

# *Significant Changes to the FBC 8<sup>th</sup> Edition (2023) Electrical.*

*Electrical Changes for the 2020 National Electrical Code. NFPA-70*

Presented by Miami-Dade County Department of Regulatory and Economic Resources  
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# *Code-Wide Revisions*

## *Reconditioned Equipment*

- There are now several reconditioned equipment requirements in the NEC.
- See a new definition of Reconditioned added in Article 100.
- See 110.21(A)(2), where reconditioned equipment must be identified as reconditioned, and the original listing mark be removed.
- Other examples of requirements include a prohibition to recondition molded case circuit breakers and transfer switches.
- Low voltage power circuit breakers, and more, are permitted to be reconditioned.



# *Code-Wide Revisions*

## *GFCI Requirements*

- The NEC now globally provides clarity in Chapters 5, 6, and 7 with respect to the general GFCI requirements in 210.8.
- Revisions provide clarity that 210.8 applies unless specifically modified in a Chapter 5, 6, or 7 article.
- Sections 210.8 and 422.5 are correlated to clarify the application of GFCI requirements for appliances.



# *CODE-WIDE REVISIONS*

## *Definitions*

- Article 100 now has a new Part III, which contains hazardous (classified) location definitions.
- Generally, where a word or term is defined and is used in more than one article, the definition is located in Article 100.
- Generally, where used only in a single article, a definition is located in the XXX.2 section of that article.
- Note that a number of definitions exist in the XXX.2 section of an article but apply throughout the Code (e.g., cable assemblies, raceways, and systems).
- Text in each XXX.2 section explain which definitions apply only within that article, and those that apply beyond that article.



# *CODE-WIDE REVISIONS*

## *Fault Current*

- Definitions were added for Fault Current and Available Fault Current.
- The use of the terms short circuit current, fault current, and available fault current were correlated throughout the NEC.
- Equipment has a short circuit current rating.
- Available fault current must not exceed the short circuit current rating.



# *CODE-WIDE REVISIONS*

## *Disconnects for Emergency Responders*

- There is a need for a means to remove power quickly and safely for one- and two-family dwelling units during a fire or other emergency.
- A means to disconnect power (and signage) on the outside of the dwelling unit requirements is added.
- Examples include requirements for services, generators, energy storage systems, and alternative energy sources.



# CODE-WIDE REVISIONS

## *Outside Feeders and Service Disconnects*

- Revisions allow for easier establishment of an ESWC and reducing the likelihood and level of exposure where ESWC is not established.
- Section 230.71 no longer permits a panelboard to contain six disconnecting means.
- Generally, each service enclosure must contain only one disconnecting means.
- Switchboards, switchgear, and metering centers with separate compartments and barriers may contain up to six disconnects.
- New 225.30(B) now allows six feeders instead of a single large feeder under prescribed conditions to facilitate ESWC on a part of the building supply and smaller conductors and a reduction in available fault current.
- This requirement mandates that (not more than six) feeders originate in the same equipment and terminate in the same location.



# *CODE-WIDE REVISIONS*

## *CHAPTER 8 CHANGE SUMMARY*

- Reorganization and clarification of the application of Chapter 8 requirements has begun.
- A new Article 800, General Requirements for Communications Systems, is added.
- Redundancies that existed throughout Chapter 8 have been eliminated.
- Existing Article 800 for Communications Circuits is editorially renumbered as Article 805.



*New articles to the  
NEC*

*NEW ARTICLE*  
*Article 242*  
*Overvoltage*  
*Protection*

- Articles 280 and 285 from the 2017 NEC have been combined into a single article titled “Overvoltage Protection.”
- The article has three parts, General, Surge Protective Devices (SPDs) 1000 Volts or Less, and Surge Arresters Over 1000 Volts.

## NEW ARTICLE

# Article 311 Medium Voltage Conductors and Cables

- Article 328 in the 2017 NEC has been deleted, and its content has been relocated to a new Article 311 titled Medium Voltage Conductors and Cables.
- Requirements for medium voltage cables and conductors rated over 2000 volts and located formerly in Article 310 have also been incorporated into this new article.
- This new article covers the use, installation, construction specifications, and ampacities for Type MV medium voltage conductors and cable.



# *NEW ARTICLE*

## *Article 337 Type P Cable*

- A new article titled “Type P Cable” has been added to NEC Chapter 3.
- Article 337 addresses the use and installation of Type P cable (marine shipboard cable).
- Type P cable has been commonly used in land-based oil and gas rigs for over four decades, but the NEC has never addressed its permitted use.
- Type P cable is limited to industrial installations and hazardous locations.

# *NEW ARTICLE*

## *Article 805 Communications Circuits*

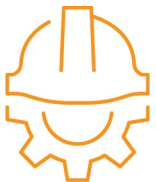
- Article 800 has been revised to include all the common general requirements from all the Chapter 8 communications articles into a single article.
- The remaining specific rules in former Article 800 have been included in a new Article 805 titled “Communications Circuits.”
- This revision eliminates redundancy.

# *Revisions to Articles*

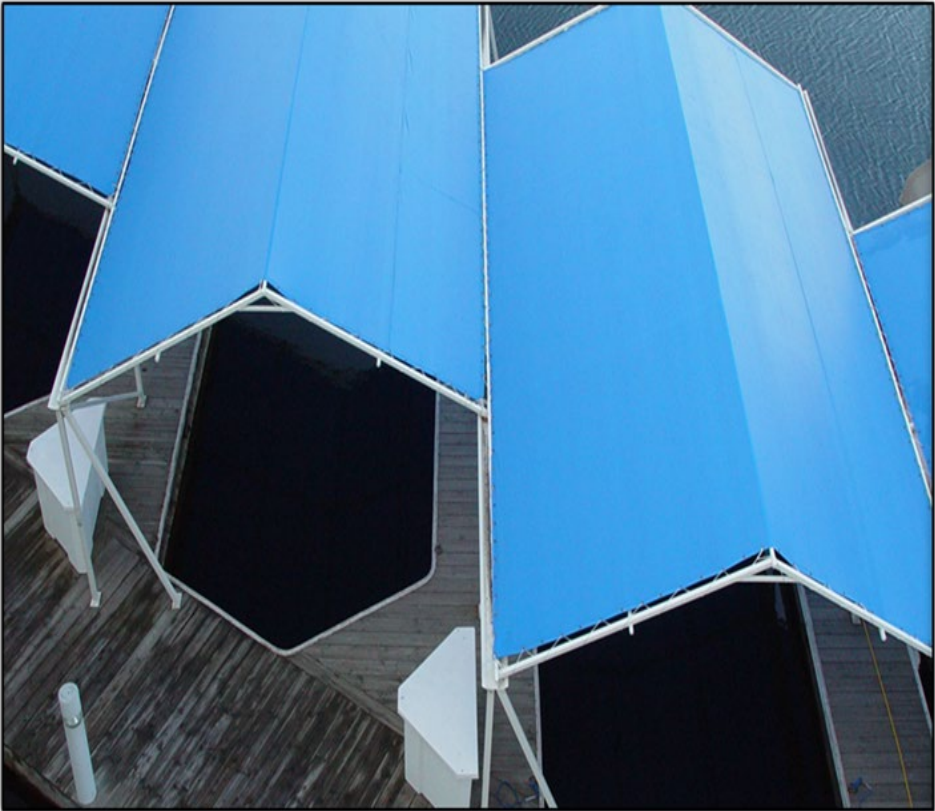
## 90.2(A)(5) & (6)

### *Expanded Scope Electric Vehicles and Marinas*

- The words “in marinas and boatyards” have been added to 90.2(A)(5).
- A new (6) has been added to 90.2(A) to address installations used to export power from electric vehicles to premises wiring.
- Bidirectional flow of power is typically accomplished using utility interactive inverters.



# 90.2(A)(5) & (6)





# *Article 100*

## *Article 100 Scope (Parts I, II, and III)*

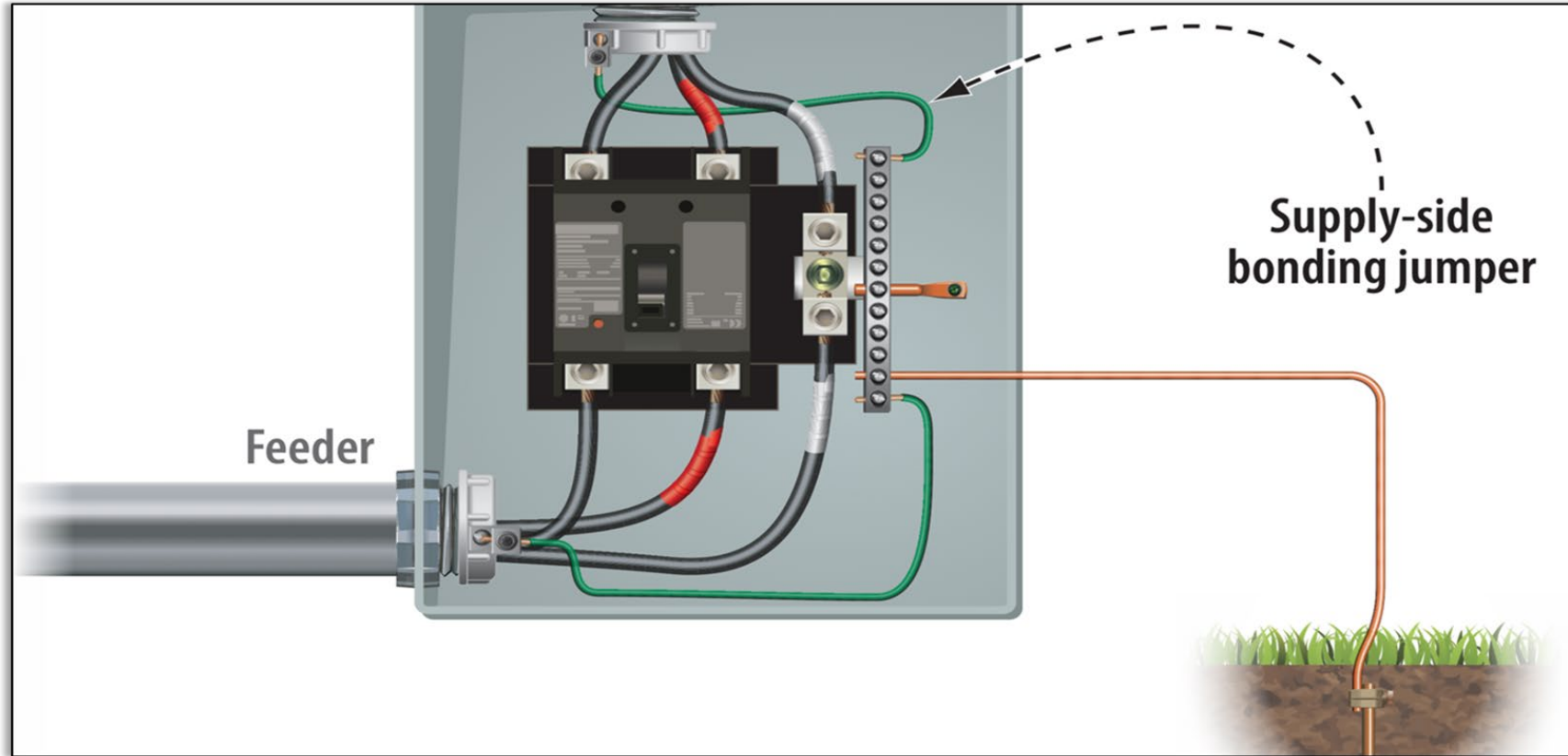
- The scope of Article 100 has been revised to indicate that definitions are also provided in the .2 section of some articles.
- The second paragraph of the scope now indicates that Part III of Article 100 includes definitions applicable to Hazardous (Classified) Locations.
- Both changes revise the scope to align with the representation contained in Article 100.

