1

Welcome NC Electricians!

What Does North Carolina Require?

4 to 8 Hours of Continuing Education is Required

- NC licenses [I, L, U, SP SFD] must complete 8 hours of continuing education every year. Half of those hours must come from an in-person or VILT classroom session.
- NC licensees [SP-FA/LV, SP-EL, SP-PH, SP-WP, SP-ES, SP-SP] must complete 4 hours of continuing education every year. Half of those hours must come from an in-person or VILT classroom session.

Today's class is worth 4 hours of classroom/VILT continuing education.

2

2023 NEC Changes Part 1

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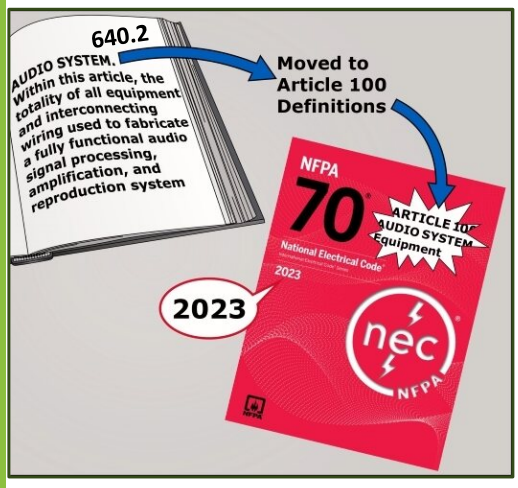
7:45 AM – 8:10 AM Eastern	**Registration / Check In / Intro**
8:10 AM – 9:30 AM Eastern	**NEC Introduction and Chapter 1** *with poll questions*
9:30 AM – 9:40 PM Eastern	**Break**
9:40 AM – 10:10 AM Eastern	**NEC Chapter 2** *with poll questions*
10:10 AM – 10:20 AM Eastern	**Break**
10:20 AM – 11:10 AM Eastern	**NEC Chapter 2 (Continued)** *with poll questions*
11:10 AM – 11:20 AM Eastern	**Break**
11:20 AM – 12:00 PM Eastern	**NEC Chapter 3 and NEC Chapter** *with poll questions*
12:00 PM Eastern	**End of Class**

3

4

100 Definitions. Scope.



- **In the 2020 NEC:** Definitions were scattered throughout various articles of the NEC. They were included in the XXX.2 sections of those articles.
- **In the 2023 NEC:** Definitions are now found only in:

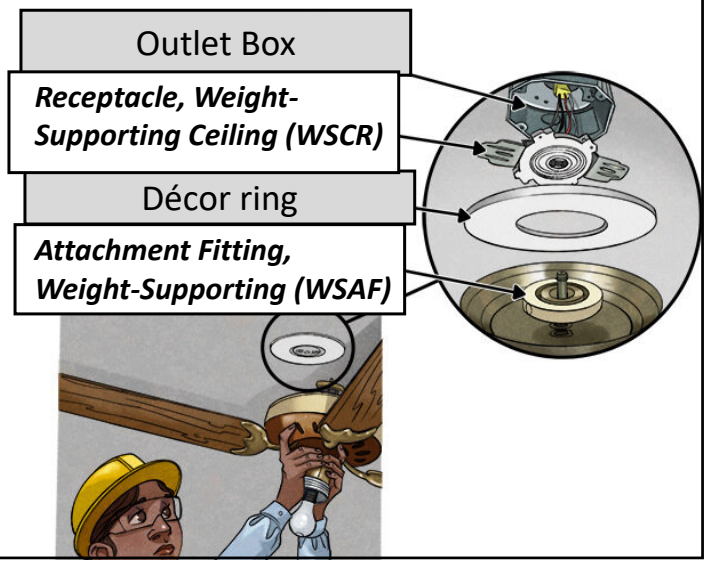
  Article 100, Definitions

Those definitions that apply only to a single article(s) have the article number identified in parenthesis after that definition.

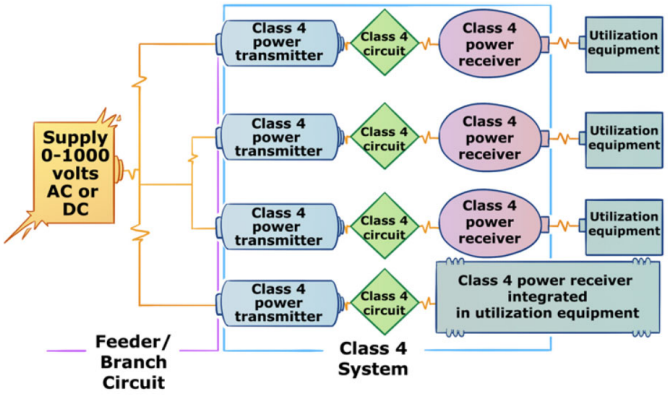
100 Definitions. Attachment Fitting, WSAF, and WSCR

The 2023 NEC has replaced the term *Attachment Fitting* with the following two NEW terms!

1. ***Attachment Fitting, Weight-Supporting (WSAF)***
2. ***Receptacle, Weight-Supporting Ceiling (WSCR)***



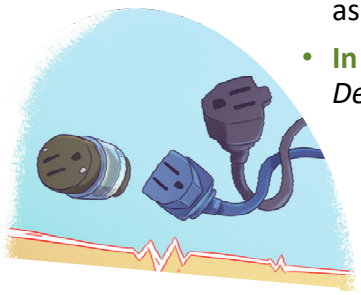
100 Definitions. Class 4 *Circuit, Device, Etc…*



The 2023 NEC now defines Class 4 components that were not defined in 2020 NEC!

- Class 4 Circuit
- Class 4 Device
- Class 4 Power system
- Class 4 Receiver
- Class 4 Transmitter
- Class 4 Utilization Equipment

100 Definitions. Cord Connector



Non-Hazardous Cord Connectors!

- **In the 2020 NEC:** The term *Cord Connector* was defined - but only as it applied to *Hazardous Locations.*
- **In the 2023 NEC:** *Cord Connector* is defined twice in Article 100, *Definitions,* and includes a new NON-hazardous definition.

✓**Cord Connector** **Non-Hazardous Type!**

A contact device terminated to a flexible cord that accepts an attachment plug or other insertion device.

✓**Cord Connector [as applied to hazardous (classified) locations]**

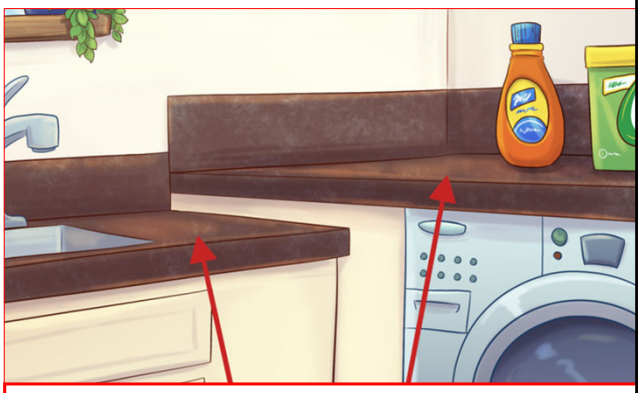
A fitting intended to terminate a cord to a box or similar device and reduce the strain at points of termination and might include an explosion-proof, a dust-ignition-proof, or a flameproof seal.

100 Definitions. Counter (Countertop).

The 2023 NEC now defines ***countertops*** to help distinguish them from *work surfaces* (which is also a new definition in 2023!)

Counter (Countertop)—

A fixed or stationary surface typically intended for food preparation and serving, personal lavation, or laundering or a similar surface that presents a routine risk of spillage of larger quantities of liquids upon outlets mounted on or in the surface.



