to the centerline of the conduit shall not be less than indicated in Table 2, Chapter 9

(B) Number in One Run.

~~There~~ The total degrees of bends in a conduit run shall not ~~be more than the equivalent of four quarter bends (exceed 360 degrees total)~~ between pull points, ~~for example, conduit bodies and boxes .~~

~~**344.26** Bends — Number in One Run.~~

~~There shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points, for example, conduit bodies and boxes.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 17:08:26 EST 2020

Committee Statement

Committee Statement: This First Revision combines Sections 344.24 and 344.26 into a single section for clarity and usability and clarifies the total degrees of bends permitted to be used in a conduit run between pull points.

Response Message: FR-7588-NFPA 70-2020

[Public Input No. 1285-NFPA 70-2020 \[Sections 344.24, 344.26\]](#)

[Public Input No. 3271-NFPA 70-2020 \[Section No. 344.26\]](#)

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7589-NFPA 70-2020 [Section No. 344.28]

344.28 Reaming and Threading.

All cut ends shall be reamed or otherwise finished to remove rough edges. Where conduit is threaded in the field, a standard cutting die with a 1 in 16 taper ($\frac{3}{4}$ in. taper per foot) shall be used. PVC-coated RMC shall be threaded in accordance with manufacturer's instructions to prevent damage to the exterior coating.

Informational Note No. 1: See ANSI/ASME B1.20.1-2013, *Standard for Pipe Threads, General Purpose (Inch)*.

Informational Note No. 2: See NECA 101-2013, *Standard for Installing Steel Conduits (RMC, IMC, EMT)*, for information on threading and clamping methods for RMC and PVC-coated RMC.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 17:14:19 EST 2020

Committee Statement

Committee Statement: Damage to the exterior coating of PVC coated conduit can create unsafe conditions. In order to prevent damage during threading and bending the manufacturer's instruction for clamping shall be followed

Response Message: FR-7589-NFPA 70-2020

Public Input No. 1286-NFPA 70-2020 [Section No. 344.28]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7590-NFPA 70-2020 [Section No. 344.30(A)]

(A) Securely Fastened.

RMC shall be secured in accordance with one of the following:

- (1) RMC shall be securely fastened within 900 mm (3 ft) of each outlet box, junction box, device box, cabinet, conduit body, or other conduit termination.
- (2) Fastening shall be permitted to be increased to a distance of 1.5 m (5 ft) where structural members do not readily permit fastening within 900 mm (3 ft).
- (3) Where approved, conduit shall not be required to be securely fastened within 900 mm (3 ft) of the service head for above-the-roof termination of a mast.

Exception: For concealed work in finished buildings or prefinished wall panels where such securing is impracticable, unbroken lengths (without coupling) of RMC shall be permitted to be fished.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 17:19:52 EST 2020

Committee Statement

Committee Statement: Where securing for concealed work in finished buildings or prefinished walls is impracticable, EMT and flexible conduits are permitted to be fished. This same practice would be acceptable for RMC

Response Message: FR-7590-NFPA 70-2020

Public Input No. 2582-NFPA 70-2020 [Section No. 344.30(A)]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay
Campbell, David M.
Gerstetter, David A.
Hofkin, Michal
Kendall, David H.
Martin, Michael C.
Myers, Paul W.
Roe, Rhett A.
Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7552-NFPA 70-2020 [New Section after 348.6]

348.8 Reconditioning.

FMC shall not be reconditioned.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 12:22:49 EST 2020

Committee Statement

Committee Statement: This First Revision adds a new Section 348.8 and clarifies that FMC cannot be reconditioned per NEMA CS100-2020.

Response Message: FR-7552-NFPA 70-2020

Public Input No. 2330-NFPA 70-2020 [New Section after 348.6]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7553-NFPA 70-2020 [Sections 348.24, 348.26]

348.24 Bends — How Made .

~~Bends in conduit shall be made so that the conduit is not damaged and the internal diameter of the conduit is not effectively reduced. Bends shall be permitted to be made manually without auxiliary equipment. The radius of the curve to the centerline of any bend shall not be less than shown in Table 2, Chapter 9 using the column "Other Bends."~~

(A) How Made.

Bends in conduit shall be made so that the conduit is not damaged and the internal diameter of the conduit is not effectively reduced. Bends shall be permitted to be made manually without auxiliary equipment. The radius of the curve to the centerline of any bend shall not be less than shown in Table 2, Chapter 9 using the column "Other Bends."

(B) Number in One Run.

~~There~~ The total degrees of bends in a conduit run shall not ~~be more than the equivalent of four quarter bends (exceed 360 degrees total)~~ between pull points, for example, conduit bodies and boxes .

~~**348.26** Bends — Number in One Run.~~

~~There shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points, for example, conduit bodies and boxes.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 12:24:50 EST 2020

Committee Statement

Committee Statement: This First Revision combines Sections 348.24 and 348.26 into a single Section for clarity and usability and clarifies the number of degrees of bends permitted to be used in a conduit run between pull points.

Response Message: FR-7553-NFPA 70-2020

Public Input No. 1287-NFPA 70-2020 [Sections 348.24, 348.26]

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.

**First Revision No. 7554-NFPA 70-2020 [Section No. 348.30(A)]****(A) Securely Fastened.**

FMC shall be securely fastened in place by an approved means within 300 mm (12 in.) of each box, cabinet, conduit body, or other conduit termination and shall be supported and secured at intervals not to exceed 1.4 m (4½ ft). Where used, cable ties shall be listed and be identified for securement and support.

Exception No. 1: Where FMC is fished between access points through concealed spaces in finished buildings or structures and supporting is impracticable.

Exception No. 2: Where flexibility is necessary after installation, lengths from the last point where the raceway is securely fastened shall not exceed the following:

- (1) 900 mm (3 ft) for metric designators 16 through 35 (trade sizes ½ through 1¼)
- (2) 1200 mm (4 ft) for metric designators 41 through 53 (trade sizes 1½ through 2)
- (3) 1500 mm (5 ft) for metric designators 63 (trade size 2½) and larger

Exception No. 3: Lengths not exceeding 1.8 m (6 ft) from a luminaire terminal connection for tap connections to luminaires as permitted in 410.117(C).

Exception No. 4: Lengths not exceeding 1.8 m (6 ft) from the last point where the raceway is securely fastened for connections within an accessible ceiling to a luminaire(s) or other equipment. For the purposes of ~~this the~~ exceptions, listed flexible metal conduit FMC fittings shall be permitted as a means of securement and support.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 12:27:56 EST 2020

Committee Statement

Committee Statement: This First Revision harmonizes the language with 350.30(A) and clarifies that Listed FMC Fittings are permitted as the means of securement and support for the exceptions.

Response Message: FR-7554-NFPA 70-2020

[Public Input No. 1222-NFPA 70-2020 \[Section No. 348.30\(A\)\]](#)

[Public Input No. 1221-NFPA 70-2020 \[Section No. 348.30\(A\)\]](#)

[Public Input No. 2583-NFPA 70-2020 \[Section No. 348.30\(A\)\]](#)

[Public Input No. 1288-NFPA 70-2020 \[Section No. 348.30\]](#)

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7605-NFPA 70-2020 [Section No. 348.60]

348.60 Grounding and Bonding.

~~If used to connect equipment where flexibility is necessary to minimize the transmission of vibration from equipment or to provide flexibility for equipment that requires movement after installation, an equipment grounding conductor shall be installed.~~

~~Where flexibility is not required after installation, FMC shall be permitted to be used as an equipment grounding conductor when installed in accordance with 250.118(5) .~~

~~Where required or installed, equipment grounding conductors shall be installed in accordance with 250.134 .~~

~~Where required or installed, equipment bonding jumpers shall be installed in accordance with 250.102 .~~

(A) Fixed Installation.

FMC shall be permitted to be used as an equipment grounding conductor when installed in accordance with 250.118(A)(5) where flexibility is not required after installation.

(B) Flexible Installation.

An equipment grounding conductor shall be installed ~~If used to connect equipment where flexibility is necessary to minimize the transmission of vibration from equipment or to provide flexibility for equipment that requires movement after installation, an equipment grounding conductor shall be installed .~~

(C) Equipment Grounding Conductors.

Where required or installed, equipment grounding conductors shall be installed in accordance with 250.134.

(D) Equipment Bonding Jumpers.

Where required or installed, equipment bonding jumpers shall be installed in accordance with 250.102.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 10:03:36 EST 2020

Committee Statement

Committee Statement: Section 348.60 was revised for usability and clarity to comply with the 2020 NEC Style Manual.

Response Message: FR-7605-NFPA 70-2020

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7556-NFPA 70-2020 [New Section after 350.6]

350.8 Reconditioning.

LFMC shall not be reconditioned.

Submitter Information Verification

Committee: NEC-P08

Submission Date: Tue Dec 01 12:38:02 EST 2020

Committee Statement

Committee Statement: This First Revision adds a new Section 350.8 and clarifies that LFMC cannot be reconditioned per NEMA CS100-2020.