# Article 100 (DELETION & RELOCATION) Definition of Bonding Jumper, Supply-Side

- The definition of the term Bonding Jumper, Supply-Side has been deleted from 250.2.
- The definition, without revision, has been located into Part I of Article 100.



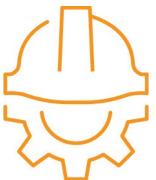
# Bonding Jumper, Supply-Side



# Article 100 (REVISION & RELOCATION) Definition of Equipotential Plane

- The definition of the term equipotential plane has been simplified and relocated in Article 100.
- This definition applies to Articles 680 and 682.
- The definition of “equipotential plane” in Section 547.2 remains in that section and applies only to agricultural facilities.
- ❖ Equipotential Plan. 680. Accessible conductive parts bonded together to reduce voltage gradients in a designated area.

cal Datum Plane. 682. A specified distance above a water level above which electrical equipment can be installed and electrical connection can be made.



# Electrical Datum Plane. 682.



# Article 100

## Definition of Fault Current and Available Fault Current

- New definitions of the terms fault current and fault current, available have been added to Article 100.
- A new informational note and associated figure have been added to enhance clarity and usability.
- This revision aligns with similar recent revisions in other standards that use the terms, such as NFPA 70E.
- ❖ **Fault Current.** The current delivered at a point on the system during a short-circuit condition.
- ❖ **Available Fault Current.** The largest amount of current capable of being delivered at a point on the system during a short-circuit condition.

# Electrical Datum Plane. 682.

**Fixed Piers.** For a fixed pier, electrical connections must be located **not less than 12 in.** above the deck, and never below the electrical datum plane. **Figure 555-10**

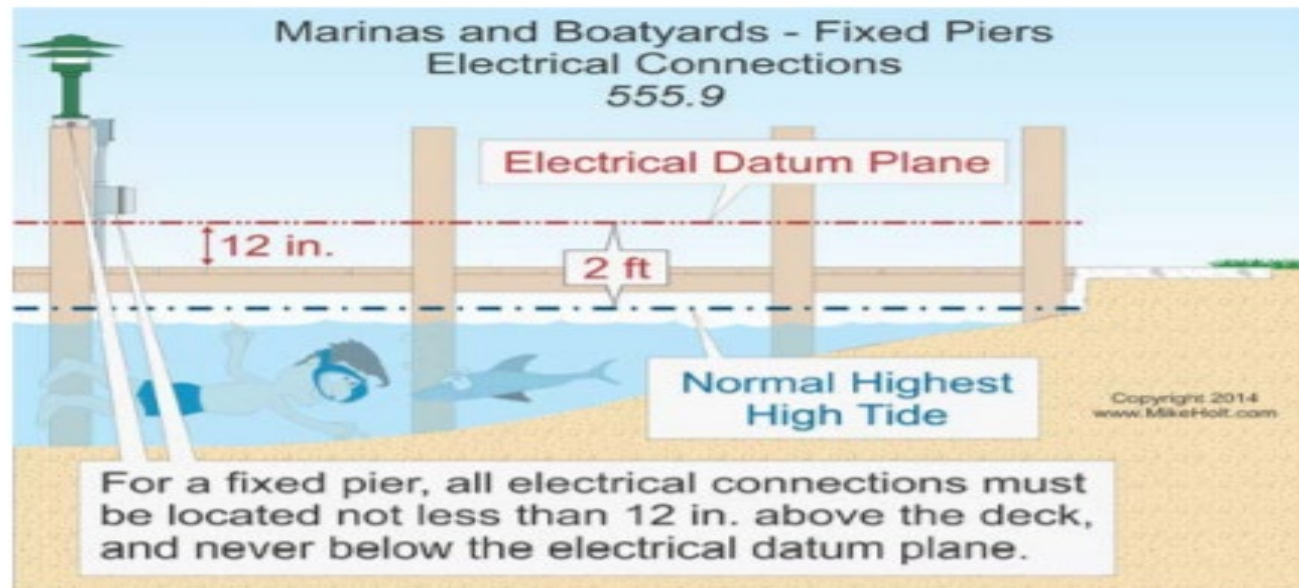
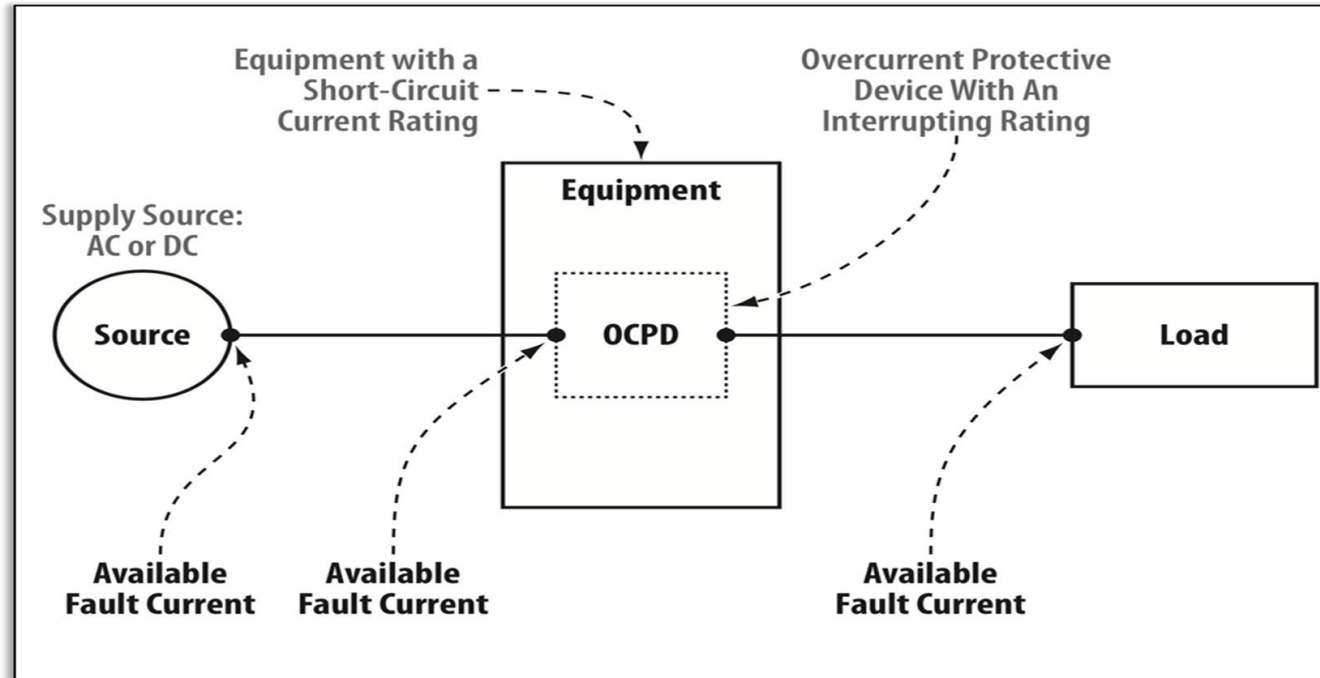


Figure 555-10



# Fault Current



# Article 100

## Definition of Laundry Area

- A new definition of the term Laundry Area has been added to Article 100.
- This is an area containing or designed to contain a laundry tray, clothes washer, or clothes dryer.
- The definition of laundry area in Section 550.2 is no longer necessary and has been deleted.
- ❖ An area containing or designed to contain a laundry tray, clothes washer, or clothes dryer. (CMP-2)

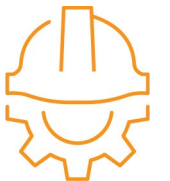


# Laundry Area

# Article 100

## REVISION/Definition of Photovoltaic (PV) System

- The definition of the term Photovoltaic (PV) System has been revised.
- As revised, the system includes all components, circuits, and equipment up to and including the PV system disconnecting means.
- The text about connecting to a utilization load has been deleted.
- ❖ The total components, circuits, and equipment up to and including the PV system disconnecting means that, in combination, convert solar energy into electric energy. (CMP-4)





(PV) System

# Article 100

## NEW DEFINITION OF POWER PRODUCTION EQUIPMENT & PRIME MOVER

- POWER PRODUCTION EQUIPMENT:
  - ❖ Electrical generating equipment supplied by any source other than a utility service, up to the source system disconnecting means. (CMP-4)
- PRIME MOVER:
  - ❖ The machine that supplies the mechanical horsepower to a generator. (CMP-13)



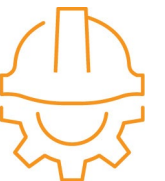
# Article 110.3(b) New Installation & Use.

- Section 110.3(B) was revised and reworded to include the words “or both” in the rule.
- Equipment that is listed (certified), either bears the listing mark, bears a label, or both, often in combination.
- The revision aligns with the fact that most but not all listed (certified) equipment is labeled.
- ❖ Equipment that is listed, labeled, or both shall be installed and used in accordance with any instructions included in the listing or labeling.

# 110.12(C)

## (New) Cables and Conductors - Workmanship

- A new subdivision (C) titled Cables and Conductors has been added in Section 110.12 which is titled Mechanical Execution of Work.
- It includes relocated requirements from the .24 sections from the communications articles in Chapters 7 and 8.
- Conductor and cable support and concerns about damage are addressed in both 110.12(C) and in 800.24.



# 110.14(D) (Revision) Terminal Connection Torque

- ❖ This is a big change. This will require documentation.
- The title of subdivision (D) has been changed from “Installation” to “Terminal Connection Torque.”
- The term calibrated has been deleted from this section.
- Three new informational notes provide practical guidance for installers and inspectors.





# Connection Torque

# 110.22(A) (Revision) Disconnect Marking

- A new second sentence has been added to Section 110.22(A).
- Identification of the source circuit supplying the disconnecting means is now required for other than one- and two-family dwelling installations.
- The revision enhances the ability to establish an electrically safe work condition as addressed in NFPA 70E.