Do you think these are *Countertops* or *Work Surfaces?*

2023 NEC Changes

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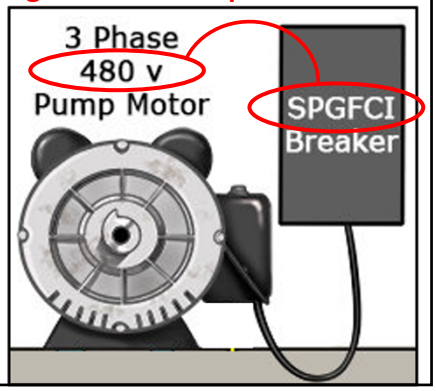
100 Definitions. Ground Fault Circuit Interrupter, Special Purpose

The 2023 NEC provides a new definition:

Special Purpose Ground-Fault Circuit Interrupter (SPGFCI)

- The **SPGFCI** first debuted in the year 2000 when Underwriters Laboratory (UL) established new voltage categories for Ground-Fault Circuit Interrupters (GFCI).
- **SPGFCI** protection classes includes Class C, Class D, and Class E GFCI devices
- Class C, Class D, and Class E GFCI devices are designed to protect against voltages measuring greater than 150V to ground.

3-PH 480V measures 277V to ground so it requires SPGFCI



2023 NEC Changes

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100 Definitions. Ground-Fault Detector-Interrupter, dc (GFDI).

***Ground-Fault Detector-Interrupter, dc (GFDI),* first appeared in Section 690.41(B) of the 2020 NEC. But it had no official definition!**

The 2023 NEC introduces the following new definition:

Ground-Fault Detector-Interrupter, dc (GFDI)—
A device that provides protection for PV System DC Circuits by detecting a ground fault and can interrupt the fault path in the DC circuit.

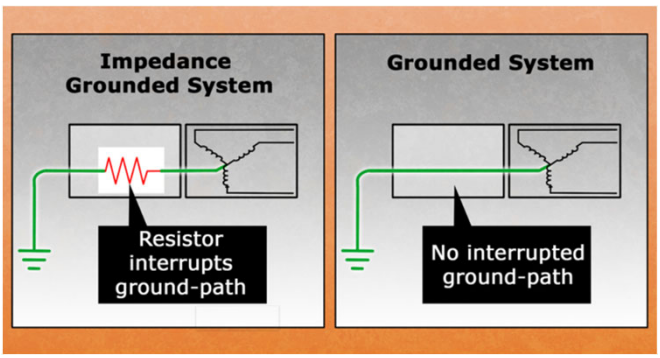
GFDI devices protect solar PV circuits. Similar to GFCI, they look for an imbalance in current flow and stop all flow by disconnecting DC output conductors.

100 Definitions. Grounded System, Impedance. (Impedance Grounded System)

Grounded System, Impedance. (Impedance Grounded System) is another new term **in the 2023 NEC!**

Grounded System, Impedance. (Impedance Grounded System)—

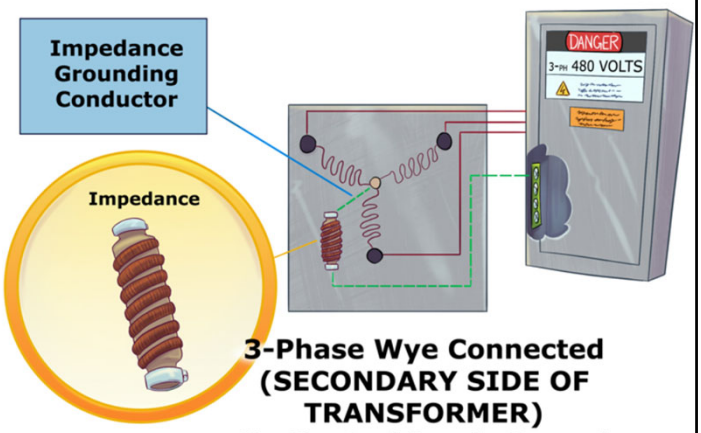
An electrical system that is grounded by intentionally connecting the system neutral point to ground through an impedance device.



100 Definitions. Grounding Conductor, Impedance. (Impedance Grounding Conductor)

Another new term **in the 2023 NEC** is ***Grounding Conductor, Impedance. (Impedance Grounding Conductor)—***

An electrical system that is grounded by intentionally connecting the system neutral point to ground through an impedance device



2023 NEC Changes

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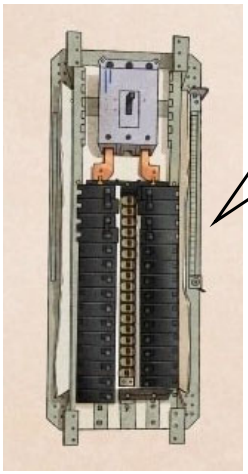
100 Definitions. Panelboard, Enclosed. (Enclosed Panelboard)

Part 1 of 2

In the 2020 NEC *Panelboard* referred to a single or group of panel-units that served as a single panel.

The panelboard per the 2020 NEC was designed to be placed ***inside*** a cabinet or cutout box – so, that the cutout box or enclosure was NOT a part of the panelboard.



Panelboard in the 2020 NEC meant the "guts!"

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100 Definitions. Panelboard, Enclosed. (Enclosed Panelboard)

Part 2 of 2

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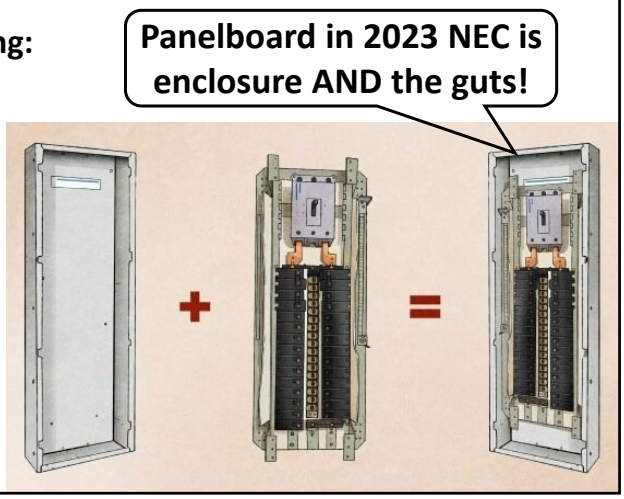
In the 2023 NEC *Panelboard, Enclosed. (Enclosed Panelboard)* is as follows:

An assembly of some or all of the following:

- buses & connections
- overcurrent devices
- control apparatus with or without switches or other equipment

They are installed in one of the following:

- A cabinet
- cutout box
- enclosure suitable for a panelboard application.



2023 NEC Changes

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100 Definitions. Restricted Industrial Establishment

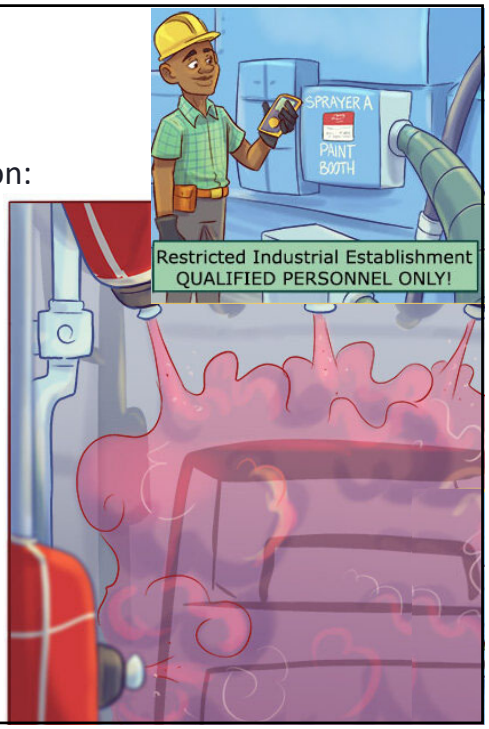
In the 2023 NEC, there is another brand-new definition:

Restricted Industrial Establishment [as applied to hazardous (classified) locations—

Establishment with restricted public access, where the conditions of maintenance and supervision ensure that only qualified persons service the installation

Important Points:

- The public does not have access.
- Qualified personnel *only* will be allowed to perform installations and maintenance on the equipment within hazardous locations.