Response Message: FR-7556-NFPA 70-2020

Public Input No. 2331-NFPA 70-2020 [New Section after 350.6]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7623-NFPA 70-2020 [Section No. 350.10]

350.10 Uses Permitted.

LFMC shall be permitted to be used in exposed or concealed locations as follows:

- (1) Where conditions of installation, operation, or maintenance require flexibility or protection from machine oils, liquids, vapors, or solids.
- (2) In hazardous (classified) locations where specifically permitted by Chapter 5.
- (3) For direct burial where listed and marked for the purpose.
- (4) Conductors or cables rated at a temperature higher than the listed temperature rating of LFMC ~~conduit~~ shall be permitted to be installed in LFMC, provided the conductors or cables are not operated at a temperature higher than the listed temperature rating of the LFMC ~~per 110.14(C)~~.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 15:43:03 EST 2020

Committee Statement

Committee Statement: This First Revision removes the reference to 110.14(C) since it is not applicable to the temperature rating of the LFMC.

Response Message: FR-7623-NFPA 70-2020

[Public Input No. 2334-NFPA 70-2020 \[Section No. 350.10\]](#)

[Public Input No. 4433-NFPA 70-2020 \[Section No. 350.10\]](#)

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay
Campbell, David M.
Gerstetter, David A.
Hofkin, Michal
Kendall, David H.
Martin, Michael C.
Myers, Paul W.
Roe, Rhett A.
Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7558-NFPA 70-2020 [Sections 350.24, 350.26]

350.24 Bends — How Made .

~~Bends in conduit shall be so made that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Bends shall be permitted to be made manually without auxiliary equipment. The radius of the curve to the centerline of any bend shall not be less than required in Table 2, Chapter 9 using the column "Other Bends."~~

(A) How Made.

Bends in conduit shall be so made that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Bends shall be permitted to be made manually without auxiliary equipment. The radius of the curve to the centerline of any bend shall not be less than required in Table 2, Chapter 9 using the column "Other Bends."

(B) Number in One Run.

~~There~~ The total degrees of bends in a conduit run shall not ~~be more than the equivalent of four quarter bends (exceed 360 degrees total)~~ between pull points, for example, conduit bodies and boxes .

~~**350.26** Bends — Number in One Run.~~

~~There shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points, for example, conduit bodies and boxes.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 12:42:20 EST 2020

Committee Statement

Committee Statement: This First Revision combines Sections 350.24 and 350.26 into a single Section for clarity and usability and clarifies the number of degrees of bends permitted to be used in a conduit run between pull points.

Response Message: FR-7558-NFPA 70-2020

[Public Input No. 1289-NFPA 70-2020 \[Sections 350.24, 350.26\]](#)

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.

**First Revision No. 7606-NFPA 70-2020 [Section No. 350.60]****350.60** Grounding and Bonding.

~~If used to connect equipment where flexibility is necessary to minimize the transmission of vibration from equipment or to provide flexibility for equipment that requires movement after installation, an equipment grounding conductor shall be installed.~~

~~Where flexibility is not required after installation, LFMC shall be permitted to be used as an equipment grounding conductor when installed in accordance with 250.118(6) .~~

~~Where required or installed, equipment grounding conductors shall be installed in accordance with 250.134 .~~

~~Where required or installed, equipment bonding jumpers shall be installed in accordance with 250.102 .~~

~~Informational Note: See 501.30(B) , 502.30(B) , 503.30(B) , 505.25(B) , and 506.25(B) for types of equipment grounding conductors.~~

(A) Fixed Installation.

LFMC shall be permitted to be used as an equipment grounding conductor when installed in accordance with 250.118(A)(6) where flexibility is not required after installation.

(B) Flexible Installation.

~~If used to connect equipment~~ An equipment grounding conductor shall be installed where flexibility is necessary to minimize the transmission of vibration from equipment or to provide flexibility for equipment that requires movement after installation, ~~an equipment grounding conductor shall be installed .~~

(C) Equipment Grounding Conductor.

Where required or installed, equipment grounding conductors shall be installed in accordance with 250.134.

(D) Equipment Bonding Jumpers.

Where required or installed, equipment bonding jumpers shall be installed in accordance with 250.102.

Informational Note: See 501.30(B), 502.30(B), 503.30(B), 505.25(B), and 506.25(B) for types of equipment grounding conductors.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 10:11:53 EST 2020

Committee Statement

Committee Statement: Section 348.60 was revised for usability and clarity to comply with the 2020 NEC Style Manual.

Response Message: FR-7606-NFPA 70-2020

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7559-NFPA 70-2020 [Section No. 352.1]

352.1 Scope.

This article covers the use, installation, and construction specifications for rigid polyvinyl chloride conduit (PVC) and associated fittings.

~~Informational Note: Refer to Article 353 for High Density Polyethylene Conduit: Type HDPE, and Article 355 for Reinforced Thermosetting Resin Conduit: Type RTRC.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 13:00:06 EST 2020

Committee Statement

Committee Statement: This First Revision deletes the Informational Note in 352.1 since it is no longer needed. The Informational Note was useful when the nonmetallic conduits separated into individual Articles several cycles ago. The new Articles for different nonmetallic conduits are now well established. By deleting the Informational Note, 352.1 is now compliant with the 2020 NEC Style Manual, Section 4.1.4.

Note to the Correlating Committee; A revision was made to the Scope of PVC Conduit.

Response Message: FR-7559-NFPA 70-2020

Public Input No. 3857-NFPA 70-2020 [Section No. 352.1]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7561-NFPA 70-2020 [New Section after 352.10(A)]

(B) Encased in Concrete.

PVC conduit shall be permitted to be encased in concrete.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 13:04:26 EST 2020

Committee Statement

Committee Statement: This First Revision adds a new section 352.10(B) to clarify that PVC Conduit is permitted to be encased in concrete. Sections are renumbered accordingly

Response Message: FR-7561-NFPA 70-2020

Public Input No. 2167-NFPA 70-2020 [New Section after 352.10]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7562-NFPA 70-2020 [Section No. 352.10(F)]

(G) Exposed.

PVC conduit shall be permitted for exposed work. ~~PVC conduit used exposed in areas of physical damage shall be identified for the use.~~

Informational Note: ~~PVC Conduit, Type Schedule 80, is identified for areas of physical damage.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 13:11:52 EST 2020

Committee Statement

Committee Statement: This First Revision revises 352.10(F) for clarification and usability. This First Revision correlates with the new section 352.10(J) and 352.12(C).

Response Message: FR-7562-NFPA 70-2020

Public Input No. 873-NFPA 70-2020 [Section No. 352.10(F)]

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7563-NFPA 70-2020 [New Section after 352.10(I)]

(K) Physical Damage.

Where subject to physical damage, Type Schedule 80 PVC conduit, Type Schedule 80 PVC elbows, and listed fittings for PVC conduit shall be used.

Informational Note: All listed PVC conduit fittings are suitable for connection to both Schedule 40 and Schedule 80 PVC conduit.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 13:13:45 EST 2020

Committee Statement

Committee Statement: This First Revision adds a new section 352.10(J) and informational note for clarification and usability. This new section makes it clear that Schedule 80 PVC Conduit and Schedule 80 PVC Conduit elbows are acceptable for areas of Physical Damage and that listed PVC Conduit fittings are used. This First Revision correlates with the sections 352.10(F) and 352.12(C).

Response Message: FR-7563-NFPA 70-2020

Public Input No. 858-NFPA 70-2020 [New Section after 352.10(I)]

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7567-NFPA 70-2020 [Section No. 352.12(C)]

(C) Physical Damage.

Where subject to physical damage ~~unless identified for such use~~ , except as permitted in 352.10(K) .

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 14:37:11 EST 2020

Committee Statement

Committee Statement: This First Revision revises 352.12(C) for clarification and usability. This First Revision correlates with the new section 352.10(J) and 352.10(F).

Response Message: FR-7567-NFPA 70-2020

[Public Input No. 859-NFPA 70-2020 \[Section No. 352.12\(C\)\]](#)

[Public Input No. 2939-NFPA 70-2020 \[Section No. 352.12\(C\)\]](#)

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7569-NFPA 70-2020 [Sections 352.24, 352.26]

352.24 Bends — How Made .

~~Bends shall be so made that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Field bends shall be made only with identified bending equipment. The radius of the curve to the centerline of such bends shall not be less than shown in Table 2, Chapter 9 .~~

(A) How Made.

Bends shall be so made that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Field bends shall be made only with identified bending equipment. The radius of the curve to the centerline of such bends shall not be less than shown in Table 2, Chapter 9.

(B) Number in One Run.

~~There~~ The total degrees of bends in a conduit run shall not ~~be more than the equivalent of four quarter bends (exceed 360 degrees total)~~ between pull points, for example, conduit bodies and boxes .

~~**352.26** Bends — Number in One Run.~~

~~There shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points, for example, conduit bodies and boxes.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 14:48:28 EST 2020

Committee Statement

Committee Statement: This First Revision combines Sections 352.24 and 352.26 into a single section for clarity and usability and clarifies the number of degrees of bends permitted to be used in a conduit run between pull points.

Response Message: FR-7569-NFPA 70-2020

[Public Input No. 3273-NFPA 70-2020 \[Section No. 352.26\]](#)

[Public Input No. 1290-NFPA 70-2020 \[Sections 352.24, 352.26\]](#)

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7571-NFPA 70-2020 [Section No. 352.44]

352.44 Expansion Fittings.

Expansion fittings for PVC conduit shall be provided to compensate for thermal expansion and contraction where the length change, in accordance with Table 352.44, is expected to be 6 mm ($\frac{1}{4}$ in.) or greater in a straight run between securely mounted items such as boxes, cabinets, elbows, or other conduit terminations.

(A) Thermal Expansion and Contraction.