**Feeder supplied switchboard, switchgear and panelboards in other than dwelling must be marked to indicate the source.**

**PANELBOARD LP-427  
SUPPLIED FROM SW-L22  
ON LOWER LEVEL 2  
NORTHWEST**

Label must be of sufficient durability for environment

Label must be permanently affixed

Not handwritten

# Disconnect Marking

# 110.24(A) (New) Published Values of Available Fault Current

- Section 110.24(A) has been revised for accuracy and clarification.
- The word “maximum” has been deleted in front of “available fault current” because it is not necessary.
- New Informational Note No. 2 explains that available fault current values are typically provided and published by utilities.
- ❖ Service equipment at other than dwelling units shall be legibly marked in the field with the available fault-current. The field marking(s) shall include the date the fault-current calculation was performed and be of sufficient durability to withstand the environment involved. The calculation shall be documented and made available to those authorized to design, install, inspect, maintain, or operate the system.

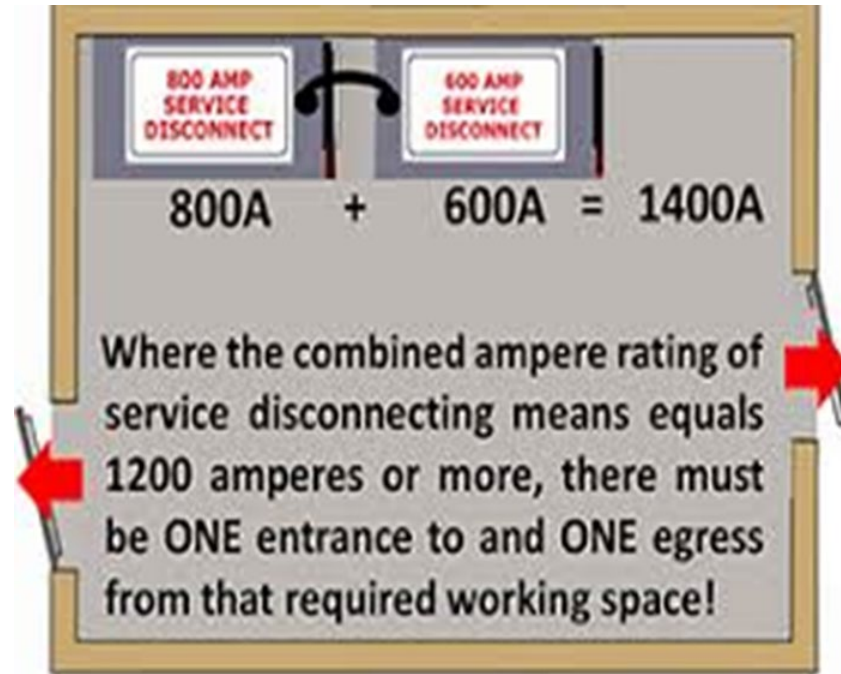
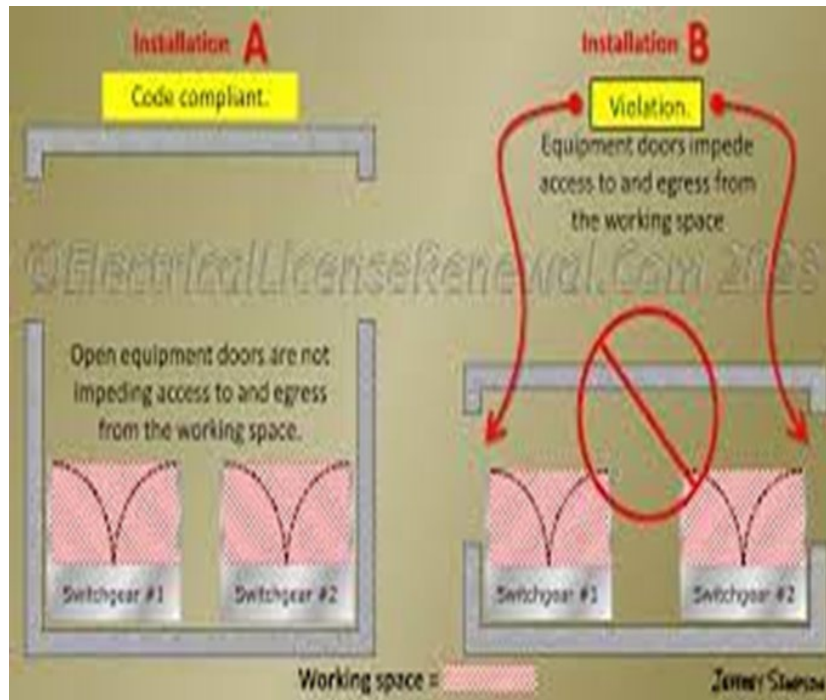
SES#	1 PH 120/240 POLE/PAD XFMR		3 PH 120/240 Closed Delta POLE TOP XFMR		3 PH 120/240 Open Delta POLE TOP XFMR		3 PH 120/240 Open Delta PAD XFMR <small>(based upon a 167/75kva transformer)</small>		3 PH 120/208 POLE TOP XFMR		3 PH 120/208 PAD XFMR		3 PH 277/480 POLE TOP XFMR		3 PH 277/480 PAD XFMR	
	AMPS	kVA	Isc	kVA	Isc	kVA	ISC	kVA	Isc	kVA	Isc	kVA	Isc	kVA	Isc	kVA
<b>100</b>	50	8,890	3-25	9,948	75-75	19,953	167-75	23,971	3-25	8,895	112.5	12,684	75	5,192	112.5	8,688
<b>125</b>	50	8,890	3-25	9,948	75-75	19,953	167-75	23,971	3-25	8,895	112.5	12,684	150	9,613	112.5	8,688
<b>150</b>	50	8,890	3-25	9,948	75-75	19,953	167-75	23,971	3-25	8,895	112.5	12,684	150	9,613	112.5	8,688
<b>200</b>	75	14,318	3-25	10,478	75-75	25,625	167-75	33,705	3-25	10,483	112.5	16,178	150	10,347	150	12,076
<b>*400</b>	100	20,955	3-50	20,034	75-75	28,369	167-75	39,681	3-50	21,553	150	27,478	300	20,938	300	25,573
<b>600</b>	167	32,755	3-75	28,369	100-75	35,297	167-75	44,187	3-75	33,789	225	39,066	500	31,615	500	25,773
<b>800</b>	167	36,451	3-100	33,208	167-75	44,186	167-75	44,187	**3-100	43,106	300	49,505			750	25,773
<b>1,000</b>									**3-100	45,740	300	53,011			750	25,773
<b>1,200</b>											500	53,011			1,000	25,773
<b>1,600</b>											500	56,194			1,500	32,990
<b>2,000</b>											750	56,194			1,500	33,207
<b>2,500</b>											750	56,194			2,000	44,250
<b>3,000</b>											1,000	56,194			2,000	44,346

**Sample Published Available Fault Current Levels for Utility Service**

# Available Fault Current

# 110.26(C)(2) (Revision) Sum of Service Disconnect Ratings Added

- Section 110.26(C)(2) has been revised and restructured into a list format.
- Two entrances and egress paths from the working space are required if the sum of the two-to-six service disconnects is 1200 amperes or more.
- Open equipment doors on large equipment shall not impede the entry to or egress from the required working space.

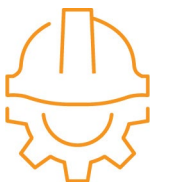


# Sum of Service Disconnect

# 110.26 (C)(3)

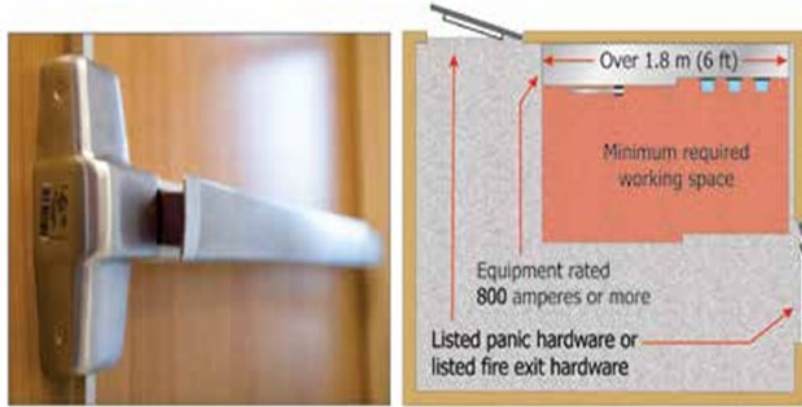
## Personnel Doors

- Where equipment rated 800 A or more (previously 1200 A) containing overcurrent devices, switching devices, or control devices is installed and there is a personnel door(s) intended for access to and egress from the working space less than 25 feet from the closest edge of the working space, the door(s) shall:
  - ❖ Open in the direction of egress
  - ❖ And be equipped with listed fire exist hardware.
- This requirement is not dependent on the width of the equipment.
- This requirement is not dependent on the need for two exits from the working space.



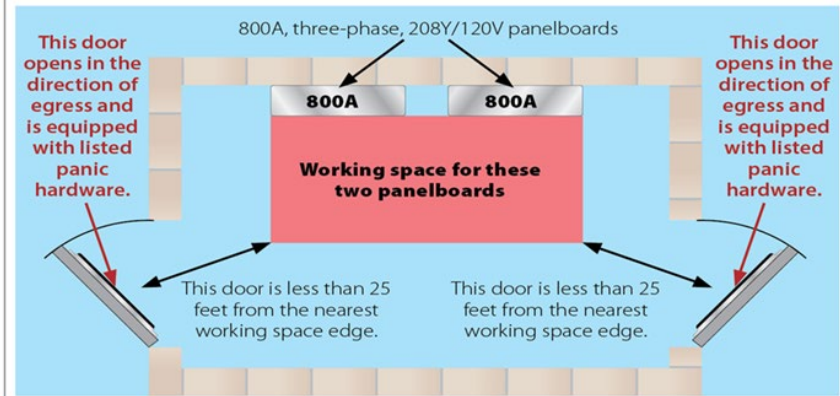


### 110.26(C)(3) Personnel Doors



Where equipment rated 800 amperes or more that contains overcurrent devices, switching devices, or control devices is installed and there is a personnel door(s) intended for entrance to and egress from the working space less than 7.6 m (25 ft) from the nearest edge of the working space, the door(s) shall open in the direction of egress and be equipped with listed panic hardware or listed fire exit hardware.

FIGURE 4 PERSONNEL DOORS



Where equipment rated 800A or more that contains overcurrent devices, switching devices, or control devices is installed and there is a personnel door(s) intended for entrance to and egress from the working space less than 25 feet from the nearest working space edge, the door(s) shall open in the direction of egress and be equipped with listed panic hardware [110.26(C)(3)].