2023 NEC Changes

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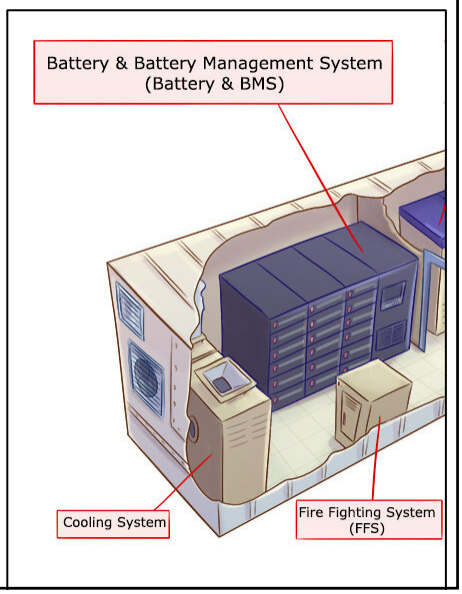
100 Definitions. Stored Energy Power Supply System (SEPSS)

Another new term **in the 2023 NEC** is:

Stored-Energy Power Supply System (SEPSS)—
[see 2023 NEC for this definition]

- A battery is the simplest form of an SEPSS
- In sum, a SEPSS is a system of one or more stored-energy power sources coupled together with all conductors, disconnect switches, transfer switches, overcurrent devices and similar equipment needed to operate the system as a safe and reliable power source.



2023 NEC Changes

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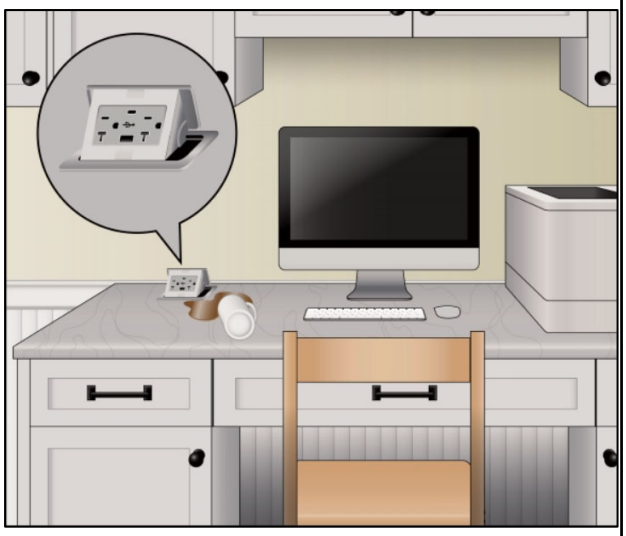
100 Definitions. Work Surface

New in the 2023 NEC a definition for ***Work Surface*** to help distinguish it from countertops.

Work Surface—

A fixed, stationary, or portable surface typically intended for dry use and for tasks other than food preparation, personal lavation, or laundering that presents an incidental risk of spillage of smaller quantities of beverages and other liquids upon outlets mounted directly on or recessed in the surface.



2023 NEC Changes

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Article 110

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Jqjhywnf◊Nsxyfqfyntsx

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110.3(A)(8) Cybersecurity.

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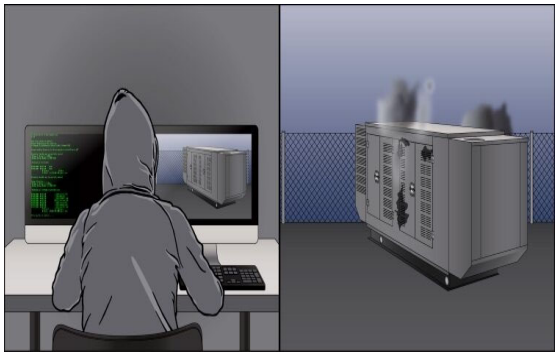
Internet & network-connected electrical backup generators can be hacked!

Hacking can lead to:

- Shutdown of generators and life-safety branch circuits in hospitals, etc.
- New **in the 2023 NEC:** ***Section 110.3(A)(8), Cybersecurity for connected life-safety equipment—*** Helps electricians choose life safety equipment able to withstand hacking & malicious software attacks.



New **110.3(A)(8)** in 2023 NEC aims at promoting cybersecurity protection for these life safety circuits

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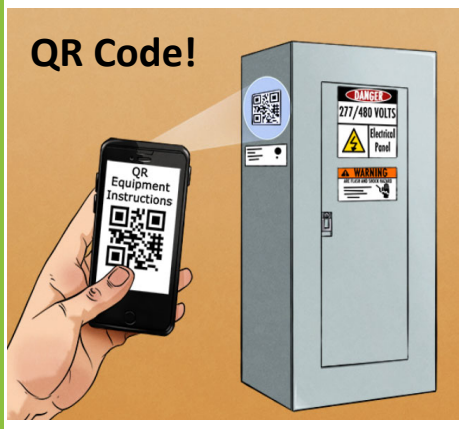
110.3(B) Installation and Use

The 2023 NEC expanded section 110.3(B) to include equipment that is identified as well as listed or labeled.



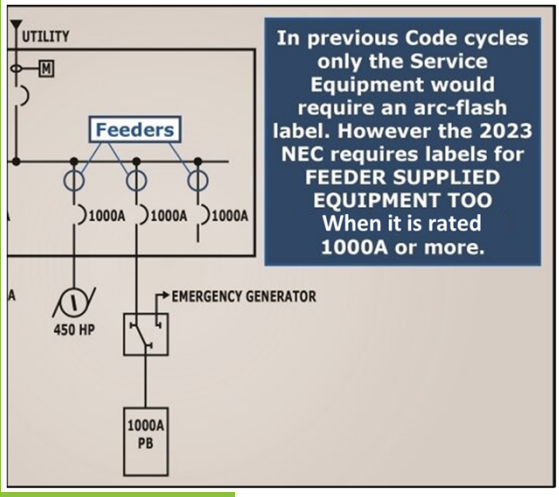
110.3(B) says—

- *Equipment that is listed, labeled, or both, or identified for a use shall be installed and used in accordance with any instructions included in the listing, labeling, or identification.*

- Also new for 2023 NEC is a brand-new *Informational Note* stating equipment installation instructions may be provided in the form of a QR code, or an internet address, in addition to the traditional printed instructions that often accompany equipment.

110.16(B) Arc-Flash Hazard Warning. Service Equipment and Feeder Supplied Equipment

Section 110.16(B) has expanded to include **feeder supplied equipment** **in 2023 NEC.**



- Feeder supplied equipment can include transformers, motor control centers, or second distribution panels (aka “sub-panels”) fed using a feeder cable from the main service panel.

- **Also new to 2023 NEC**, labels are now required for equipment **rated 1000 amps or more** instead of 1200 Amps or more as it was in the 2020 NEC!

110.17 Servicing and Maintenance of Equipment

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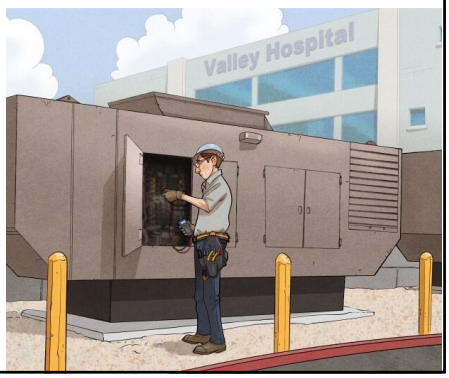
Brand-new **in the 2023 NEC** Section 110.17 **Servicing and Maintenance of Equipment** requires that electrical service and maintenance be performed *only* by qualified persons trained in the proper servicing and maintenance of electrical equipment.

Section 110.17 says to use identified replacement parts during any service work or maintenance, and the parts must meet at least one of the following standards:

- Be provided by the original manufacturer
- Be designed by an engineer experienced in the design of replacement parts for the type of equipment being serviced or maintained
- Be approved by the authority having jurisdiction



2023 NEC Changes

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110.20 Reconditioned Equipment

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The 2023 NEC adds brand-new **Section, 110.20, *Reconditioned Equipment.***

110.20 states: *Reconditioned equipment shall be permitted except where it is prohibited elsewhere in this code. Equipment that is restored to operating condition shall be reconditioned with identified replacement parts, verified under applicable standards, that are either provided by the original manufacturer or that are designed by an engineer experienced in the design of replacement parts for the type of equipment being reconditioned.*

2023 NEC Changes

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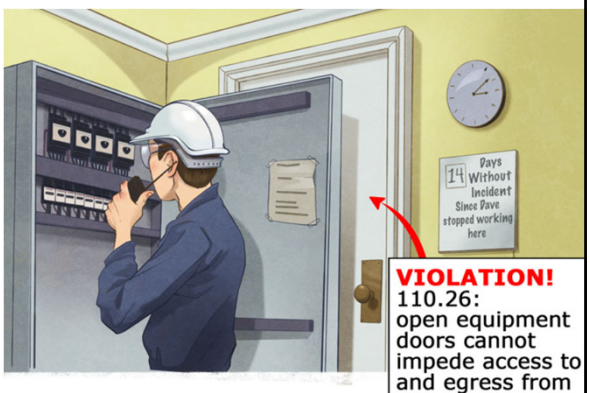
110.26 Spaces About Electrical Equipment

Section 110.26 has expanded in the 2023 NEC to include rules for access and egress to the electrical equipment.