Expansion fittings for PVC conduit shall be provided to compensate for thermal expansion and contraction where the length change, in accordance with Table 352.44(A), is expected to be 6 mm ($\frac{1}{4}$ in.) or greater in a straight run between securely mounted items such as boxes, cabinets, elbows, or other conduit terminations.

Table 352.44(A) Expansion Characteristics of PVC Rigid Nonmetallic Conduit Coefficient of Thermal Expansion = 6.084×10^{-5} mm/mm/°C (3.38×10^{-5} in./in./°F)

<u>Temperature Change (°C)</u>	<u>Length Change of PVC Conduit (mm/m)</u>	<u>Temperature Change (°F)</u>	<u>Length Change of PVC Conduit (in./100 ft)</u>	<u>Temperature Change (°F)</u>	<u>Length Change of PVC Conduit (in./100 ft)</u>
5	0.30	5	0.20	105	4.26
10	0.61	10	0.41	110	4.46
15	0.91	15	0.61	115	4.66
20	1.22	20	0.81	120	4.87
25	1.52	25	1.01	125	5.07
30	1.83	30	1.22	130	5.27
35	2.13	35	1.42	135	5.48
40	2.43	40	1.62	140	5.68
45	2.74	45	1.83	145	5.88
50	3.04	50	2.03	150	6.08
55	3.35	55	2.23	155	6.29
60	3.65	60	2.43	160	6.49
65	3.95	65	2.64	165	6.69
70	4.26	70	2.84	170	6.90
75	4.56	75	3.04	175	7.10
80	4.87	80	3.24	180	7.30
85	5.17	85	3.45	185	7.50
90	5.48	90	3.65	190	7.71
95	5.78	95	3.85	195	7.91
100	6.08	100	4.06	200	8.11

(B) Earth Movement.

Expansion fittings for underground runs of direct buried PVC conduit emerging from the ground shall be provided above grade when required to compensate for earth settling or movement, including frost heave.

Informational Note: See 300.5(J) .

Submitter Information Verification

Committee: NEC-P08

Submission Date: Tue Dec 01 14:53:18 EST 2020

Committee Statement

Committee Statement: 352.44 was revised to address earth movement, including frost heave, and the installation of expansion fittings and correlated to 300.5(D)(1).

Response Message: FR-7571-NFPA 70-2020

Public Input No. 1107-NFPA 70-2020 [Section No. 352.44]

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7572-NFPA 70-2020 [Section No. 352.60]

352.60 Grounding.

Where equipment grounding is required, ~~a~~ separate ~~equipment~~ grounding conductor shall be installed in the conduit.

Exception No. 1: ~~As The equipment grounding conductor shall be permitted to be run separately from the circuit conductors as permitted in 250.134, Exception No. 2, for dc circuits and 250.134, Exception No. 1, for separately run equipment grounding conductors.~~

Exception No. 2: ~~Where The equipment grounding conductor shall not be required where the grounded conductor is used to ground equipment as permitted in 250.142.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 15:00:28 EST 2020

Committee Statement

Committee Statement: Section 352.60 was revised to clarify the equipment grounding conductor connection. Exception 1 and 2 were revised to harmonize the language used within other non-metallic raceway articles

Response Message: FR-7572-NFPA 70-2020

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7517-NFPA 70-2020 [Section No. 353.1]

353.1 Scope.

This article covers the use, installation, and construction specifications for high density polyethylene (HDPE) conduit and associated fittings.

~~Informational Note: Refer to Article 352 for Rigid Polyvinyl Chloride Conduit: Type PVC and Article 355 for Reinforced Thermosetting Resin Conduit: Type RTRC.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Mon Nov 30 15:51:18 EST 2020

Committee Statement

Committee Statement: The Informational Note was deleted since the reference to Article 353 was in general and not to a specific section. A reference to an Article in general is a violation of Section 4.1.4 of the 2020 NEC Style Manual.

Response Message: FR-7517-NFPA 70-2020

Public Input No. 3859-NFPA 70-2020 [Section No. 353.1]

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.

**First Revision No. 7520-NFPA 70-2020 [Sections 353.24, 353.26]****353.24 Bends — How Made .**

~~Bends shall be so made that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Bends shall be permitted to be made manually without auxiliary equipment, and the radius of the curve to the centerline of such bends shall not be less than shown in Table 354.24 . For conduits of metric designators 129 and 155 (trade sizes 5 and 6) the allowable radii of bends shall be in accordance with specifications provided by the manufacturer.~~

(A) How Made.

Bends shall be so made that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Bends shall be permitted to be made manually without auxiliary equipment, and the radius of the curve to the centerline of such bends shall not be less than shown in Table 354.24(A). For conduits of metric designators 129 and 155 (trade sizes 5 and 6), the allowable radii of bends shall be in accordance with specifications provided by the manufacturer.

(B) Number in One Run.

~~There~~ The total degrees of bends in a conduit run shall not be more than the equivalent of four quarter bends (exceed 360 degrees total) between pull points, for example, conduit bodies and boxes .

~~353.26 Bends — Number in One Run.~~

~~There shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points, for example, conduit bodies and boxes.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Mon Nov 30 16:08:18 EST 2020

Committee Statement

Committee Statement: This First Revision combines Sections 353.24 and 353.26 into a single Section for clarity and usability and clarifies the number of degrees of bends permitted to be used in a conduit run between pull points.

Response Message: FR-7520-NFPA 70-2020

[Public Input No. 3274-NFPA 70-2020 \[Section No. 353.26\]](#)

[Public Input No. 1275-NFPA 70-2020 \[Sections 353.24, 353.26\]](#)

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7537-NFPA 70-2020 [Section No. 353.48]

353.48 Joints.

All joints between lengths of conduit, ~~and between conduit and couplings,~~ fittings, and boxes, shall be made ~~by an approved method using either electrofusion or mechanical fittings .~~

~~Informational Note: HDPE conduit can be joined using either heat fusion, electrofusion, or mechanical fittings.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Mon Nov 30 21:49:37 EST 2020

Committee Statement

Committee Statement: Revise 353.48 to specify the permissible joining methods. Heat or butt fusion has been removed from the informational note because these joining methods result in an internal lip or bead formed on the conduit ID, which may 'burn' or damage the cabling when it is subsequently pulled into the raceway and over the lip. Furthermore, the lip will reduce the potential wire pull surface area and conduit fill calculations.

Response Message: FR-7537-NFPA 70-2020

[Public Input No. 1276-NFPA 70-2020 \[Section No. 353.48\]](#)

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7538-NFPA 70-2020 [Section No. 353.60]

353.60 Grounding.

Where equipment grounding is required, a separate ~~equipment~~ grounding conductor shall be installed in the conduit.

Exception No. 1: The equipment grounding conductor shall be permitted to be run separately from the conduit where used for grounding dc circuits as permitted in 250.134, Exception No. 2.

Exception No. 2: The equipment grounding conductor shall not be required where the grounded conductor is used to ground equipment as permitted in 250.142.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Mon Nov 30 22:01:59 EST 2020

Committee Statement

Committee Statement: The second "equipment" was removed in the charging statement to clarify all types of grounding.

Response Message: FR-7538-NFPA 70-2020

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7539-NFPA 70-2020 [Section No. 354.10]

354.10 Uses Permitted.

The use of NUCC and fittings shall be permitted in the following:

- (1) For direct burial underground installation (For minimum cover requirements, see Table 300.5 under nonmetallic raceway_ and Table 305.15 under Rigid Nonmetallic Conduit.) RTRC, PVC, HDPE.)
- (2) Encased or embedded in concrete
- (3) In cinder fill
- (4) In underground locations subject to severe corrosive influences as covered in 300.6 and where subject to chemicals for which the assembly is specifically approved
- (5) ~~Aboveground~~ Above ground , except as prohibited in 354.12, where encased in not less than 50 mm (2 in.) of concrete

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Mon Nov 30 22:08:28 EST 2020

Committee Statement

Committee Statement: Rigid nonmetallic conduit is no longer used in the reference tables. Table 300.5 now uses the term nonmetallic raceways and table 300.50 provides a list of the non-metallic raceway, RTRC, PVC and HDPE.

Response Message: FR-7539-NFPA 70-2020

[Public Input No. 4544-NFPA 70-2020 \[Section No. 354.10\]](#)

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay
Campbell, David M.
Gerstetter, David A.
Hofkin, Michal
Kendall, David H.
Martin, Michael C.
Myers, Paul W.
Roe, Rhett A.
Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7540-NFPA 70-2020 [Sections 354.24, 354.26]

354.24 Bends — How Made .

~~Bends shall be manually made so that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. The radius of the curve of the centerline of such bends shall not be less than shown in Table 354.24 .~~

(A) How Made.

Bends shall be manually made so that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. The radius of the curve of the centerline of such bends shall not be less than shown in Table 354.24(A).

Table 354.24(A) Minimum Bending Radius for Nonmetallic Underground Conduit with Conductors (NUCC)

<u>Conduit Size</u>		<u>Minimum Bending Radius</u>	
<u>Metric Designator</u>	<u>Trade Size</u>	<u>mm</u>	<u>in.</u>
16	½	250	10
21	¾	300	12
27	1	350	14
35	1¼	450	18
41	1½	500	20
53	2	650	26
63	2½	900	36
78	3	1200	48
103	4	1500	60

(B) Number in One Run.

~~There~~ The total degrees of bends in a conduit run shall not be more than the equivalent of four quarter bends (exceed 360 degrees total) between termination pull points.