# 110.26 (C)(3) Personnel Doors



110.2(C)(3)  
Personnel Doors

# 210.5 (C)(1)

## Identification of Ungrounded Conductors



210.5(C)(1) now requires ungrounded conductors be identified by phase or line and by system voltage class.



Clarification is provided to permit different voltage systems within the same premises with the same system voltage class to use the same means of identification.

*SECTION*  
2

# 210.5 (C)(1)

NECA Electric, Bethesda MD 20814			
Ungrounded Conductor Identification			
Voltage Class			
Less than 150 volts to ground and not over 300 volts to phase to phase		Over 150 volts to ground and not over 1,000 volts to phase to phase	
A-Phase	Black	A-Phase	Brown
B-Phase	Red	B-Phase	Orange
C-Phase	Blue	C-Phase	Yellow
Neutral	White	Neutral	Gray

# 210.8 GFCI Protection for Personnel

- Measuring distance from receptacles is modified. Doors or doorways do not eliminate GFCI requirements.
- 210.8(C) for boat hoists is relocated into 555.9. An informational note is added.
- In 210.8 two first level subdivisions are deleted and three are added.

# 210.8 (A) GFCI Dwelling Units

- The parent text in 210.8(A) is expanded to include all 125-volt through 250-volt receptacles rated 150 volts or less to ground.
- List item 210.8(A)(5) is no longer limited to unfinished areas and applies to all receptacles in basements.
- New list item 11 requires GFCI protection for indoor damp and wet locations.



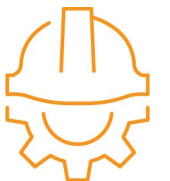
210.8 (A)



# 210.8 (B)

## GFCI, Other than Dwelling Units

- Parent text in 210.8(B) is revised for clarity. Accessory buildings are added in 210.8(B)(8).
- 210.8(B)(2) Kitchens include areas with a sink and permanent provisions for either food preparation or cooking.
- Two new list items are added to include laundry areas, bathtubs and shower stalls.



## 210.8 (B)



# 210.8 (D), (E), & (F) GFCI Protection for Personnel

- Existing 210.8(D) is deleted and GFCI requirements for dishwashers are expanded and relocated to 422.5.
- New 210.8(D) references 422.5 to coordinate GFCI protection.
- New 210.8(E) references 210.63 requiring GFCI protection and new (F) includes general GFCI requirements for outdoor outlets other than those in 210.8(A)(3) Exception.

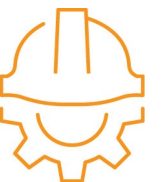


210.8 (D), (E), & (F)

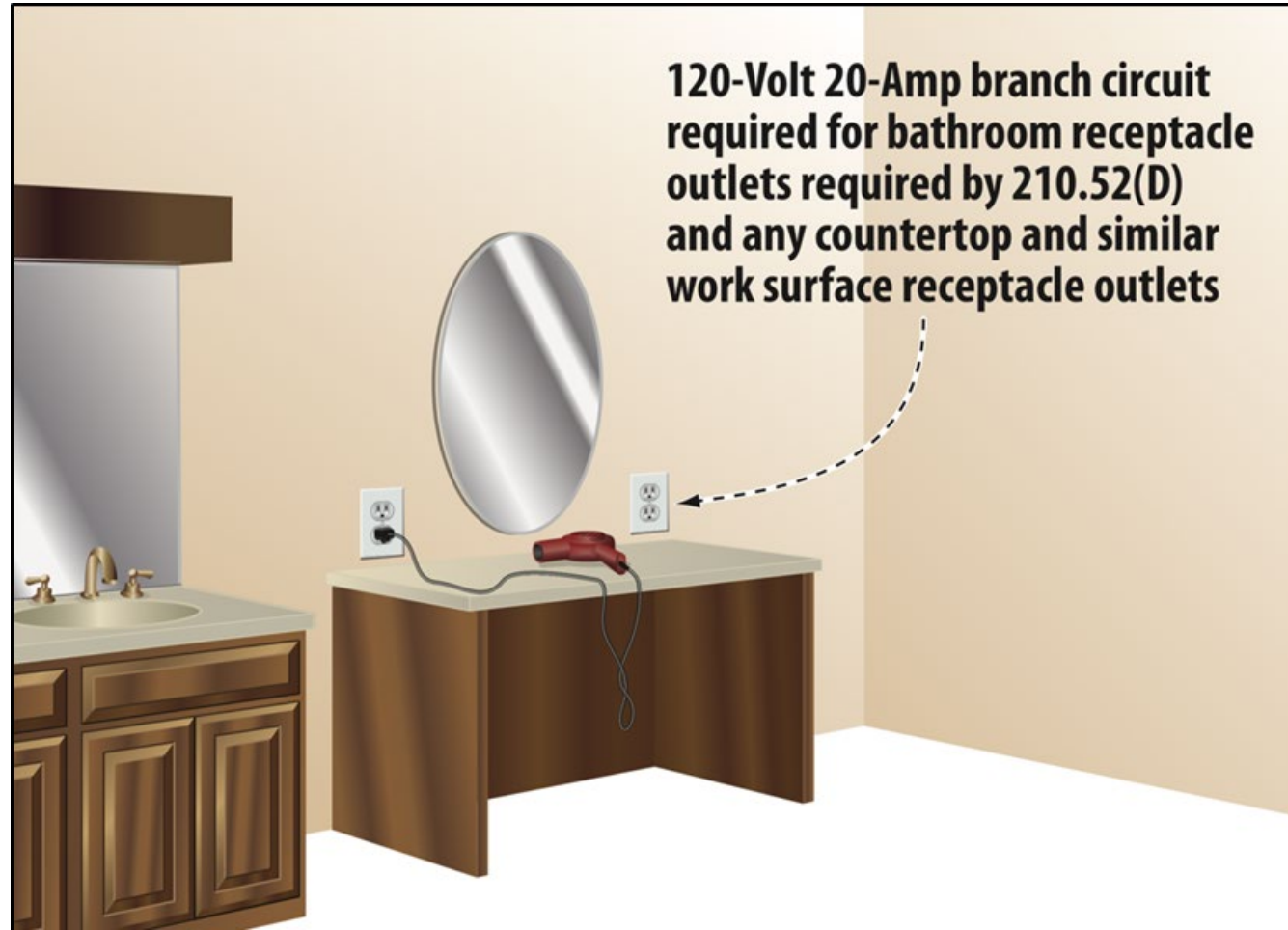
# 210.11 (C)(3) & (C)(4)

## BATHROOM AND GARAGE BRANCH CIRCUITS

- Requirements for branch circuits in 210.11 are modified for clarity.
- The required receptacle outlet(s) in 210.52(D) and any other countertop or similar work surface receptacle outlets in bathrooms must be supplied by one or more 120-volt, 20-amp branch circuits.
- The required 120-volt, 20-amp branch circuit in 210.11(C)(4) is intended to supply the required receptacle outlet(s) in 210.52(G)(1).



## 210.11 (C)(3) & (C)(4)



## 210.12(D)

### BC EXTENSIONS / MODIFICATIONS, GUEST ROOMS/SUITES



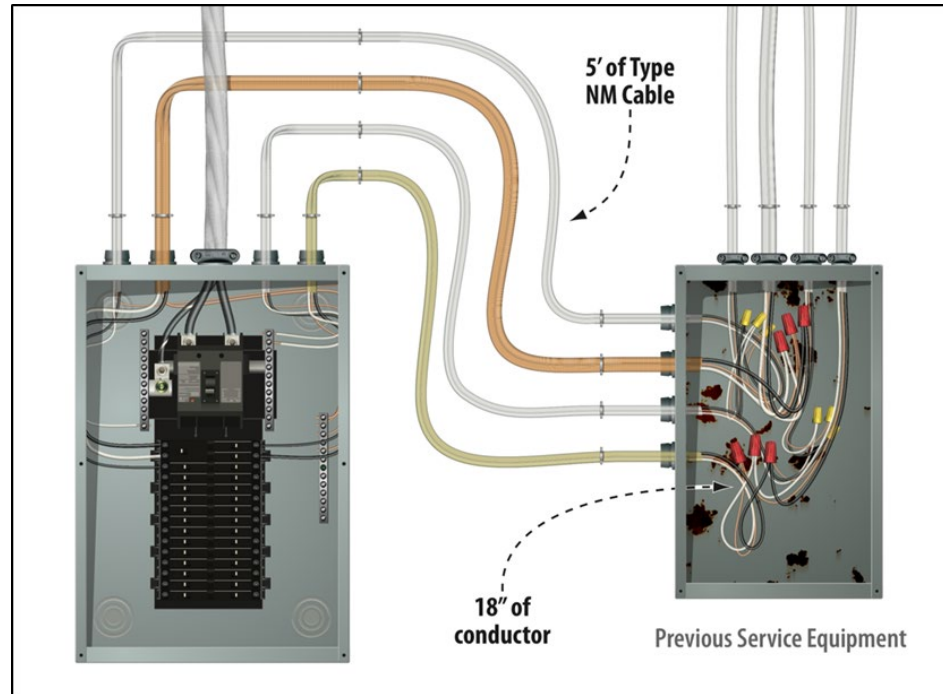
210.12(D) is expanded to include guest rooms and guest suites.



New text is added to clarify the exception for branch circuit conductor extensions not more than 6 feet.



Splicing devices are permitted. The 6-foot measurement does not include conductors inside an enclosure, cabinet, or junction box.