Working space, and access and egress from the working space, shall be provided and maintained about all electrical equipment to permit ready and safe operation and maintenance of such equipment. Open equipment doors shall not impede access to and egress from the working space. Access or egress is impeded if one or more simultaneously opened equipment doors restrict working space access to be less than 24in wide and 6.5ft tall.



2023 NEC Changes

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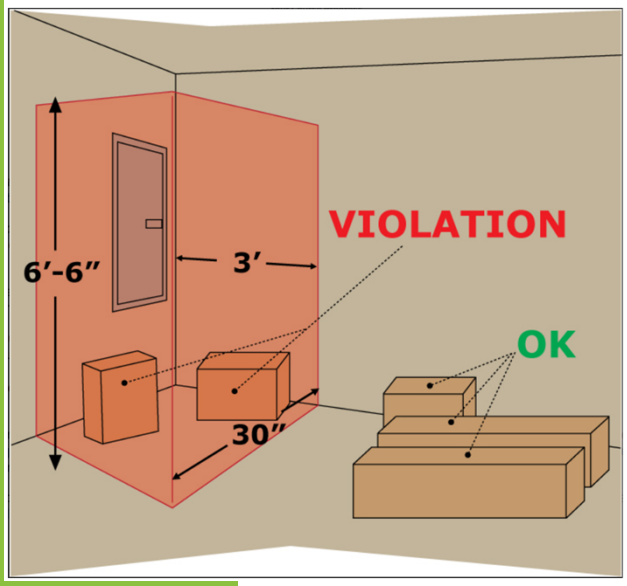
110.26(A)(6) Grade, Floor, or Working Platform



In the 2023 NEC, 110.26(A) has expanded to include 110.26(A)(6), *Grade, Floor, or Working Platform,* which states:

The grade, floor, or platform in the required working space shall be kept clear, and the floor, grade, or platform in the working space shall be as level and flat as practical for the entire required depth and width of the working space.

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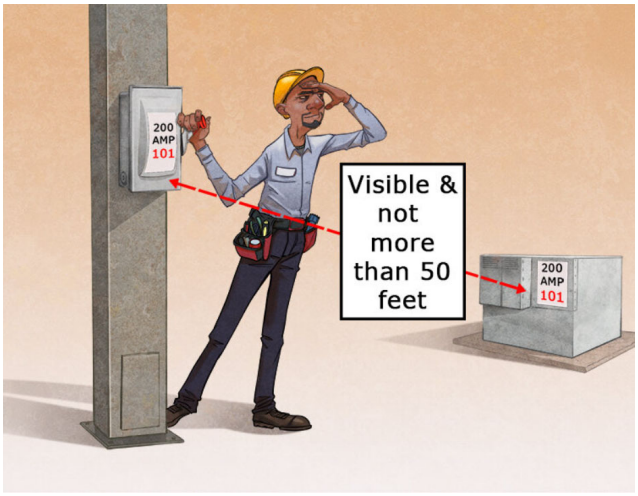
110.29 In Sight From (Within Sight From, Within Sight)

In the 2023 NEC, brand-new Section 110.29 now contains the requirement that used to be found in the Article 100 definition for ***In Sight From (Within Sight From, Within Sight).***

New Section 110.29 states—

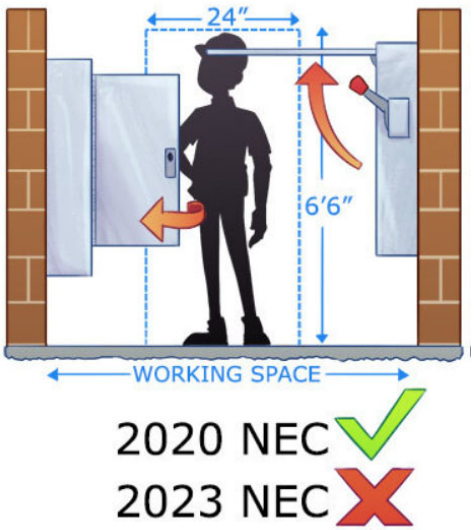
Equipment shall be visible and not more than 15m (50ft) distant from the other equipment.

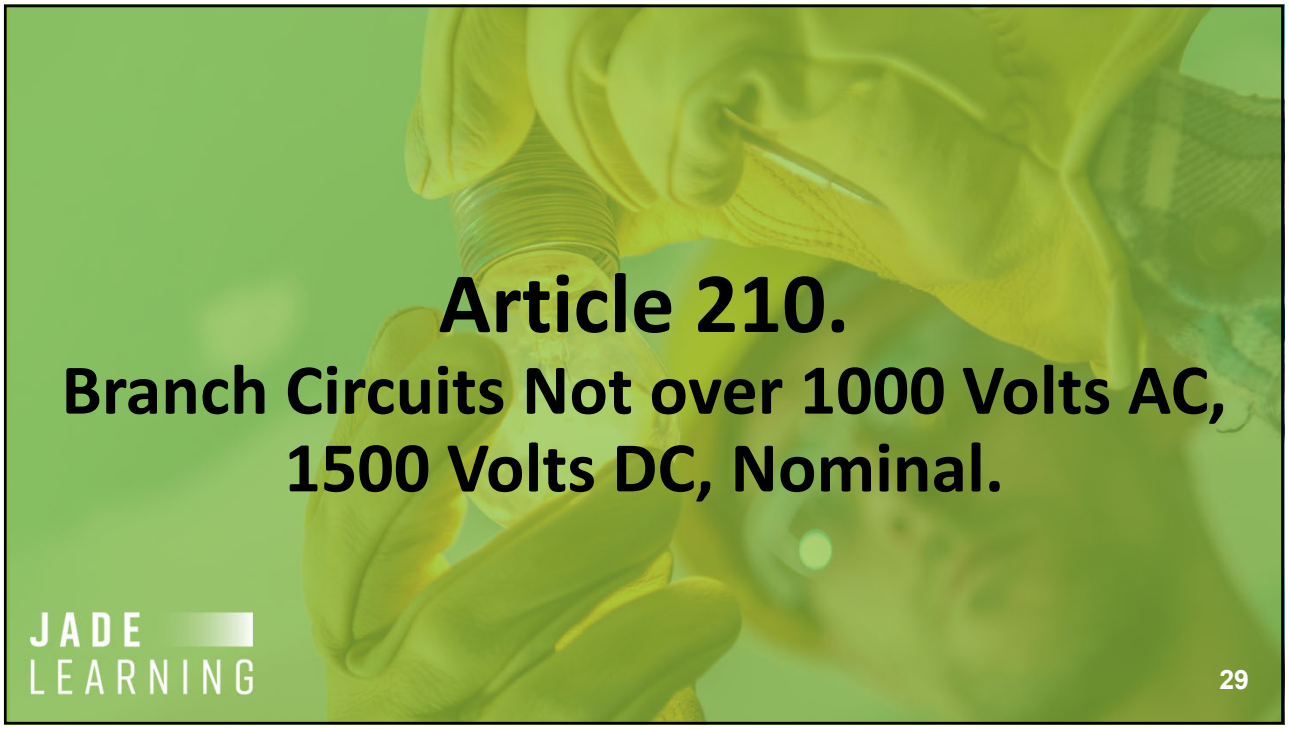


110.33(A) Entrance to Enclosure and Access to Working Space. Entrance.