~~354.26 Bends — Number in One Run.~~

~~There shall not be more than the equivalent of four quarter bends (360 degrees total) between termination points.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Mon Nov 30 22:17:32 EST 2020

Committee Statement

Committee Statement: This First Revision combines Sections 354.24 and 354.26 into a single Section for clarity and usability and clarifies the number of degrees of bends permitted to be used in a conduit run between pull points.

Response Message: FR-7540-NFPA 70-2020

Public Input No. 1277-NFPA 70-2020 [Sections 354.24, 354.26]

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7541-NFPA 70-2020 [Section No. 354.60]

354.60 Grounding.

Where equipment grounding is required, an assembly containing a separate equipment grounding conductor shall be used.

Exception No. 1: The equipment grounding conductor shall be permitted to be run separately from the conduit where used for grounding dc circuits as permitted in 250.134 .
Exception No. 2.

Exception No. 2: The equipment grounding conductor shall not be required where the grounded conductor is used to ground equipment as permitted in 250.142 .

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Mon Nov 30 22:26:02 EST 2020

Committee Statement

Committee Statement: The second "equipment" was removed in the charging statement to clarify all types of grounding.

Exception 1 and 2 were added as they are permitted as a service entrance wiring method where separate equipment grounding conductors would not be necessary. This aligns 354.60 with 353.60.

Response Message: FR-7541-NFPA 70-2020

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7542-NFPA 70-2020 [Section No. 355.1]

355.1 Scope.

This article covers the use, installation, and construction specification for reinforced thermosetting resin conduit (RTRC) and associated fittings.

~~Informational Note: Refer to Article 352 for Rigid Polyvinyl Chloride Conduit: Type PVC, and Article 353 for High Density Polyethylene Conduit: Type HDPE.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 09:53:03 EST 2020

Committee Statement

Committee Statement: This First Revision deletes the Informational Note in 355.1 since it is no longer needed. The Informational Note was useful when the nonmetallic conduits separated into individual Articles several cycles ago. The new Articles for different nonmetallic conduits are now well established. By deleting the Informational Note, 355.1 is now compliant with the 2020 NEC Style Manual, Section 4.1.4.

Note to the Correlating Committee; A revision was made to the Scope of RTRC Conduit.

Response Message: FR-7542-NFPA 70-2020

[Public Input No. 3860-NFPA 70-2020 \[Section No. 355.1\]](#)

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7545-NFPA 70-2020 [Sections 355.24, 355.26]

355.24 Bends — How Made .

~~Bends shall be so made that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Field bends shall be made only with identified bending equipment. The radius of the curve to the centerline of such bends shall not be less than shown in Table 2, Chapter 9 .~~

(A) How Made.

Bends shall be so made that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Field bends shall be made only with identified bending equipment. The radius of the curve to the centerline of such bends shall not be less than shown in Table 2, Chapter 9.

(B) Number in One Run.

~~There~~ The total degrees of bends in a conduit run shall not ~~be more than the equivalent of four quarter bends (exceed 360 degrees total)~~ between pull points, for example, conduit bodies and boxes .

~~**355.26** Bends — Number in One Run.~~

~~There shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points, for example, conduit bodies and boxes.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 10:21:43 EST 2020

Committee Statement

Committee Statement: This First Revision combines Sections 355.24 and 355.26 into a single Section for clarity and usability and clarifies the number of degrees of bends permitted to be used in a conduit run between pull points.

Response Message: FR-7545-NFPA 70-2020

[Public Input No. 1278-NFPA 70-2020 \[Sections 355.24, 355.26\]](#)

[Public Input No. 3275-NFPA 70-2020 \[Section No. 355.26\]](#)

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7595-NFPA 70-2020 [Section No. 355.60]

355.60 Grounding.

Where equipment grounding is required, a separate ~~equipment~~ grounding conductor shall be installed in the conduit.

Exception No. 1: As The equipment grounding conductor shall be permitted to be run separately from the circuit conductors as permitted in 250.134, Exception No. 2, for dc circuits and 250.134, Exception No. 1, for separately run equipment grounding conductors.

Exception No. 2: Where An equipment grounding conductor shall not be required where the grounded conductor is used to ground equipment as ~~permitted~~ in 250.142(A).

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 20:37:14 EST 2020

Committee Statement

Committee Statement: The second “equipment” was removed in the charging statement to clarify all types of grounding.

Exception 1 was modified to comply with the NEC style manual.

Exception 2 was modified for usability and consistency.

Response Message: FR-7595-NFPA 70-2020

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7502-NFPA 70-2020 [Section No. 356.10]

356.10 Uses Permitted.

LFNC shall be permitted to be used in exposed or concealed locations for the following purposes:

- (1) Where flexibility is required for installation, operation, or maintenance.
- (2) Where protection of the contained conductors is required from vapors, machine oils, liquids, or solids.
- (3) For outdoor locations where listed and marked as suitable for the purpose.
- (4) For direct burial where listed and marked for the purpose.
- (5) ~~Type LFNC shall be permitted to be installed~~ Installed in lengths longer than 1.8 m (6 ft) where secured in accordance with 356.30.
- (6) Type LFNC-B as a listed manufactured prewired assembly, metric designator 16 through 27 (trade size ½ through 1) conduit.
- (7) For encasement in concrete where listed for direct burial and installed in compliance with 356.42.
- (8) In locations subject to severe corrosive influences as covered in 300.6 and where subject to chemicals for which the materials are specifically approved.
- (9) Conductors or cables rated at a temperature higher than the listed temperature rating of LFNC ~~conduit~~ shall be permitted to be installed in LFNC, provided the conductors or cables are not operated at a temperature higher than the listed temperature rating of the LFNC.

Informational Note: Extreme cold can cause some types of nonmetallic conduits to become brittle and therefore more susceptible to damage from physical contact.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Mon Nov 30 09:00:31 EST 2020

Committee Statement

Committee Statement: The phrase "shall be permitted" does not add clarity. For consistency the phrase "shall be permitted to be" in 356.10(5) has been eliminated. The charging section already denotes "shall be permitted".

CMP-8 reaffirms the action on Tentative Interim Amendment No. 20-10 that adds the previously omitted text.

The addition of permission for use in corrosive environments is already approved use in Section 680.21(2), 680.23(B)(2), 680.23(F)(1), 680.25(A), 680.27(A)(2), and 680.42(A)(1).

The added language is consistent with sections 352.10(B), 353.10(2), 355.10(B) and 362.10(3).

Response FR-7502-NFPA 70-2020

Message:

[Public Input No. 2332-NFPA 70-2020 \[Section No. 356.10\]](#)

[Public Input No. 4692-NFPA 70-2020 \[Section No. 356.10\]](#)

[Public Input No. 1052-NFPA 70-2020 \[Section No. 356.10\]](#)

[Public Input No. 2930-NFPA 70-2020 \[Section No. 356.10\]](#)

[Public Input No. 1968-NFPA 70-2020 \[Section No. 356.10\]](#)

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7535-NFPA 70-2020 [Sections 356.24, 356.26]

356.24 Bends — How Made .

~~Bends in conduit shall be so made that the conduit is not damaged and the internal diameter of the conduit is not effectively reduced. Bends shall be permitted to be made manually without auxiliary equipment. The radius of the curve to the centerline of any bend shall not be less than shown in Table 2, Chapter 9 using the column "Other Bends."~~

(A) How Made.

Bends in conduit shall be so made that the conduit is not damaged and the internal diameter of the conduit is not effectively reduced. Bends shall be permitted to be made manually without auxiliary equipment. The radius of the curve to the centerline of any bend shall not be less than shown in Table 2, Chapter 9 using the column "Other Bends."

(B) Number in One Run.

~~There~~ The total degrees of bends in a conduit run shall not ~~be more than the equivalent of four quarter bends (exceed 360 degrees total)~~ between pull points, for example, conduit bodies and boxes .

~~**356.26** Bends — Number in One Run.~~

~~There shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points, for example, conduit bodies and boxes.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Mon Nov 30 20:42:55 EST 2020

Committee Statement

Committee Statement: This First Revision combines Sections 352.24 and 352.26 into a single Section for clarity and usability and clarifies the number of degrees of bends permitted to be used in a conduit run between pull points.

Response Message: FR-7535-NFPA 70-2020

Public Input No. 1279-NFPA 70-2020 [Sections 356.24, 356.26]

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7536-NFPA 70-2020 [Section No. 356.60]

356.60 Grounding.

Where equipment grounding is required, a separate ~~equipment~~ grounding conductor shall be installed in the conduit.

Exception No. 1: ~~As The equipment grounding conductor shall be permitted to be run separately from the circuit conductors as permitted in 250.134, Exception No. 2, for dc circuits and 250.134, Exception No. 1, for separately run equipment grounding conductors.~~

Exception No. 2: ~~Where The equipment grounding conductor shall not be required where the grounded conductor is used to ground equipment as permitted in 250.142.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Mon Nov 30 21:20:01 EST 2020

Committee Statement

Committee Statement: The second “equipment” was removed in the charging statement to clarify all types of grounding.

Exception 1 was modified to comply with the NEC style manual.

Exception 2 was modified for usability and consistency.

Response Message: FR-7536-NFPA 70-2020

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7591-NFPA 70-2020 [Section No. 358.10(A)]

(A) Exposed and Concealed.