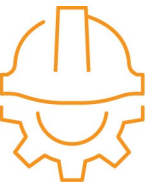
210.12(D)



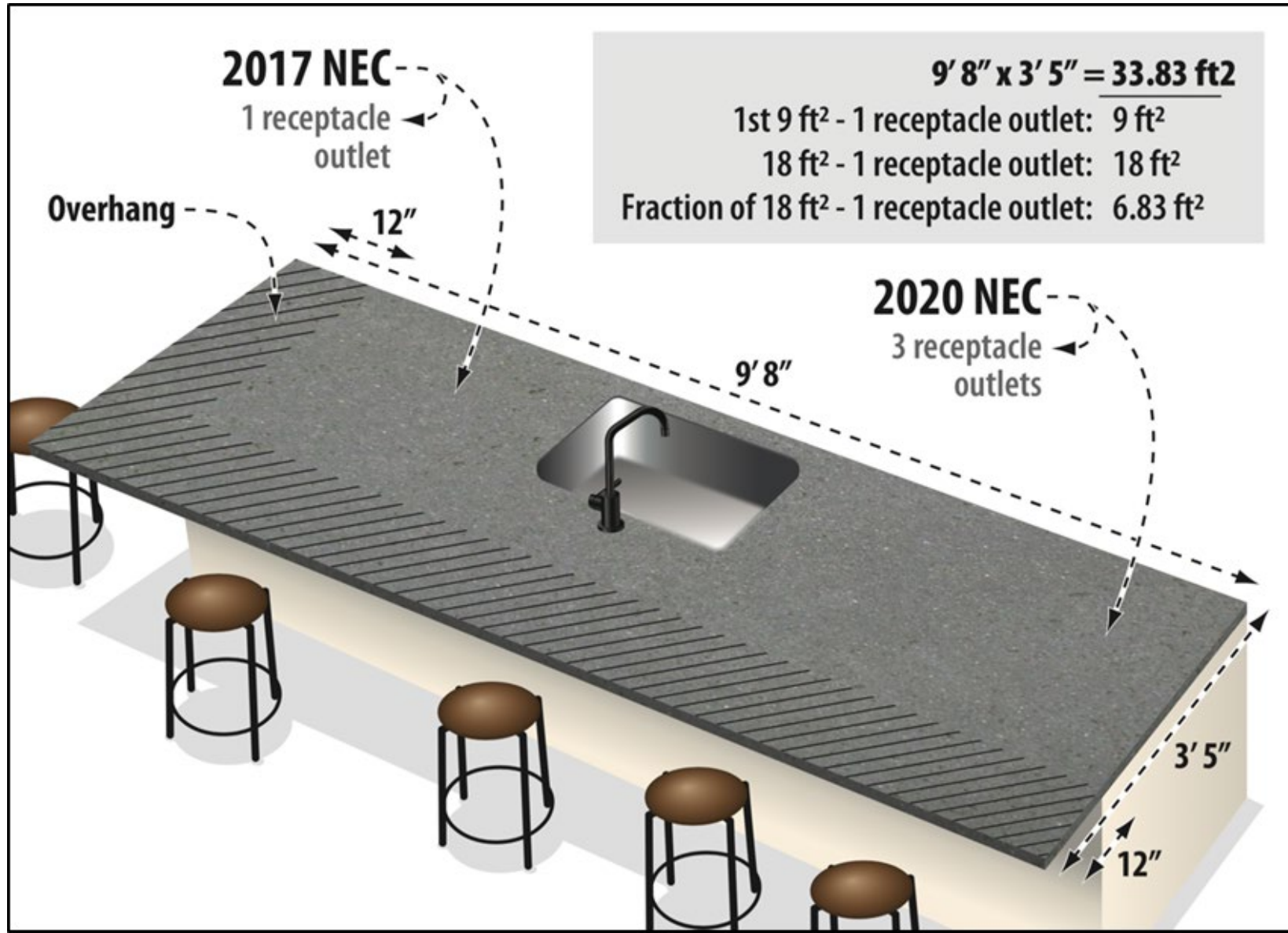
## 210.52(C)

# RECEPTACLE OUTLETS, COUNTERTOPS, AND WORK SURFACES

- Requirements for island and peninsular countertops are combined.
- 9 ft.2 of space or any fraction will require a receptacle and one more for every 18 ft.2 or any fraction thereof.
- A peninsular countertop work surface must have a receptacle outlet within 2 feet of the end of the countertop or work surface.



# 210.52(C)



# 210.63 EQUIPMENT REQUIRING SERVICING

- 210.63 and 210.64 are revised and combined into a single section.
- The exceptions to 210.64 are deleted.
- A new requirement now mandates a receptacle outlet for all indoor equipment requiring dedicated equipment space.



210.63

## TABLE 220.12 GENERAL LIGHTING LOADS BY NON-DWELLING OCCUPANCY

- Table 220.12 is now limited to non-dwelling occupancies.
- Significant revisions are included for types of occupancies to correlate with ASHRAE 90.1.
- The unit load for most occupancies has been significantly reduced.



TABLE 220.12

# 220.87

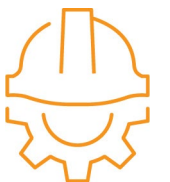
## DETERMINING EXISTING LOADS

- 220.87 permits actual maximum demand values to determine existing loads.
- Where feeder or service conductors have a renewable energy system, or any form of peak load shaving, actual maximum demand is not obtainable, and Section 220.87 cannot be applied.

## 225.30(A)

# SPECIAL CONDITIONS (NUMBER OF SUPPLIES)

- 225.30(A) is modified to permit additional feeders or branch circuits for docking facilities and piers.
- This revision recognizes the need for increased levels of ground fault protection in marinas and similar installations.
- Section 555.35 requires shore power receptacles to have GFPE not exceeding 30 mA. Feeders and branch circuits must have GFPE set to open at not more than 100 mA.





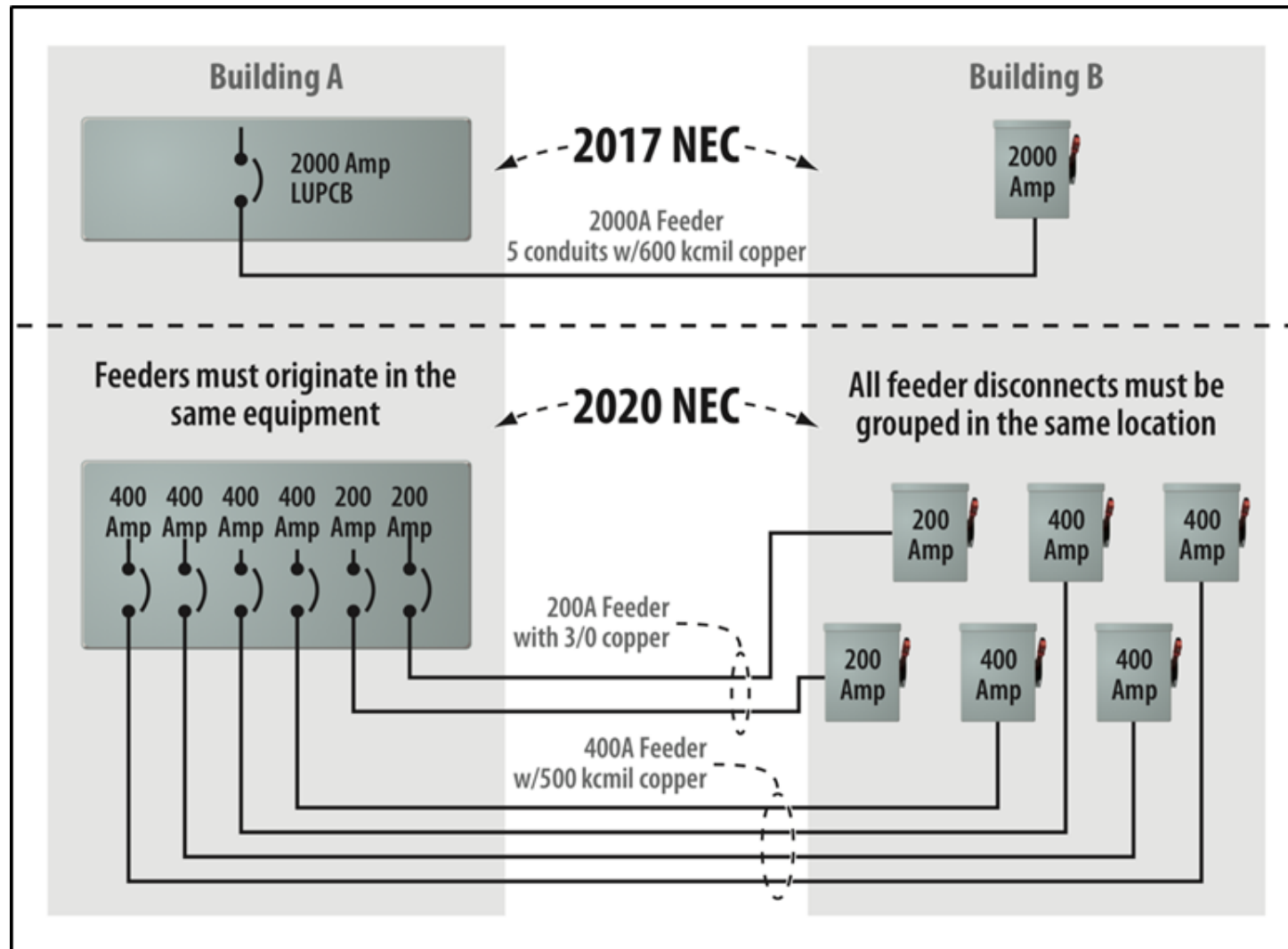


225.30(A)

# 225.30(B) COMMON SUPPLY EQUIPMENT

- 225.30(B) now permits up to six feeders to supply a separate building or structure.
- All of the feeder conductors must originate in the same panelboard, switchboard, or other distribution equipment.
- Each feeder must terminate in a single disconnecting means, and all of the feeder disconnects in the building or structure supplied, must be grouped in the same location.

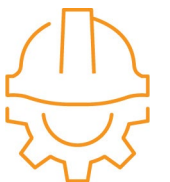
# 225.30(B)



# 230.46

## SPLICED AND TAPPED CONDUCTORS

- The requirement for marking power distribution blocks used on service conductors is moved from 314.28(E)(1) to 230.46.
- All power distribution blocks, pressure connectors, and devices for splices and taps of service conductors must be listed.
- Effective January 1, 2023, pressure connectors and devices for splices and taps on service conductors must be marked as suitable.





230.46

# 230.67 SURGE PROTECTION, DWELLING UNITS

- New 230.67 requires services supplying dwelling units to be provided with an SPD.
- The SPD must be located in or next to the service equipment. An exception permits an alternate location, provided an SPD is located at each next level distribution equipment downstream toward the load.
- All of the requirements in this new section apply where service equipment is replaced.



230.67

# 230.71 MAXIMUM NUMBER OF DISCONNECTS, TWO TO SIX

- The requirements in 230.71(B) permitting up to six service disconnects are significantly revised.
- Panelboards, for example, must be provided with a single main in each enclosure.
- 230.71(B)(1) through (4) outline the permitted methods for two to six service disconnects.





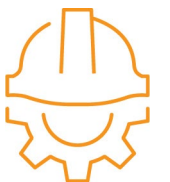
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230.71

# 230.85

## EMERGENCY DISCONNECTS

- All services for one and two family dwellings are now required to have emergency disconnects installed in a readily accessible outdoor location.
- These disconnects are necessary for first responders in a fire or other emergency.
- Similar requirements are added in this NEC cycle for energy storage systems and permanently mounted generators.