- Section 110.33(A) includes a new requirement for the 2023 Code cycle.
- In the 2023 NEC, electricians are now required to adhere to:

  Open equipment doors shall not impede access to and egress from the working space. Access or egress is impeded if one or more simultaneously opened equipment doors restrict working space access to be less than 610mm (24in) wide and 2.0m (6.5ft) high.





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210.2 Reconditioned Equipment.

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The following rule that prohibits the reconditioning of certain types of protective equipment has moved from Section 210.15 to Section 210.2 **in the 2023 NEC.**

Section 210.2 [in 2023 NEC]—

The following shall not be reconditioned:

(1) Equipment that provides ground-fault circuit-interrupter protection for personnel.

(2) Equipment that provides arc-fault circuit-interrupter protection.

This move in the codebook allows electricians to see the rule before applying other rules from Article 210.

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210.8(A)(5) Dwelling Units. Basements

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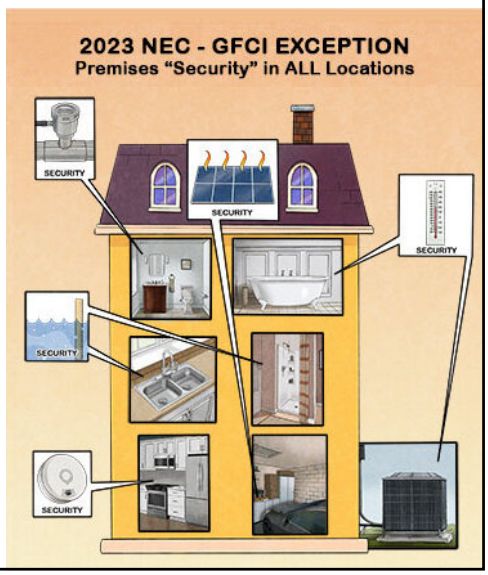
Section 210.8 in the NEC declares receptacles and their locations that require GFCI protection—

In the 2020 NEC: 210.8(A)(5) included an *Exception* stating that receptacles supplying fire and burglar alarms in dwelling unit basements were exempt from GFCI protection.

In the 2023 NEC: That *Exception* relocated to the end of Section 210.8 so **it is no longer exclusive to just basements but applies to ALL 12 LOCATIONS identified in Section 210.8(A).**

ALSO, the *Exception* language was updated to say that receptacles supplying all types of premises security systems are exempt from GFCI protection, not just fire alarm or burglar alarm systems.



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210.8(A)(6) Dwelling Units. Kitchens.

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In the 2020 NEC: 210.8(6) required GFCI protection for kitchen receptacles that were—

- Installed to serve countertop surfaces

In the 2023 NEC: 210.8(6) requires GFCI protection for **ALL** kitchen receptacles (**regardless of location or purpose).**

This applies to all 125V through 250V receptacles installed in a kitchen,

2023 NEC Changes

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210.8(A)(7) Dwelling Units. Areas with Sinks.

In the 2020 NEC: 210.8(A)(7) required GFCI protection where receptacles were installed within 6 feet from the top inside edge of the bowl of the sink.

In the 2023 NEC: 210.8(A)(7) has been revised and requires GFCI protection for receptacles in ***all areas with sinks and permanent provisions for food preparation, beverage preparation, or cooking***

(This is regardless of how far away the sink is from the receptacle)

Part 1 of 2

210.8(B)(1-15) GFCI Protection for Personnel. Other than Dwelling Units.

- **The 2023 NEC** introduces 3 new locations within areas that are not dwelling units where GFCI protection is required:
  - Areas with sinks and permanent provisions for food preparation, beverage preparation, or cooking
  - Buffet serving areas with permanent provisions for food serving, beverage serving, or cooking
  - Aquariums, bait wells, and similar open aquatic vessels or containers where receptacles are within 6ft of the top inside edge or rim or from the conductive support framing

Part 2 of 2

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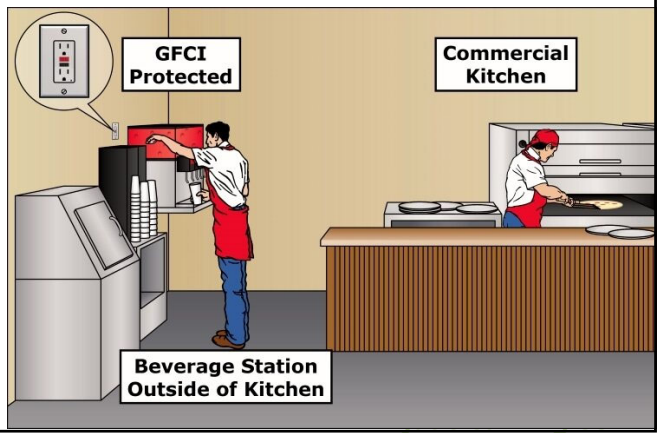
210.8(B)(1-15) GFCI Protection for Personnel. Other than Dwelling Units.

Two sections were also revised **in the 2023 NEC:**

- Kitchens (not just countertops)
- Sinks where receptacles or cord-and-plug-connected fixed and/or stationary appliances are installed within 1.8m (6ft) from the top inside edge of the bowl of the sink.



2023 NEC Changes

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210.8(B) GFCI Protection for Personnel. Other than Dwelling Units. Exceptions.

In the 2020 NEC, the 210.8(B) exceptions were listed in each individual section for which they applied.

In the 2023 NEC all exceptions are moved to the end of the code section.

- ***This means all of the exceptions now apply to all 15 locations identified in 210.8(B)!***

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210.8(D) GFCI Protection for Personnel. Specific Appliances

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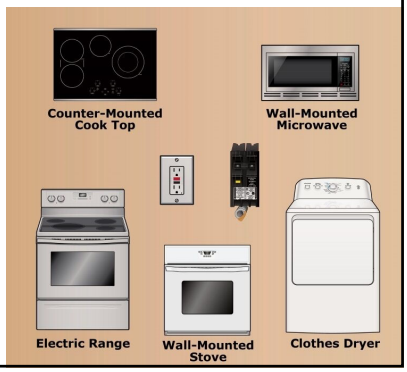
In the 2020 NEC, Section 210.8(D) sent code users to *Section 422.5 Appliances, Ground-Fault Circuit-Interrupter Protection for Personnel* to determine GFCI requirements for many appliances

In the 2023 NEC, the NEC removes the reference to Section 422.5 and now provides the list of appliances in 210.8(D) …PLUS ADDS FIVE NEW APPLIANCES NOT NAMED IN THE 2020 NEC!

Note these *NEW* things in 2023 NEC:

- Many appliances have been added compared to previous Code cycles.
- The expanded list includes, counter mounted cook tops, wall mounted microwaves, electric ranges, and clothes dryers



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210.8(F) Outdoor Outlets.

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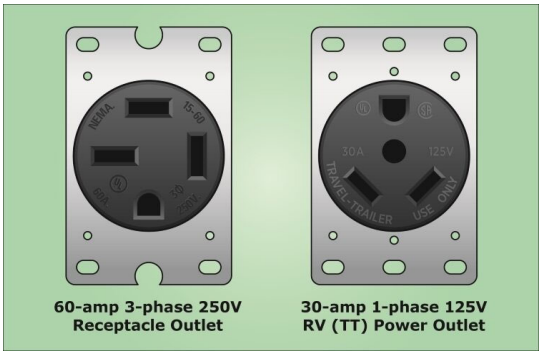

60-amp 3-phase 250V Receptacle Outlet

30-amp 1-phase 125V RV (TT) Power Outlet

In the 2023 NEC, 210.8(F) adds outlets at the following locations to require GFCI protection:

- Garages that have floors located at or below grade level
- Accessory buildings
- Boathouses

NOTE, ALSO NEW FOR 2023 NEC: If existing equipment fails and/or is replaced at the above locations, then the outlet must be converted to have GFCI protection!