The use of EMT shall be permitted for both exposed and concealed work for the following:

- (1) In concrete, in direct contact with the earth or in areas subject to severe corrosive influences where installed in accordance with 358.10(B)
- (2) In dry, damp, and wet locations
- (3) In any hazardous (classified) location as permitted by other articles in this *Code*
- (4) In direct burial applications when used with fittings listed and identified for direct burial
- (5) For manufactured wiring systems as permitted in 604.100(A)(2).

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 17:27:46 EST 2020

Committee Statement

Committee Statement: List item 4 is added to clarify that EMT is permitted for direct burial applications. The current UL Directory recognizes the use of EMT for direct burial applications. There is a companion PI adding EMT to table 300.5 column 2. The fittings used for direct burial applications shall be listed and identified for the purpose.

List item 5 is added to address changes made by Code panel 7, that added EMT to 604.100(A)(2) permitting it to be used as a manufactured wiring system. This first revision adds permission under section 358.10(5) to correlate with the changes made to 604.100(A)(2).

Response Message: FR-7591-NFPA 70-2020

[Public Input No. 1280-NFPA 70-2020 \[Section No. 358.10\]](#)

[Public Input No. 2846-NFPA 70-2020 \[Section No. 358.30 \[Excluding any Sub-Sections\]\]](#)

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7592-NFPA 70-2020 [Section No. 358.20(A)]

(A) Minimum.

EMT smaller than metric designator 16 (trade size $\frac{1}{2}$) shall not be used.

Exception: ~~For~~ Metric designator 12 (trade size $\frac{3}{8}$) shall be permitted for enclosing the leads of motors as permitted in 430.245(B).

Submitter Information Verification

Committee: NEC-P08

Submission Date: Tue Dec 01 17:31:30 EST 2020

Committee Statement

Committee Statement: The exception was re-written as a complete sentence as required by section 3.1.4.1 of the 2020 NEC Style Manual.

Response Message: FR-7592-NFPA 70-2020

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7593-NFPA 70-2020 [Section No. 358.20(B)]

(B) Maximum.

The maximum size of EMT shall be metric designator 403 155 (trade size 4 6).

Informational Note: See 300.1(C) for the metric designators and trade sizes. These are for identification purposes only and do not relate to actual dimensions.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 17:36:40 EST 2020

Committee Statement

Committee Statement: A first revision was created to revise 358.20(B) to allow for larger diameter light weight listed metal tubing that is not being addressed in the current code.

Response Message: FR-7593-NFPA 70-2020

Public Input No. 2426-NFPA 70-2020 [Section No. 358.20(B)]

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

10 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

2 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Campbell, David M.

Gerstetter, David A.

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.

Abstention

Burris, Jay

The Steel Tube Institute could not reach a consensus on this first revision.

Hofkin, Michal

I would be in favor of this change if a product standard existed. This can be assessed during the Public Comment stage.



First Revision No. 7594-NFPA 70-2020 [Sections 358.24, 358.26]

358.24 Bends — How Made .

~~Bends shall be made so that the tubing is not damaged and the internal diameter of the tubing is not effectively reduced. The radius of the curve of any field bend to the centerline of the tubing shall not be less than shown in Table 2, Chapter 9 for one-shot and full shoe benders.~~

(A) How Made.

Bends shall be made so that the tubing is not damaged and the internal diameter of the tubing is not effectively reduced. The radius of the curve of any field bend to the centerline of the tubing shall not be less than shown in Table 2, Chapter 9 for one-shot and full shoe benders.

(B) Number in One Run.

~~There~~ The total degrees of bends in a conduit run shall not ~~be more than the equivalent of four quarter bends (exceed 360 degrees total)~~ between pull points, ~~for example, conduit bodies and boxes .~~

~~**358.26** Bends — Number in One Run.~~

~~There shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points, for example, conduit bodies and boxes.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 17:57:20 EST 2020

Committee Statement

Committee Statement: This First Revision combines Sections 358.24 and 358.26 into a single section for clarity and usability and clarifies the total degrees of bends permitted to be used in a conduit run between pull points.

Response Message: FR-7594-NFPA 70-2020

[Public Input No. 1281-NFPA 70-2020 \[Sections 358.24, 358.26\]](#)

[Public Input No. 3276-NFPA 70-2020 \[Section No. 358.26\]](#)

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7604-NFPA 70-2020 [Section No. 358.28(B)]

(B) Threading.

EMT shall not be threaded.

Exception: EMT with factory threaded integral couplings complying with 358.100 shall be permitted.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 09:48:11 EST 2020

Committee Statement

Committee Statement: The exception was re-written as a complete sentence as required by section 3.1.4.1 of the 2020 NEC Style Manual.

Response Message: FR-7604-NFPA 70-2020

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

11 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

1 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.

Abstention

Hofkin, Michal

I would be in favor of this change if a product standard existed that covered 5" and 6" EMT. I am hopeful that the standard will exist by the Public Comment stage.

**First Revision No. 7607-NFPA 70-2020 [Section No. 358.30(A)]****(A) Securely Fastened.**

~~EMT shall be securely fastened in place in accordance with the following: EMT shall be securely fastened in place at intervals not to exceed 3 m (10 ft). In addition, each EMT run between termination points shall be securely fastened within 900 mm (3 ft) of each outlet box, junction box, device box, cabinet, conduit body, or other tubing termination.~~

- ~~(1) EMT shall be securely fastened in place at At intervals not to exceed 3 m (10 ft).~~
- ~~(2) In addition, each EMT run between termination points shall be securely fastened within Within 900 mm (3 ft) of each outlet box, junction box, device box, cabinet, conduit body, or other tubing termination.~~

Exception No. 1: Fastening of unbroken lengths shall be permitted to be increased to a distance of 1.5 m (5 ft) where structural members do not readily permit fastening within 900 mm (3 ft).

Exception No. 2: For concealed work in finished buildings or prefinished wall panels where such securing is impracticable, unbroken lengths (without coupling) of EMT shall be permitted to be fished.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 10:19:49 EST 2020

Committee Statement

Committee Statement: Reformatted Securing and Supporting Sections into a list item format for clarity and usability.

Response Message: FR-7607-NFPA 70-2020

Public Input No. 1899-NFPA 70-2020 [Section No. 358.30]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7548-NFPA 70-2020 [New Section after 362.6]

362.8 Reconditioned.

ENT cannot be reconditioned.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 11:23:13 EST 2020

Committee Statement

Committee Statement: This First Revision adds a new Section 362.8 and clarifies that ENT cannot be reconditioned per NEMA CS100-2020.

Response Message: FR-7548-NFPA 70-2020

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7596-NFPA 70-2020 [Section No. 362.10]

362.10 Uses Permitted.

For the purpose of this article, the first floor of a building shall be that floor that has 50 percent or more of the exterior wall surface area level with or above finished grade. One additional level that is the first level and not designed for human habitation and used only for vehicle parking, storage, or similar use shall be permitted. The use of ENT and fittings shall be permitted in the following:

- (1) In any building not exceeding three floors above grade as follows:
 - a. For exposed work, where not prohibited by 362.12
 - b. Concealed within walls, floors, and ceilings
- (2) In any building exceeding three floors above grade, ~~ENT shall be~~ concealed within combustible or noncombustible walls, floors, and ceilings where the walls, floors, and ceilings provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies. ~~The 15-minute finish-rated thermal barrier shall be permitted to be used for combustible or noncombustible walls, floors, and ceilings.~~

Exception to (2): Where a an approved automatic fire sprinkler protective system(s) is installed in accordance with NFPA 13 -2016, Standard for the Installation of Sprinkler Systems , on all floors, ENT shall be permitted to be used within walls, floors, and ceilings, exposed or concealed, in buildings exceeding three floors above grade.

Informational Note No. 1: A finish rating is established for assemblies containing combustible (wood) supports. The finish rating is defined as the time at which the wood stud or wood joist reaches an average temperature rise of 121°C (250°F) or an individual temperature of 163°C (325°F) as measured on the plane of the wood nearest the fire. A finish rating is not intended to represent a rating for a membrane ceiling.

Informational Note No. 2: NFPA 13 -2019, Standard for the Installation of Sprinkler Systems , is a recognized fire sprinkler system(s) standard.

- (3) In locations subject to severe corrosive influences as covered in 300.6 and where subject to chemicals for which the materials are specifically approved.
- (4) In concealed, dry, and damp locations not prohibited by 362.12.
- (5) Above suspended ceilings where the suspended ceilings provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies, except as permitted in 362.10(1)a.

Exception to (5): ENT shall be permitted to be used above suspended ceilings in buildings exceeding three floors above grade where the building is protected throughout by a an approved automatic fire sprinkler protective system installed in accordance with NFPA 13 -2016, Standard for the Installation of Sprinkler Systems .

Informational Note No. 3: NFPA 13 -2019, Standard for the Installation of Sprinkler Systems , is a recognized fire sprinkler system(s) standard.

- (6) Encased in poured concrete floors, ceilings, walls, and slabs.
- (7) ~~Encased in poured concrete, or embedded~~ Embedded in a concrete slab on grade where ENT is placed on sand or approved screenings, provided fittings identified for this purpose are used for connections.
- (8) For wet locations ~~indoors~~ as permitted in this section or in a concrete slab on or belowgrade, with fittings listed for the purpose.
- (9) Metric designator 16 through 27 (trade size ½ through 1) as listed manufactured prewired assembly.
- (10) ~~Conductors~~ With conductors or cables rated at a temperature higher than the listed temperature rating of ENT ~~shall be permitted to be installed in ENT,~~ if the conductors or cables are not operated at a temperature higher than the listed temperature rating of the ENT.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 21:01:01 EST 2020

Committee Statement

Committee Statement: This First Revision separates 362.10(6) into two different sections, clarifies the requirements associated to the single section. Renumber the following sections accordingly.