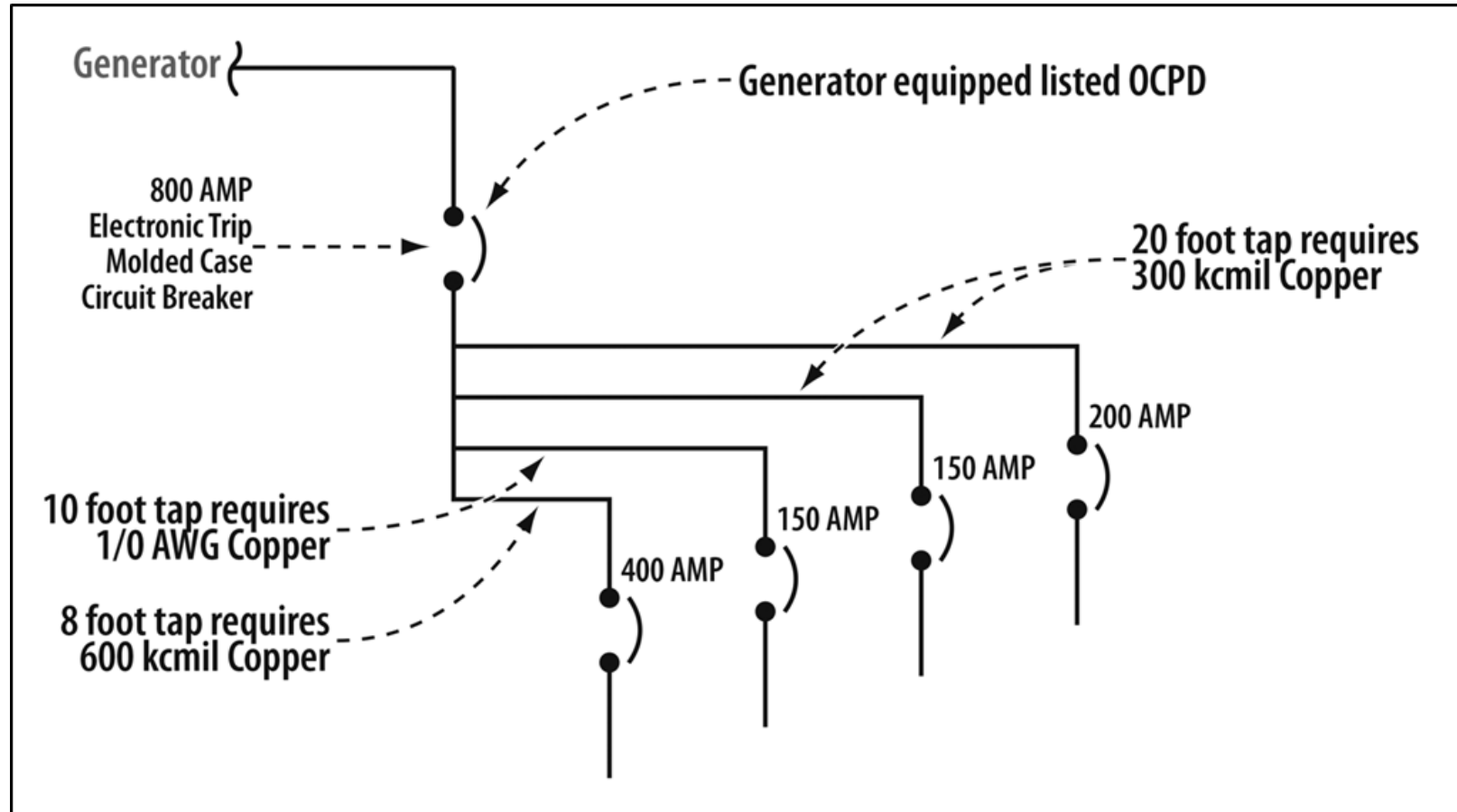


230.85

## 240.21(B) FEEDER TAPS

- The parent text 240.21(B) is modified for clarity.
- Feeders are permitted to be tapped at any point on the load side of the feeder overcurrent protective device.
- Generator supplied feeder tap conductors are often installed in this manner. See 445.13(B).

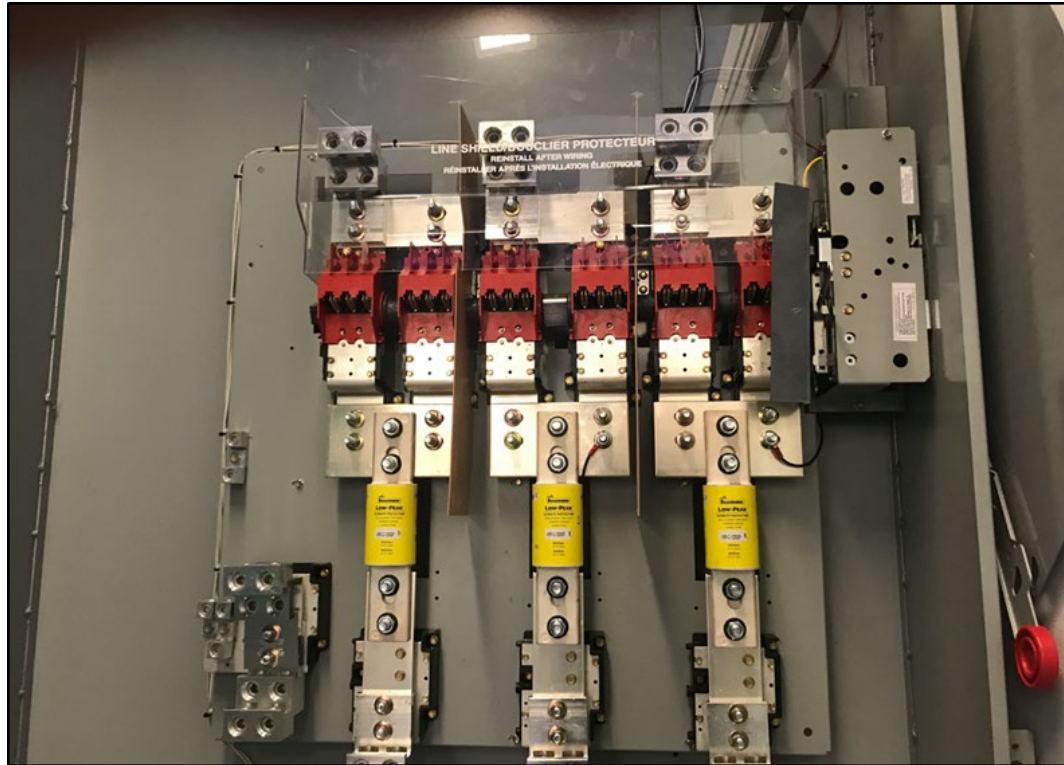
# 240.21(B)



# 240.67

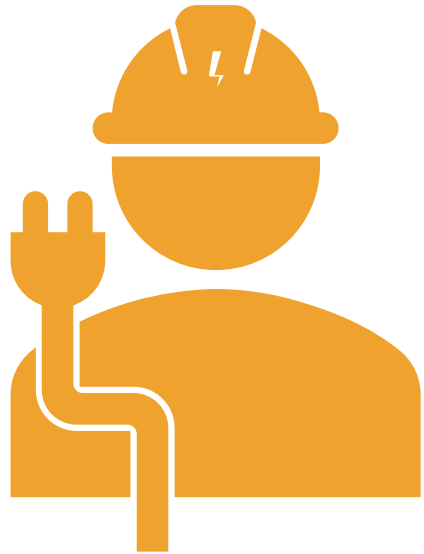
## ARC ENERGY REDUCTION

- Documentation is now required to demonstrate that the method chosen to reduce clearing time will operate at a value below the arcing current.
- 240.67(B) requires that the method chosen to reduce clearing time operates at a value below the arcing current.
- Current limiting electronically actuated fuses are now a permitted arc energy reduction method in 240.67.



240.67

# 240.67(C) & 240.87(C) PERFORMANCE TESTING



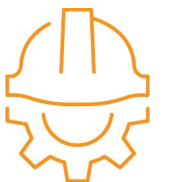
- Arc energy reduction methods must be performance tested when first installed onsite.
- Testing must be performed by qualified persons in accordance with the manufacturers' instructions.
- A written record of this testing must be made available to the AHJ.



# 240.87

## ARC ENERGY REDUCTION

- Temporary adjustment of the instantaneous trip setting to achieve arc energy reduction is prohibited.
- All arc energy reduction methods chosen, must operate at less than the available arcing current. This must be documented.





240.87

# Article 242

## OVERVOLTAGE PROTECTION

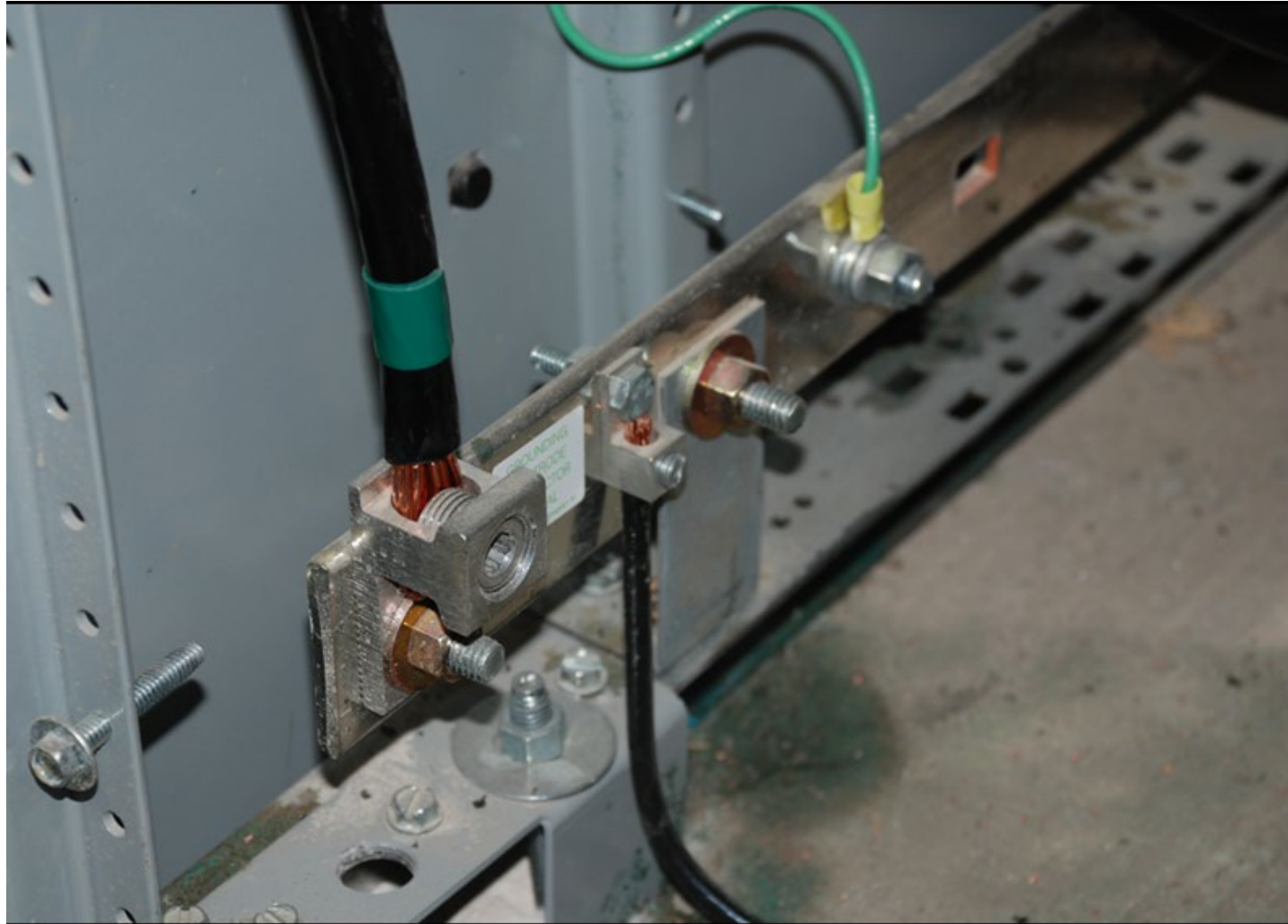
- Articles 280 and 285 have been combined to form a new Article 242 titled Overvoltage Protection.
- The article has three parts, General, Surge Protective Devices (SPDs) 1000 Volts or Less, and Surge Arresters Over 1000 Volts.
- Technical responsibility for Article 242 and its associated definitions in Article 100 has been shifted from CMP-5 to CMP-10.