2023 NEC Changes

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Part 1 of 2

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210.11(C)(4) Dwelling Units. Garage Branch Circuits

In the 2023 NEC: There are 4 primary changes for Section 210.11(C)(4) compared to 2020 NEC

- 2023 NEC now permits the one required 20-amp garage branch circuit to supply receptacle outlets *other* than the required receptacle outlet that must occupy each vehicle bay
- 2023 NEC now permits supplying receptacles in the garage with one or more 15-amp branch circuits as long as those receptacle outlets are not the outlets meant to comply with Section 210.52(G)(1) **[which requires one receptacle outlet within each vehicle bay]**

Part 2 of 2

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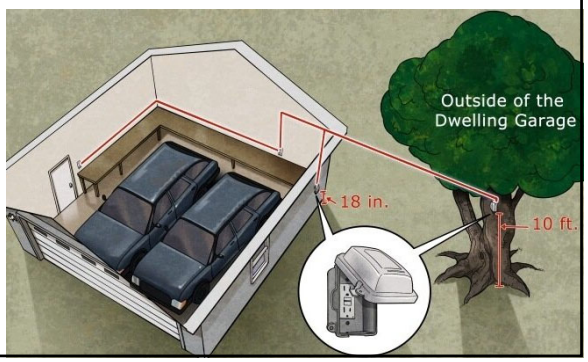
210.11(C)(4) Dwelling Units. Garage Branch Circuits

- *Exception No. 1* now permits the dedicated 20 amp garage branch circuit to supply outdoor receptacle outlets, even when they are ***not*** readily accessible
- A new *Exception No. 2* declares that a single-bay garage supplied by the one required 20 amp branch circuit can have outlets for other equipment in the garage supplied by a 10 amp branch circuit(s), as long as the 10 amp branch circuit complies with requirements from 210.23(B)(1) and (2)



210.12 Arc-Fault Circuit-Interrupter Protection.

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The structure of this section has been modified:

- 210.12(A) is now titled **Means of Protection** (compared to Dwelling units in 2020 NEC)
- 210.12(B) is now titled **Dwelling Units** (compared to Dormitory Units)

  [and AFCI protection is now required for their 10-amp branch circuits]
- **Exception No. 2** is new and states that arc welder branch circuits will be exempt from AFCI requirements until Jan 1, 2025
- 210.12(C) is now titled **Dormitory units** (compared to Guest rooms, etc.)

  [and AFCI protection is now required for their 10-amp branch circuits]
- 210.12(D) is a new section titled **Other occupancies** (compared to Branch Circuit extensions, etc., in 2020 NEC)

210.12 Arc-Fault Circuit-Interrupter Protection.

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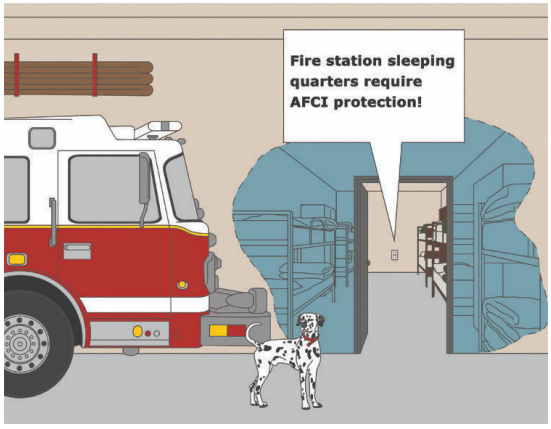
Note these NEW requirements when it comes to AFCI protection:

- *AFCI protection is now required for 10-amp branch circuits*
- New areas requiring AFCI protection: *Areas for use exclusively as sleeping quarters in fire stations, police stations, ambulance stations, rescue stations, ranger stations, or similar locations*

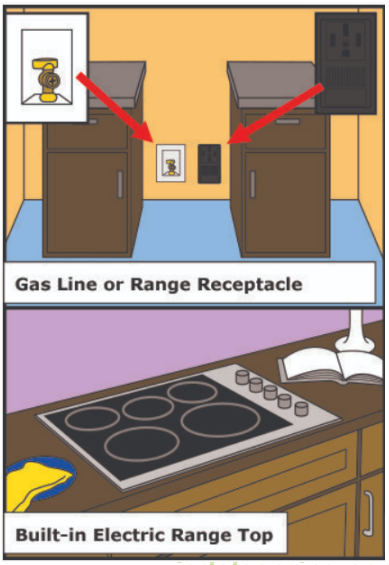


210.17 Guest Rooms and Guest Suites

2020 NEC, 210.17 did not specify the type(s) of guest rooms and guest suites (other than those with permanent provisions for cooking) that were required to meet dwelling unit requirements.

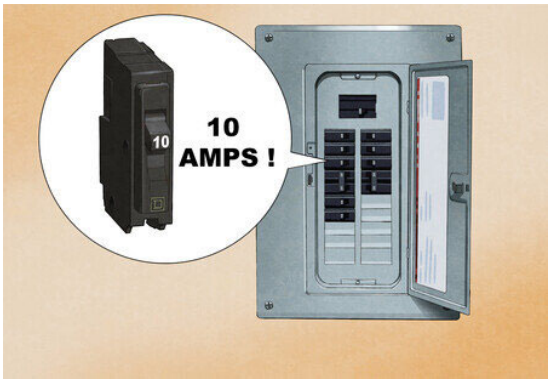
2023 NEC, 210.17 expands to specify 3 Guest Rooms and Guest Suites where branch circuits must meet the requirements of dwelling units:

- Hotels
- Motels
- Assisted living facilities



210.18 Branch-Circuits Ratings. Rating.

- 10 amp branch circuits are now the smallest branch circuit recognized in 2023 NEC for power and lighting loads.
- A New *Exception No. 2* declares that branch circuits rated 10 amps shall not supply receptacle outlets
  [This means that receptacle outlets will continue to require a source circuit rated at 15 amps for dwelling units and usually 20 amps in commercial applications]



210.23 Permissible Loads, Multiple-Outlet Branch Circuits.

- 210.23(A)(1) is a new section for the 2023 NEC that is titled ***Loads Permitted for 10-ampere branch circuits***
  - The new section outlines what is permitted for the newly recognized 10 ampere branch circuits, including:
    - **Lighting outlets**
    - **Dwelling unit exhaust fans on bathroom or laundry room lighting circuits**
    - **A gas fireplace unit supplied by an individual branch circuit**

210.23 Permissible Loads, Multiple-Outlet Branch Circuits.

210.23(A)(2) is another new section titled, ***Loads Not Permitted for 10-ampere branch circuits.*** It does the following:

- Outlines what is not permitted for the newly recognized 10 ampere branch circuits, as follows:
  - Receptacle outlets
  - Fixed appliances, except as permitted for individual branch circuits
  - Garage door openers
  - Laundry equipment

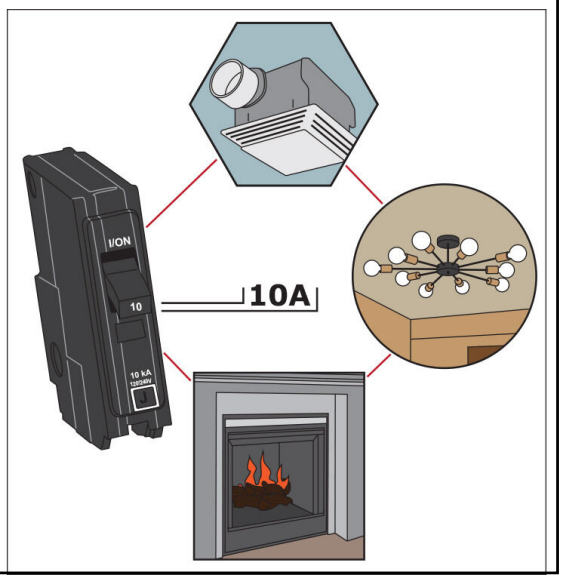


Table 210.24(1) Summary of Branch-Circuit Requirements - Copper Conductors

In 2020 NEC, there is a single Table 210.24 that covers Branch-Circuit requirements for ***copper conductors only***

In 2023 NEC, there is a second table now directed at aluminum, because aluminum and copper-clad aluminum conductors have a lesser ampacity than copper. The revised copper and brand-new aluminum tables are titled:

- ***Table 210.24(1) for copper conductors***
- ***Table 210.24(2) for aluminum and copper-clad aluminum conductors***

[Both tables in the 2023 NEC recognize the new 10 amp branch circuits]

Table 210.24(2) Summary of Branch-Circuit Requirements-

Circuit Rating	10A	15A	20A
Conductors (min. size) Circuit wires Taps Fixture wires and cords	12 12	12 12	10 12
Overcurrent Protection	**10A**	**15A**	**20A**
Outlet devices: Lampholders permitted Receptacle rating[1]	Any type Not applicable[2]	Any type 15 max. A	Any type 15 max. A
Maximum Load	**10A**	**15A**	**20A**
Permissable load	See 210.23(A)	See 210.23(B)	See 210.23(B)

210.52(A)(2) Wall Space.