362.10(2) and (5) was revised to require an approved automatic fire sprinkler system to be used on all floors for ENT to be used exposed in a building exceeding 3 floors.

This revision moves the reference to NFPA 13-2019, Standard for the Installation of Sprinkler Systems, to an Information Note per section 4.2 of the NEC Style Manual.

The term "above grade" is the proper term to be used for consistency since it is used in 362.10(5) Exception to 5. The Correlating Committee Task Group for the NEC Style Manual should consider revising the 2020 NEC Style Manual, Annex A to reflect the proper term to be used within the NEC.

Response Message: FR-7596-NFPA 70-2020

[Public Input No. 2164-NFPA 70-2020 \[Section No. 362.10\]](#)

[Public Input No. 3017-NFPA 70-2020 \[Section No. 362.10\]](#)

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7549-NFPA 70-2020 [Sections 362.24, 362.26]

362.24 Bends — How Made .

~~Bends shall be so made that the tubing will not be damaged and the internal diameter of the tubing will not be effectively reduced. Bends shall be permitted to be made manually without auxiliary equipment, and the radius of the curve to the centerline of such bends shall not be less than shown in Table 2, Chapter 9 using the column "Other Bends."~~

(A) How Made.

Bends shall be so made that the tubing will not be damaged and the internal diameter of the tubing will not be effectively reduced. Bends shall be permitted to be made manually without auxiliary equipment, and the radius of the curve to the centerline of such bends shall not be less than shown in Table 2, Chapter 9 using the column "Other Bends."

(B) Number in One Run.

~~There~~ The total degrees of bends in a tubing run shall not be more than the equivalent of four quarter bends (exceed 360 degrees total) between pull points, for example, conduit bodies and boxes .

~~**362.26** Bends — Number in One Run.~~

~~There shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points, for example, conduit bodies and boxes.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 11:25:22 EST 2020

Committee Statement

Committee Statement: This First Revision combines Sections 362.24 and 362.26 into a single section for clarity and usability and clarifies the number of degrees of bends permitted to be used in a tubing run between pull point.

Response Message: FR-7549-NFPA 70-2020

Public Input No. 1283-NFPA 70-2020 [Sections 362.24, 362.26]

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7550-NFPA 70-2020 [Section No. 362.56]

362.56 Splices and Taps.

Splices and taps shall be made only in accordance with 300.15.

~~Informational Note: See Article 314 for rules on the installation and use of boxes and conduit bodies.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 11:47:48 EST 2020

Committee Statement

Committee Statement: The Informational Note was deleted since the reference to Article 314 was in general and not to a specific section. A reference to an Article in general is a violation of Section 4.1.4 of the 2020 NEC Style Manual.

Response Message: FR-7550-NFPA 70-2020

Public Input No. 3861-NFPA 70-2020 [Section No. 362.56]

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7597-NFPA 70-2020 [Section No. 362.60]

362.60 Grounding.

Where equipment grounding is required, a separate ~~equipment~~ grounding conductor shall be installed in the raceway in compliance with Article 250, Part VI.

Exception No. 1: The equipment grounding conductor shall be permitted to be run separately from the raceway where used for grounding dc circuits as permitted in 250.134.
Exception No. 2.

Exception No. 2: The equipment grounding conductor shall not be required where the grounded conductor is used as part of the effective ground-fault path as permitted in 250.142.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 21:24:10 EST 2020

Committee Statement

Committee Statement: Section 362.60 was revised to clarify the equipment grounding conductor connection. Exception 1 and Exception 2 was added to harmonize the language used in other conduit Articles.

Response Message: FR-7597-NFPA 70-2020

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7609-NFPA 70-2020 [New Section after 366.10(B)(2)]

(C) Extended Distance of Auxiliary Gutters.

Auxiliary gutters shall be permitted to extend a distance not greater than 9 m (30 ft) beyond the equipment that it supplements.

Exception: Where used in accordance with 620.35 for elevators, an auxiliary gutter shall be permitted to extend a distance greater than 9 m (30 ft) beyond the equipment it supplements.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 10:59:44 EST 2020

Committee Statement

Committee Statement: This first revision clarifies the uses permitted and associated exception for auxiliary gutters up to and over 30 ft. This revision does not change existing requirements, it only changes the structure of the requirement for improved clarity.

Response Message: FR-7609-NFPA 70-2020

[Public Input No. 1544-NFPA 70-2020 \[Section No. 366.10\]](#)

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.

**First Revision No. 7610-NFPA 70-2020 [Section No. 366.12]****366.12** Uses Not Permitted.

Auxiliary gutters shall not be used: to enclose switches, overcurrent devices, appliances, or other similar equipment.

- (0) ~~To enclose switches, overcurrent devices, appliances, or other similar equipment~~
(0) ~~To extend a greater distance than 9 m (30 ft) beyond the equipment that it supplements~~

~~Exception: As permitted in 620.35 for elevators, an auxiliary gutter shall be permitted to extend a distance greater than 9 m (30 ft) beyond the equipment it supplements.~~

~~Informational Note: For wireways, see Articles 376 and 378. For busways, see Article 368.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 11:09:30 EST 2020

Committee Statement

Committee Statement: This first revision removes the distance related information in (2) to correlate with the uses permitted in 366.10.

The informational note in 366.12 is removed as it does not improve usability or clarity of the associated requirement.

Response Message: FR-7610-NFPA 70-2020

[Public Input No. 3862-NFPA 70-2020 \[Section No. 366.12\]](#)

[Public Input No. 1546-NFPA 70-2020 \[Section No. 366.12\]](#)

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

11 Affirmative All

1 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.

Affirmative with Comment

Smith, Raymond H

Article 620.35 will need to be correlated with this First Revision.



First Revision No. 7612-NFPA 70-2020 [Section No. 370.10]

370.10 Uses Permitted.

~~Approved cablebus~~ Cablebus shall be permitted as follows :

- (1) At any voltage or current for which spaced conductors are rated and where installed only for exposed work, except as permitted in 370.18
- (2) For branch circuits, feeders, and services
- (3) To be installed indoors, outdoors, or in corrosive, wet, or damp locations where identified for the use

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 12:04:43 EST 2020

Committee Statement

Committee Statement: This first revision aligns the language with other relevant Articles in Chapter 3. The term indoors is added to clarify that cablebus is permitted indoors as well as in the other uses listed. These changes will improve clarity and usability.

Response Message: FR-7612-NFPA 70-2020

[Public Input No. 2070-NFPA 70-2020 \[Section No. 370.10\]](#)

[Public Input No. 1969-NFPA 70-2020 \[Section No. 370.10\]](#)

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7613-NFPA 70-2020 [Section No. 370.18]

370.18 Cablebus Installation.

Cablebus shall be permitted to extend transversely through partitions and walls, ~~other than fire walls, provided that the section within the wall is continuous, protected against physical damage, and unventilated~~ or vertically through platforms and floors in wet or dry locations where the installation, complete with the installed cables, is made in accordance with 300.21.

~~(A) Transversely Routed.~~

~~Cablebus shall be permitted to extend transversely through partitions or walls, other than fire walls, provided that the section within the wall is continuous, protected against physical damage, and unventilated.~~

~~(B) Through Dry Floors and Platforms.~~

~~Except where firestops are required, cablebus shall be permitted to extend vertically through dry floors and platforms, provided that the cablebus is totally enclosed at the point where it passes through the floor or platform and for a distance of 1.8 m (6 ft) above the floor or platform.~~

~~(C) Through Floors and Platforms in Wet Locations.~~

~~Except where firestops are required, cablebus shall be permitted to extend vertically through floors and platforms in wet locations where:~~

- ~~(0) There are curbs or other suitable means to prevent waterflow through the floor or platform opening, and~~
- ~~(0) Where the cablebus is totally enclosed at the point where it passes through the floor or platform and for a distance of 1.8 m (6 ft) above the floor or platform.~~

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 12:15:31 EST 2020

Committee Statement

Committee Statement: This first revision simplifies the cablebus installation requirements and aligns the firestop requirements for Cablebus installation with the requirements for Cable Tray located in section 392.18(D). The requirements for a curb at floor penetrations in wet locations is removed as the Cablebus is suitable for wet locations and the associated curbing is a building code requirement.

Response Message: FR-7613-NFPA 70-2020

[Public Input No. 2071-NFPA 70-2020 \[Section No. 370.18\]](#)

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay
Campbell, David M.
Gerstetter, David A.
Hofkin, Michal
Kendall, David H.
Martin, Michael C.
Myers, Paul W.
Roe, Rhett A.
Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7614-NFPA 70-2020 [Section No. 370.42]

370.42 Fittings.

A cablebus system shall include ~~approved~~ fittings for the following:

- (1) Changes in horizontal or vertical direction of the run
- (1) ~~Dead ends~~
- (2) Terminations in or on connected apparatus or equipment or the enclosures for such equipment
- (3) Additional physical protection where required, such as guards where subject to severe physical damage

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 12:24:39 EST 2020

Committee Statement

Committee Statement: This first revision aligns the language with other relevant Articles in Chapter 3. The term dead ends is removed as it does not apply to cablebus installations. These changes will improve clarity and usability.