## 250.64(A)

### Aluminum and Copper-Clad Aluminum Conductors

- This section was restructured into a list format to meet the NEC Style Manual requirements.
- The revision in (1) prohibits direct contact with concrete.
- (2) has been revised to permit terminations of aluminum and copper-clad aluminum conductors connections within 18 inches of the earth where within enclosures listed for the environment.

250.64(a)

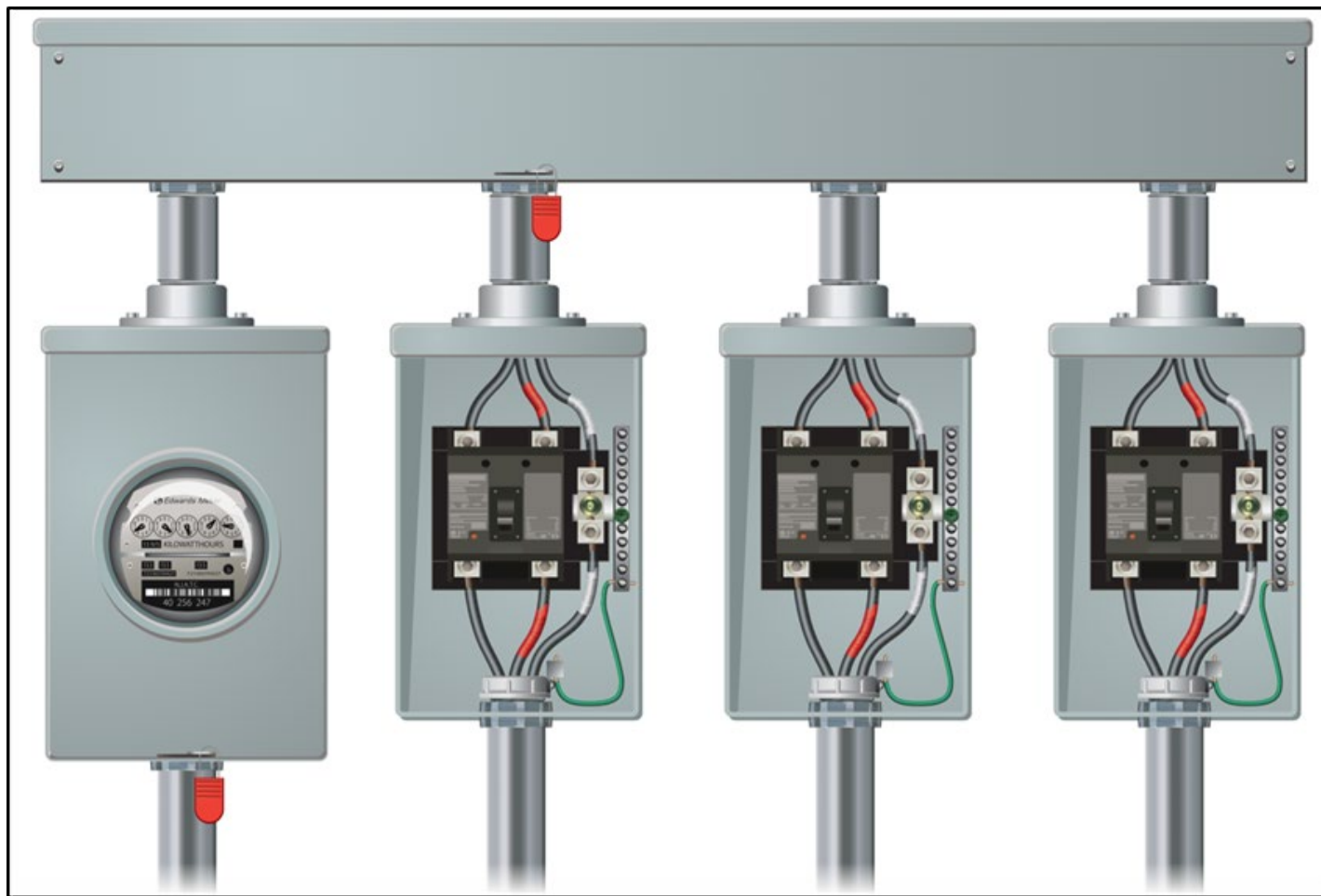


# 250.92(B)

## METHOD OF BONDING AT THE SERVICE

- The words “listed threaded hubs” have been incorporated into list item (2) of this section.
- Standard hubs that have not been evaluated and listed for use in service bonding applications are not permitted.
- Listed products are identified for the uses for which they are permitted.





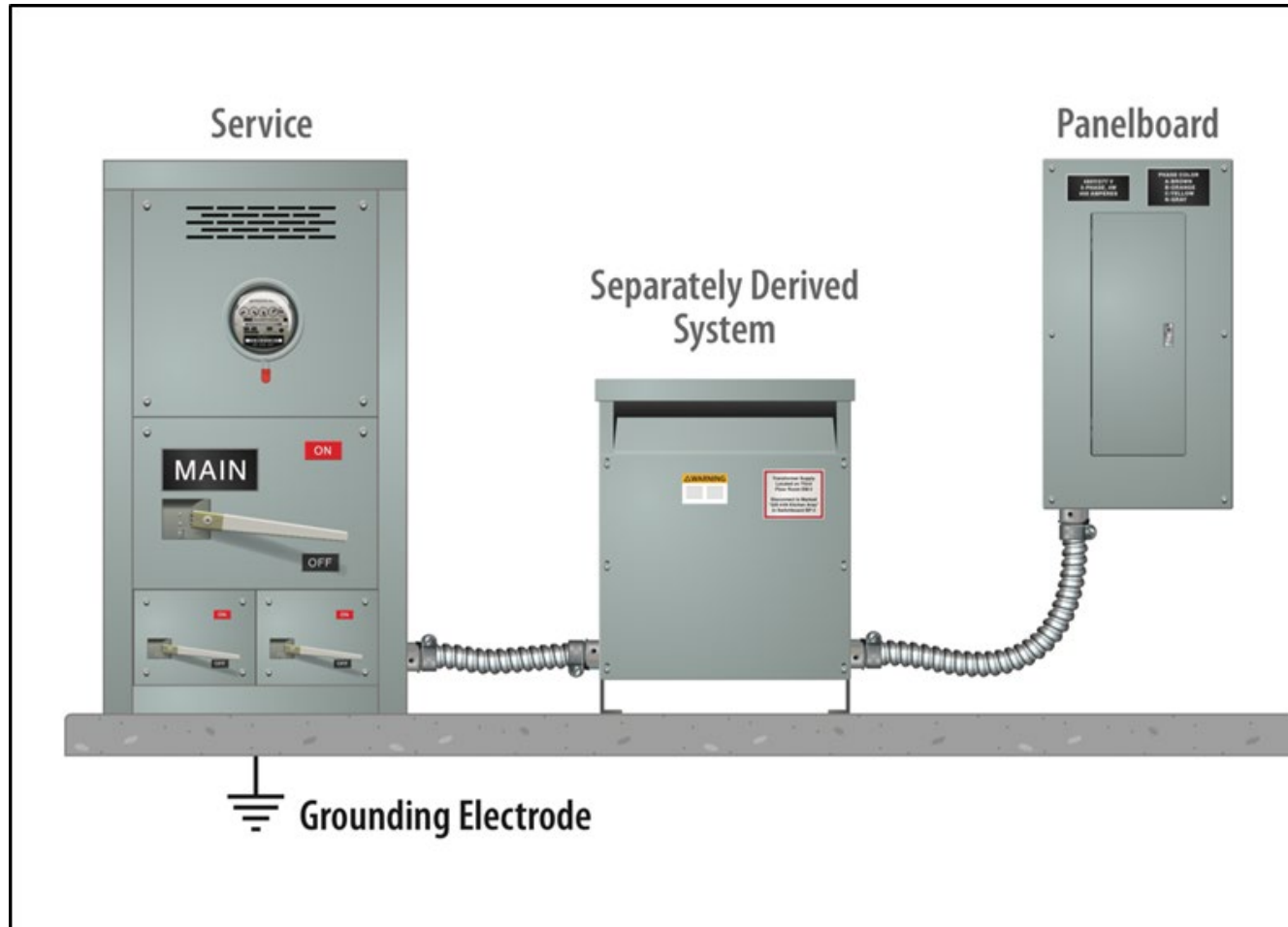
250.92(B)

# 250.121(B) METAL FRAME OF BUILDING OR STRUCTURE

- The word “restricted” has been added to the title of this section.
- Added text in (B) restricts structural metal building frames from use as equipment grounding conductors.
- The revision provides consistency with the provisions of 250.136(A).