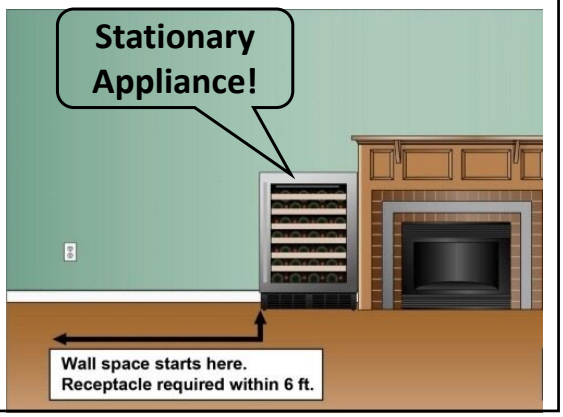
In the 2020 NEC, wall space was considered unbroken if it was unbroken along the floor line passing by doorways or similar openings, fireplaces, and fixed cabinets that do not have countertops or work surfaces.

In the 2023 NEC, stationary appliances are now considered to break the wall space.

Article 100, Definitions provides code users a definition for stationary:

Stationary—

Equipment that is not moved from one place to another in normal use.



210.52(C)(1) Countertops and Work Surfaces. Wall Spaces.

The 2020 NEC requires wall receptacle outlets serving kitchen counters and workspaces to be installed so that no point on the wall is more than 24 inches horizontally from the outlet.

- An exception exists to forgo installing receptacle outlets behind a range, sink, or counter-mounted cooking unit.

The 2023 NEC adds a NEW second exception stating if the receptacle outlets cannot fit the wall spaces immediately beside sinks and counter-mounted cooking appliances, then they can just be installed as close as possible to the required area. **BUT THE NUMBER OF OUTLETS MUST BE THE SAME!**

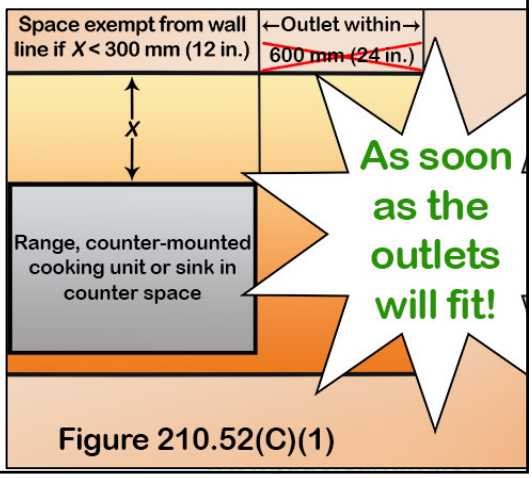


Figure 210.52(C)(1)

2023 NEC Changes

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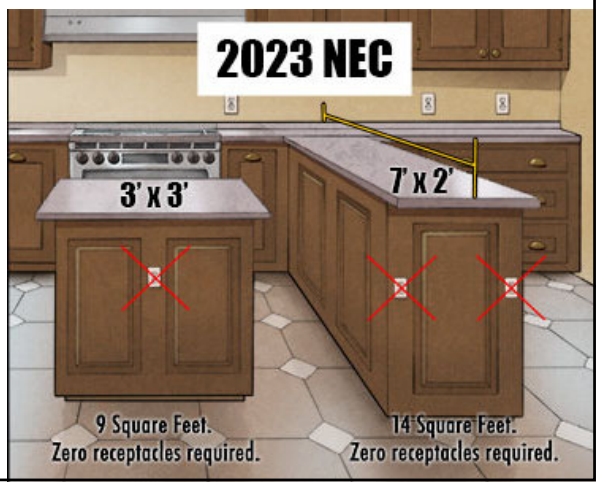
210.52(C)(2) Countertops and Work Surfaces. Island and Peninsular Countertops and Work Surfaces.

The 2020 NEC required receptacle outlets to be located to serve island and peninsular countertops. It has been that way for decades!

2023 NEC no longer requires receptacle outlets to be installed in dwelling unit kitchen island and peninsular countertops or work surfaces…and:

- If the builder decides to install a receptacle outlet, it must still comply with 210.52(C)(3) requirements
- If it is not installed, provisions for a successful future installation must be provided!



2023 NEC Changes

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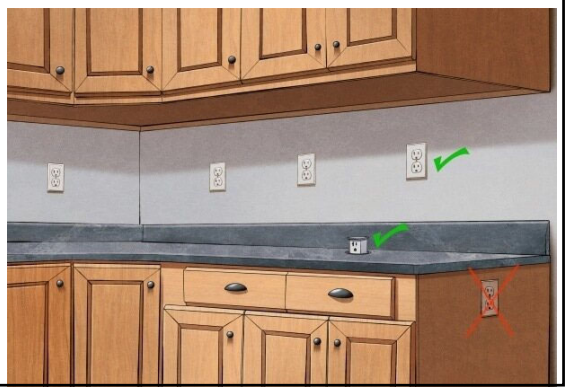
210.52(C)(3) Receptacle Outlet Locations

The 2020 NEC required receptacle outlets serving countertops and work surfaces in kitchens and similar spaces to be installed in one of 3 locations, which included the base cabinet.

In the 2023 NEC the option to install receptacle outlets below a kitchen countertop in the base cabinet is removed.

However, the other locations remain the same:

- On or above, but not more than 20 inches above the countertop or work surface.
- In a countertop surface using receptacle outlet assemblies listed for use in countertops
- In a work surface using receptacle outlets listed for use in work surfaces or listed for use in countertops



2023 NEC Changes

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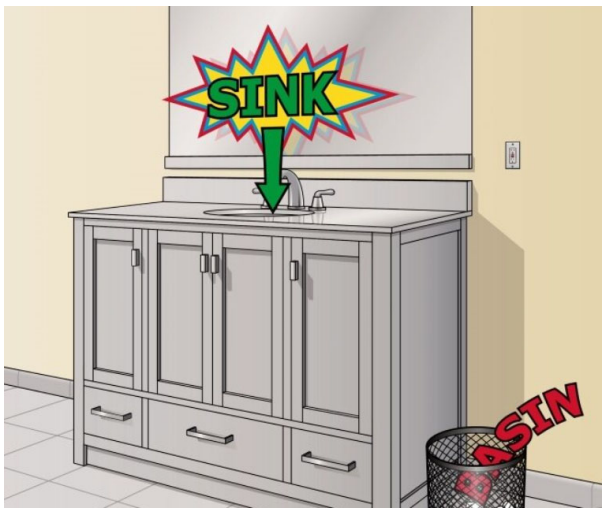
210.52(D) Bathrooms.



- **In the 2020 NEC,** Section 210.52(D) used the word "Basin" or "Sink Basin."
- **In the 2023 NEC**, "Basin" has been discarded so that a sink now is just a sink.

2023 NEC Changes

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210.70 Lighting Outlets Required.

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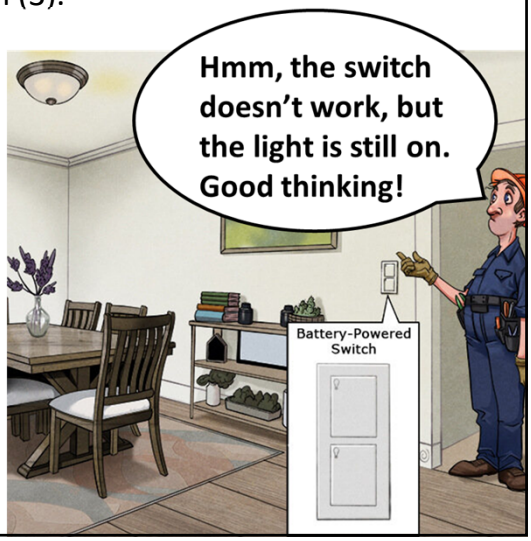
The 2020 NEC doesn't cover battery-operated light switches, but states that lighting outlets are to be installed per 210.70(A)(1) through (3).