Response Message: FR-7614-NFPA 70-2020

[Public Input No. 2072-NFPA 70-2020 \[Section No. 370.42\]](#)

[Public Input No. 1970-NFPA 70-2020 \[Section No. 370.42\]](#)

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7615-NFPA 70-2020 [Section No. 370.60]

370.60 Grounding.

A cablebus system shall be grounded and/or bonded as applicable:

- (1) Cablebus framework, where bonded, shall be permitted to be used as the equipment grounding conductor for branch circuits and feeders.
- (2) A cablebus installation shall be grounded and bonded in accordance with [Part V and Part VI of Article 250](#), excluding 250.86, Exception No. 2.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 12:32:11 EST 2020

Committee Statement

Committee Statement: The references to Article 250 are clarified to reference Parts V and VI as required by Section 4.1.4 of the 2020 NEC Style Manual.

Response Message: FR-7615-NFPA 70-2020

[Public Input No. 2073-NFPA 70-2020 \[Section No. 370.60\]](#)

[Public Input No. 3867-NFPA 70-2020 \[Section No. 370.60\]](#)

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7616-NFPA 70-2020 [Section No. 370.120]

370.120 Marking.

~~Each section of cablebus shall be marked with the manufacturer's name or trade designation and the maximum diameter, number, voltage rating, and ampacity of the conductors to be installed. Markings shall be located so as to be visible after installation.~~

(A) Nameplates.

Each cablebus system shall include a nameplate at each terminating end of the system with the manufacturer's name or trade designation and the maximum diameter, number, voltage rating, and ampacity of the conductors to be installed. Nameplates shall be visible after installation.

(B) Identification.

Each section and fitting of a cablebus system shall be identified with a marking that corresponds to the manufacturer's installation instructions.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 12:38:22 EST 2020

Committee Statement

Committee Statement: This first revision clarifies that cablebus systems are provided with two types of markings: Nameplates at each terminating end and markings to identify the pieces of the cablebus system for installation purposes. This first revision differentiates between the two types of markings.

Response Message: FR-7616-NFPA 70-2020

[Public Input No. 2074-NFPA 70-2020 \[Section No. 370.120\]](#)

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7618-NFPA 70-2020 [Section No. 374.6]

374.6 Listing Requirements.

Cellular metal floor raceways and associated fittings shall be listed.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Wed Dec 02 12:49:40 EST 2020

Committee Statement

Committee Statement: This change aligns the requirements with the ANSI Standard for Cellular Metal Floor Raceways & Fittings, UL 209 and clarifies that the construction, performance and marking requirements apply not only to raceway but also to the associated fittings.

Response Message: FR-7618-NFPA 70-2020

[Public Input No. 1070-NFPA 70-2020 \[Section No. 374.6\]](#)

Ballot Results

✓ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7619-NFPA 70-2020 [New Section after 376.58]

376.60 Grounding.

Listed metal wireway shall be permitted as an equipment grounding conductor in accordance with 250.118 (13).

Submitter Information Verification

Committee: NEC-P08

Submission Date: Wed Dec 02 12:55:53 EST 2020

Committee Statement

Committee Statement: This change creates a new section permitting listed metal wireway to be used as an equipment grounding conductor. The new section title is consistent with other raceway articles and the language correlates with 250.118(13).

Response Message: FR-7619-NFPA 70-2020

Public Input No. 1728-NFPA 70-2020 [New Section after 376.58]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7515-NFPA 70-2020 [Section No. 378.60]

378.60 Grounding.

Where equipment grounding is required, a separate ~~equipment~~ grounding conductor shall be installed in the nonmetallic wireway. A separate equipment grounding conductor shall not be required where the grounded conductor is used to ground equipment as permitted in 250.142.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Mon Nov 30 15:44:48 EST 2020

Committee Statement

Committee Statement: The second "equipment" was removed in the charging statement to clarify all types of grounding.
Response Message: FR-7515-NFPA 70-2020

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7655-NFPA 70-2020 [Section No. 388.60]

388.60 Grounding.

Where equipment grounding is required, a separate ~~equipment~~ grounding conductor shall be installed in the raceway.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Thu Dec 03 16:28:39 EST 2020

Committee Statement

Committee Statement: This First Revision clarifies that the connection is to the equipment grounding conductor, not ground.

Section 388.60 was revised to clarify the equipment grounding conductor connection.

Response Message: FR-7655-NFPA 70-2020

Ballot Results

✔ This item has passed ballot

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7574-NFPA 70-2020 [Section No. 392.10(A)]

(A) Wiring Methods.

The wiring methods in Table 392.10(A) shall be permitted to be installed in cable tray systems under the conditions described in their respective articles and sections.

Table 392.10(A) Wiring Methods

<u>Wiring Method</u>	<u>Article</u>
Armored cable: Type AC	320
CATV cables	<u>800 and 820</u>
Class 2 and Class 3 cables	725
Communications cables	<u>800 and 805</u>
Communications raceways	<u>725, 770, and 800</u>
Electrical metallic tubing: Type EMT	358
Electrical nonmetallic tubing: Type ENT	362
Fire alarm cables	760
Flexible metal conduit: Type FMC	348
Flexible metallic tubing: Type FMT	360
Instrumentation tray cable: Type ITC	727
Intermediate metal conduit: Type IMC	342
Liquidtight flexible metal conduit: Type LFMC	350
Liquidtight flexible nonmetallic conduit: Type LFNC	356
Metal-clad cable: Type MC	330
Mineral-insulated, metal-sheathed cable: Type MI	332
Network-powered broadband communications cables	<u>800 and 830</u>
Nonmetallic-sheathed cable: Types NM, NMC, and NMS	334
Non-power-limited fire alarm cable	760
Optical fiber cables	770
Other factory-assembled, multiconductor control, signal, or power cables that are specifically approved for installation in cable trays	
Power and control tray cable: Type TC	336
Power-limited fire alarm cable	760
Power-limited tray cable	725
Rigid metal conduit: Type RMC	344
Rigid polyvinyl chloride conduit: Type PVC	352
Reinforced thermosetting resin conduit: Type RTRC	355
Service-entrance cable: Types SE and USE	338
Underground feeder and branch-circuit cable: Type UF	340

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 15:12:05 EST 2020

Committee Statement

Committee Statement: Table 392.10(A) was revised to correlate with the Article 800 and 805.

Instrumentation tray cable: Type ITC was revised from 727 to 341 per the Task Groups recommendation. Note to the Correlating Committee: This revision needs to be confirmed that Article 727 was relocated to Article 341

Response Message: FR-7574-NFPA 70-2020

[Public Input No. 192-NFPA 70-2019 \[Section No. 392.10\(A\)\]](#)

[Public Input No. 2754-NFPA 70-2020 \[Section No. 392.10\(A\)\]](#)

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7575-NFPA 70-2020 [Section No. 392.10(B)(1)]

(1) Single-Conductor Cables and Single Insulated Conductors .

Single-conductor cables and single insulated conductors shall be permitted to be installed in accordance with ~~(B)(1)(a)~~ 392.10(B)(1) (a) through (B)(1)(c).

(a) Single-conductor cables and single insulated conductors shall be 1/0 AWG or larger and shall be of a type listed and marked on the surface for use in cable trays. Where 1/0 AWG through 4/0 AWG single-conductor cables and single insulated conductors are installed in ladder cable tray, the maximum allowable rung spacing for the ladder cable tray shall be 225 mm (9 in.).

(b) Welding cables shall comply with Article 630, Part IV.

(c) Single conductors used as equipment grounding conductors shall be insulated, covered, or bare, and they shall be 4 AWG or larger.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 15:15:12 EST 2020

Committee Statement

Committee Statement: Single insulated conductors were added to 392.10(B)(1) to correlate with 392.10.

Response Message: FR-7575-NFPA 70-2020

Public Input No. 589-NFPA 70-2020 [Section No. 392.10(B)(1)]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7573-NFPA 70-2020 [Section No. 392.10 [Excluding any Sub-Sections]]

Cable tray shall be permitted to be used as a support system for wiring methods containing service conductors, feeders, branch circuits, communications circuits, control circuits, and signaling circuits. Single insulated cables and single insulated conductors shall be permitted in cable tray only when installed in accordance with 392.10(B)(1). Cable tray installations shall not be limited to industrial establishments. Where exposed to direct rays of the sun, insulated conductors and jacketed cables shall be identified as being sunlight resistant. Cable trays and their associated fittings shall be identified for the intended use.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 15:09:16 EST 2020

Committee Statement

Committee Statement: Single insulated cables were added to correlate with 392.10(B)(1) and Public Input 589

Response Message: FR-7573-NFPA 70-2020

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7576-NFPA 70-2020 [Section No. 392.18(D)]

(D) Through Partitions and Walls.

Cable trays shall be permitted to extend transversely through partitions and walls or vertically through platforms and floors in wet or dry locations where the installations, complete with installed cables, are made in accordance with the requirements of 300.21.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 15:19:05 EST 2020

Committee Statement

Committee Statement: Section 392.18(D) was revised to remove “the requirements of” for usability and clarity.

Response Message: FR-7576-NFPA 70-2020

Public Input No. 4063-NFPA 70-2020 [Section No. 392.18(D)]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

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Roe, Rhett A.

Smith, Raymond H
Suriyamongkol, Dan
Vasquez, Raul L.
West, Rodney J.