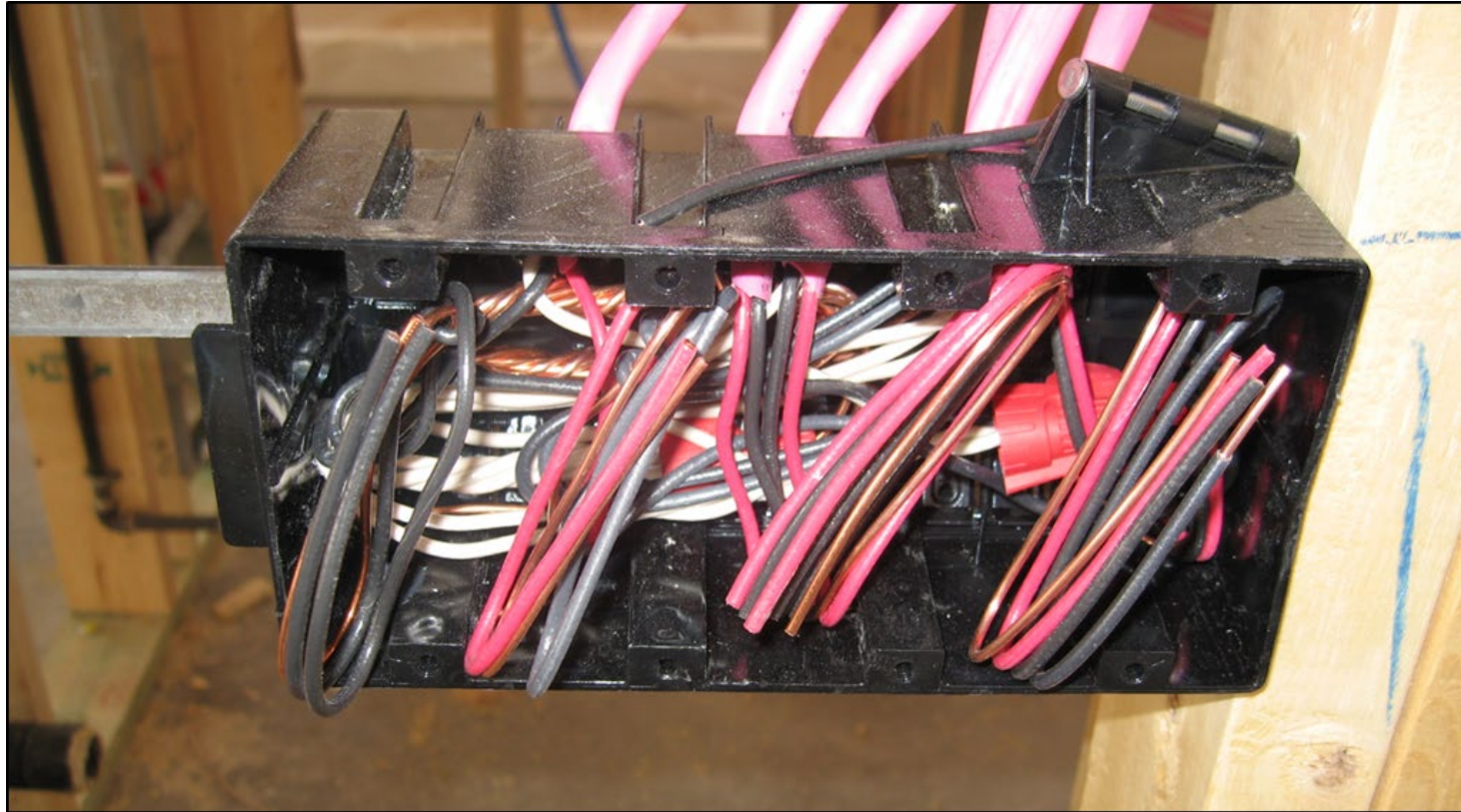
# 250.121(B)



# 314.16

## Number of Conductors/Box Volume/Fill

- The single volume allowance for EGCs and EBJs is limited to four of these conductors.
- A  $\frac{1}{4}$  volume allowance based upon the largest EGC or EBJ in the box is added for each EGC or EBJ over four.
- Editorial revisions are made in the parent text and Table 314.16(A).



314.16

# 320.80(A), 330.80(C), & 338.10(B)(4) AMPACITY

- New text in 320.80(A), 330.80(C) and 338.10(B)(4) are added to address the installation of more than two cables in thermal insulation.
- Where space is not maintained between cables that are in contact with thermal insulation, caulk, or sealing that foam, capacity must be adjusted in accordance with Table 310.15(C)(1).
- Editorial revisions are made in 330.80(B) to reference tables in new Article 311 MV Conductors and Cables.





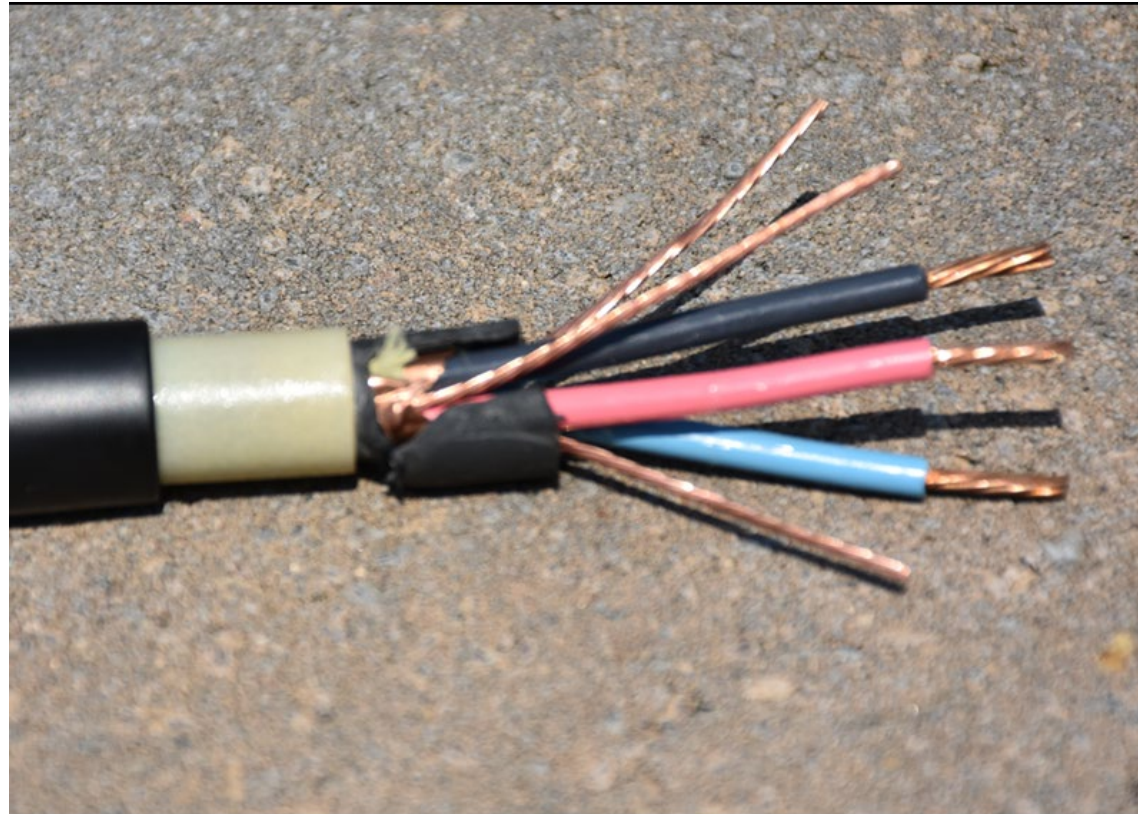
320.80(A), 330.80(C), & 338.10(B)(4)

# Article 337

## TYPE -P CABLE

- New Article 337 now permits the installation of Type P cable (marine shipboard cable).
- Type P cable has been used in land-based oil and gas rigs for over four decades.
- Type P cable is limited to industrial installations and hazardous locations.

# Article 337



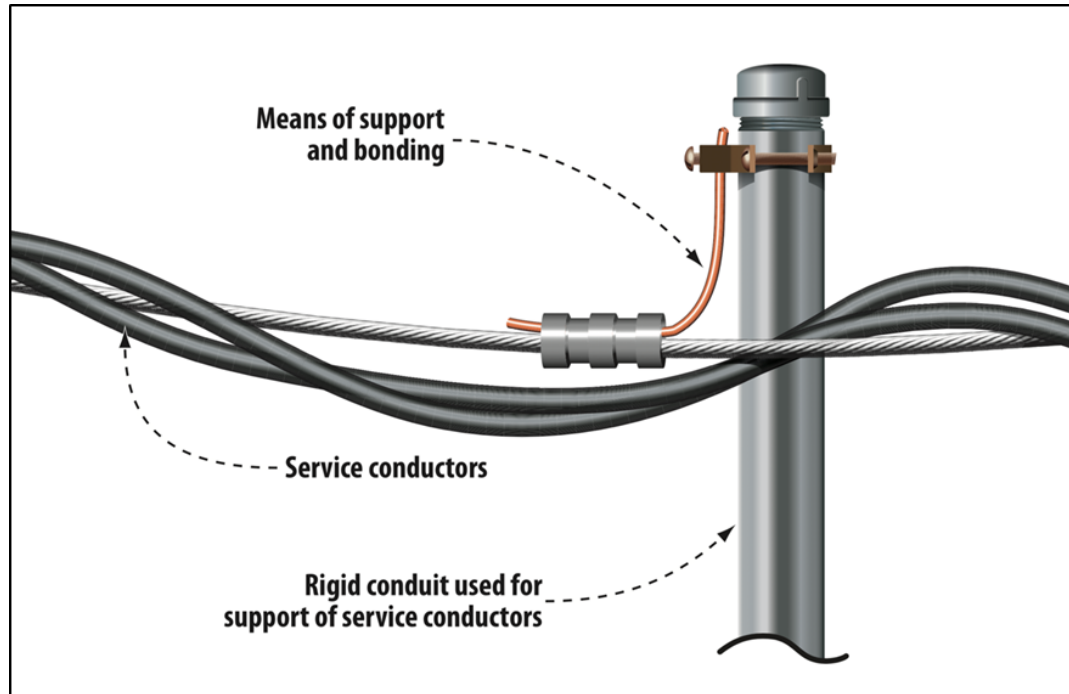
# 338.2 & 338.100

## Service Entrance Conductor Assembly

- A new definition of “Service Entrance Conductor Assembly” is added to 338.2.
- This definition is necessary to address assemblies of single insulated USE conductors.
- Construction requirements are modified to recognize service entrance conductor assemblies.







338.2 & 338.100

# 342.10(E), 344.10(E), & 358.10(E) Physical Damage & Severe Physical Damage

- Physical damage is now specifically addressed in the XXX.10(E) sections for IMC, RMC, and EMT.
- IMC and RMC are permitted to be installed in areas subject to severe physical damage.
- EMT is permitted to be installed in areas subject to physical damage.



# *REFERENCE DOCUMENTS*

- ❖ ELECTRICAL TRAINING ALLIANCE.
- ❖ MIKE HOLT.
- ❖ GOOGLE IMAGES.
- ❖ NFPA-70.

# WE ARE AVAILABLE TO ASSIST YOU!

**Miami-Dade County Permitting and Inspection Center**

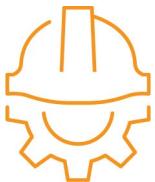
**11805 SW 26th Street**

**Miami, Florida 33175**

**Main Phone: 786-315-2000**

**Voice Response: 305-591-7966**

**[bldgdept@miamidade.gov](mailto:bldgdept@miamidade.gov)**



**THANK YOU.**