First Revision No. 7577-NFPA 70-2020 [Section No. 392.18(G)]

(G) Raceways, Cables, Boxes, and Conduit Bodies Supported from Cable Tray Systems.

In industrial facilities where conditions of maintenance and supervision ensure that only qualified persons service the installation and where the cable tray systems are designed and installed to support the load, such systems shall be permitted to support raceways and cables, and boxes and conduit bodies covered in 314.1. For raceways terminating at the tray, a listed cable tray clamp or adapter shall be used to securely fasten the raceway to the cable tray system. Additional supporting and securing of the raceway shall be in accordance with ~~the requirements of~~ the appropriate raceway article. For raceways or cables running parallel to and attached to the bottom or side of a cable tray system, fastening and supporting shall be in accordance with ~~the requirements of~~ the appropriate raceway or cable article.

For boxes and conduit bodies attached to the bottom or side of a cable tray system, fastening and supporting shall be in accordance with ~~the requirements of~~ 314.23.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 15:22:45 EST 2020

Committee Statement

Committee Statement: Section 392.18(G) was revised to remove “the requirements of” for usability and clarity.

Response Message: FR-7577-NFPA 70-2020

Public Input No. 4065-NFPA 70-2020 [Section No. 392.18(G)]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7579-NFPA 70-2020 [Section No. 392.56]

392.56 Cable Splices and Type MV Cable Joints .

Cable splices and Type MV cable joints made and insulated by approved methods shall be permitted to be located within a cable tray, provided they are accessible. Splices and Type MV cable joints shall be permitted to project above the side rails where not subject to physical damage.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 15:34:22 EST 2020

Committee Statement

Committee Statement: Type MV Cable Joints was added to 392.56 to correlate with Article 311. Note to the Correlating Committee: This revision needs to be confirmed with Article 311.

Response Message: FR-7579-NFPA 70-2020

Public Input No. 2657-NFPA 70-2020 [Section No. 392.56]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7611-NFPA 70-2020 [Part I.]

Part I. General Requirements

Submitter Information Verification

Committee: NEC-P08

Submission Date: Wed Dec 02 11:40:54 EST 2020

Committee Statement

Committee Statement: The title of Part I is updated for conciseness and consistency with other parts of this Code.

Response Message: FR-7611-NFPA 70-2020

[Public Input No. 4369-NFPA 70-2020 \[Part I.\]](#)

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7580-NFPA 70-2020 [Section No. Table]

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Table 1

Table 1 Percent of Cross Section of Conduit and Tubing for Conductors and Cables

<u>Number of Conductors and/or Cables</u>	<u>Cross-Sectional Area (%)</u>
1	53
2	31
Over 2	40

Informational Note No. 1: Table 1 is based on common conditions of proper cabling and alignment of conductors where the length of the pull and the number of bends are within reasonable limits. It should be recognized that, for certain conditions, a larger size conduit or a lesser conduit fill should be considered.

Informational Note No. 2: When pulling three conductors or cables into a raceway, if the ratio of the raceway (inside diameter) to the conductor or cable (outside diameter) is between 2.8 and 3.2, jamming can occur. While jamming can occur when pulling four or more conductors or cables into a raceway, the probability is very low.

Notes to Tables

- (1) See Informative Annex C for the maximum number of conductors and fixture wires, all of the same size (total cross-sectional area including insulation) permitted in trade sizes of the applicable conduit or tubing.
- (2) Table 1 applies only to complete conduit or tubing systems and is not intended to apply to sections of conduit or tubing used to protect exposed wiring and cable from physical damage.
- (3) Equipment grounding or bonding conductors, where installed, shall be included when calculating conduit or tubing fill. The actual dimensions of the equipment grounding or bonding conductor (insulated or bare) shall be used in the calculation.
- (4) Where conduit or tubing nipples, not including connectors, having a maximum length not to exceed 600 mm (24 in.) are installed between boxes, cabinets, and similar enclosures, the nipples shall be permitted to be filled to 60 percent of their total cross-sectional area, and 310.15(C)(1) adjustment factors need not apply to this condition.
- (5) For conductors not included in Chapter 9, such as multiconductor cables and optical fiber cables, the actual dimensions shall be used.
- (6) For combinations of conductors of different sizes, use actual dimensions or Table 5 and Table 5A for dimensions of conductors and Table 4 for the applicable conduit or tubing dimensions.
- (7) When calculating the maximum number of conductors or cables permitted in a conduit or tubing, all of the same size (total cross-sectional area including insulation), the next higher whole number shall be used to determine the maximum number of conductors permitted when the calculation results in a decimal greater than or equal to 0.8. When calculating the size for conduit or tubing permitted for a single conductor, one conductor shall be permitted when the calculation results in a decimal greater than or equal to 0.8.
- (8) Where bare conductors are permitted by other sections of this *Code*, the dimensions for bare conductors in Table 8 shall be permitted.
- (9) A multiconductor cable, optical fiber cable, or flexible cord of two or more conductors shall be treated as a single conductor for calculating percentage conduit or tubing fill area. For cables that have elliptical cross sections, the cross-sectional area calculation shall be based on using the major diameter of the ellipse as a circle diameter. Assemblies of single insulated conductors without an overall covering shall not be considered a cable when determining conduit or tubing fill area. The conduit or tubing fill for the assemblies shall be calculated based upon the individual conductors.
- (10) The values for approximate conductor diameter and area shown in Table 5 are based on worst-case scenario and indicate round concentric-lay-stranded conductors. Solid and round concentric-lay-stranded conductor values are grouped together for the purpose of Table 5. Round compact-stranded conductor values are shown in Table 5A. If the actual

values of the conductor diameter and area are known, they shall be permitted to be used.

Submitter Information Verification

Committee: NEC-P08

Submittal Date: Tue Dec 01 15:48:41 EST 2020

Committee Statement

Committee Statement: The revision clarifies that the requirement restricts the nipple to 24 inches without connectors.

Response Message: FR-7580-NFPA 70-2020

Public Input No. 603-NFPA 70-2020 [Section No. Table]

Ballot Results

✓ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Burris, Jay

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.



First Revision No. 7626-NFPA 70-2020 [Section No. Table]

Table 4

Table 4 Dimensions and Percent Area of Conduit and Tubing (Areas of Conduit or Tubing for the Combinations of Wires Permitted in Table 1, Chapter 9)

Article 358 — Electrical Metallic Tubing (EMT)											
<u>Metric Designator</u>	<u>Trade Size</u>	<u>Over 2 Wires</u>		<u>60%</u>		<u>1 Wire</u>		<u>2 Wires</u>		<u>Nominal Internal Diameter</u>	
		<u>40%</u>									
		<u>mm²</u>	<u>in.²</u>	<u>mm²</u>	<u>in.²</u>	<u>mm²</u>	<u>in.²</u>	<u>mm²</u>	<u>in.²</u>	<u>mm</u>	<u>in.</u>
16	½	78	0.122	118	0.182	104	0.161	61	0.094	15.8	0.622
21	¾	137	0.213	206	0.320	182	0.283	106	0.165	20.9	0.824
27	1	222	0.346	333	0.519	295	0.458	172	0.268	26.6	1.049
35	1¼	387	0.598	581	0.897	513	0.793	300	0.464	35.1	1.380
41	1½	526	0.814	788	1.221	696	1.079	407	0.631	40.9	1.610
53	2	866	1.342	1299	2.013	1147	1.778	671	1.040	52.5	2.067
63	2½	1513	2.343	2270	3.515	2005	3.105	1173	1.816	69.4	2.731
78	3	2280	3.538	3421	5.307	3022	4.688	1767	2.742	85.2	3.356
91	3½	2980	4.618	4471	6.927	3949	6.119	2310	3.579	97.4	3.834
103	4	3808	5.901	5712	8.852	5046	7.819	2951	4.573	110.1	4.334
<u>129</u>	<u>5</u>	<u>5220</u>	<u>8.085</u>	<u>7830</u>	<u>12.127</u>	<u>6916</u>	<u>10.713</u>	<u>4045</u>	<u>6.266</u>	<u>128.9</u>	<u>5.073</u>
<u>155</u>	<u>6</u>	<u>7528</u>	<u>11.663</u>	<u>11292</u>	<u>17.495</u>	<u>9975</u>	<u>15.454</u>	<u>5834</u>	<u>9.039</u>	<u>154.8</u>	<u>6.093</u>

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
70-2020_Chapter_9_Table_4_Article_358.doc.docx	Revisions to Table 4 Article 358 - Chapter 9. For staff use.	

Submitter Information Verification

Committee: NEC-P08
Submittal Date: Wed Dec 02 16:01:18 EST 2020

Committee Statement

Committee Statement: New row data was added to Table 4, Chapter 9 to address the new sizes 5 and 6 inch EMT.

Response Message: FR-7626-NFPA 70-2020

Public Input No. 2670-NFPA 70-2020 [Section No. Table]

Ballot Results

✔ **This item has passed ballot**

13 Eligible Voters

1 Not Returned

11 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

1 Abstention

Not Returned

Tuzzino, Joseph M

Affirmative All

Campbell, David M.

Gerstetter, David A.

Hofkin, Michal

Kendall, David H.

Martin, Michael C.

Myers, Paul W.

Roe, Rhett A.

Smith, Raymond H

Suriyamongkol, Dan

Vasquez, Raul L.

West, Rodney J.

Abstention

Burris, Jay

The Steel Tube Institute could not reach a consensus on this first revision.