NOTE: (A)(1) required at least one lighting outlet controlled by a wall-mounted device to be installed near the entrance in every habitable room, kitchen, and bathroom.

The 2023 NEC adds this NEW rule to 210.70 for using **battery-powered** lighting switches:

The switch or wall-mounted control device shall not rely exclusively on a battery unless a means is provided for automatically energizing the lighting outlets upon battery failure



2023 NEC Changes

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210.70(A)(1),(2) Dwelling Units. Additional Locations.

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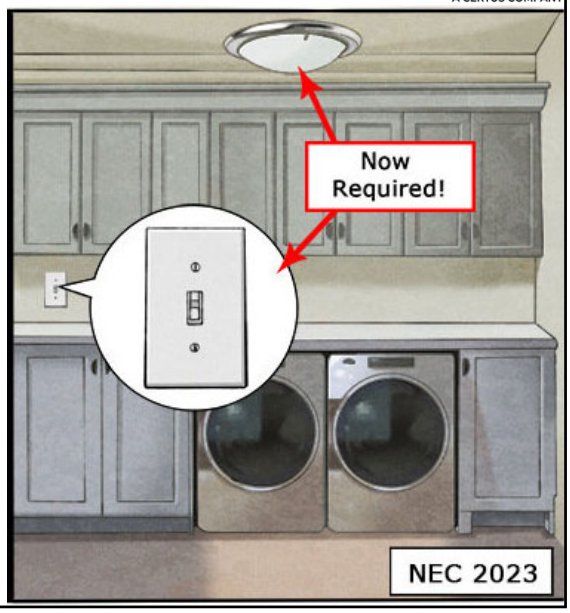
The 2020 NEC did not require a lighting outlet in a dwelling unit laundry room.

The 2023 NEC requires at least one lighting outlet controlled by a listed wall-mounted control device to be located near an entrance to the laundry room

And…210.70(A)(2) contains some verbiage changes and an additional exception for (A)(2)(2) for stairway lighting requirements for an outdoor, sub-grade-level basement.



2023 NEC Changes

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Article 215. Feeders.

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215.15 Barriers

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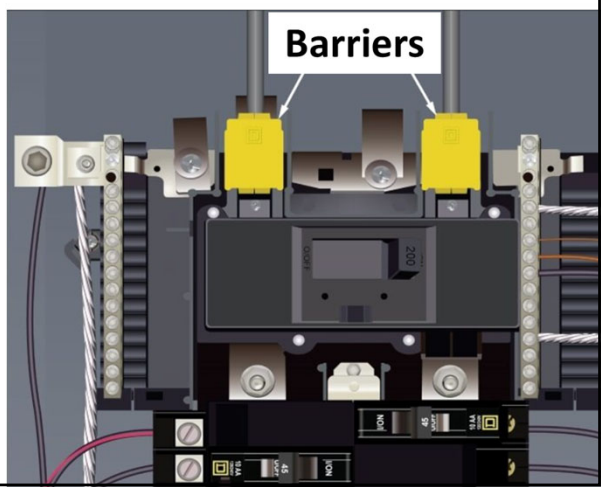
The 2023 NEC adds new section: ***215.15 Barriers,*** which states—.

Barriers shall be placed such that no energized, uninsulated, ungrounded busbar or terminal is exposed to inadvertent contact by persons or maintenance equipment while servicing load terminations in panelboards, switchboards, switchgear, or motor control centers supplied by feeder taps in 240.21(B) or transformer secondary conductors in 240.21(C) when disconnecting the device, to which the tap conductors are terminated, is in the open position



2023 NEC Changes

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215.18 Surge Protection.

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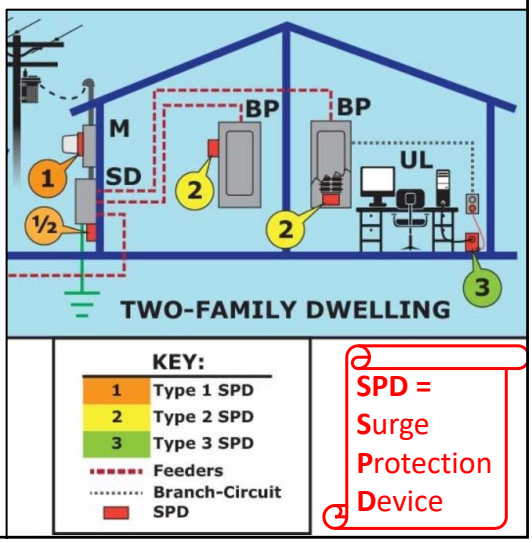
The 2023 NEC adds ***Section 215.18, Surge Protection*** to Article 215!

215.18(A) Surge Protection (covers the following):
- (A)(1) Dwelling Units
- (A)(2) Dormitory Units
- (A)(3) Guest Rooms and Guest Suites of hotels and motels
- (A)(4) Areas of nursing homes or limited-care facilities used exclusively as patient sleeping rooms

215.18(B) Location
215.18(C) Type
215.18(D) Replacement
215.18(E) Ratings

2023 NEC Changes



SPD =
Surge
Protection
Device

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Article 220.

Branch-Circuit, Feeder, and Service Load Calculations

JADE LEARNING

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220.41 Dwelling Unit(s), Minimum Unit Load.

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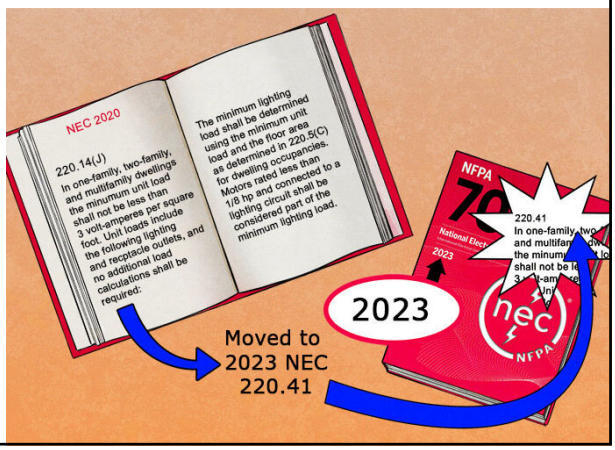
In the 2020 NEC, minimum unit loads for dwellings were a part of 220.14(J).

In 2023 NEC, new ***Section 220.41*** now contains that minimum unit load for dwellings.

We still take the following into account for the calculation:

- Square footage of the home
- Small appliance and laundry branch circuits
- Heat and A/C load
- Fastened-in-place appliance(s) load
- Clothes dryer load
- Cooking equipment load
- 25% of the largest motor



2023 NEC Changes

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220.42 Lighting Load for Non-Dwelling Occupancies

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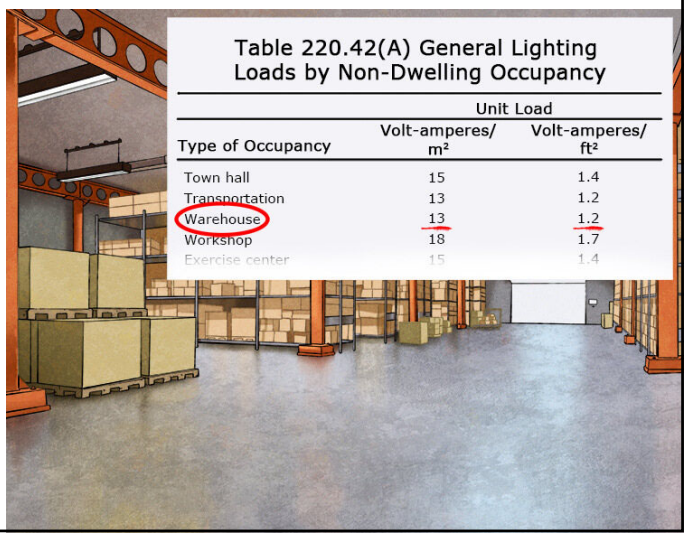
In the 2020 NEC, the minimum unit load(s) for non-dwelling occupancies were found in Section 220.12.

The 2023 NEC has moved these to Section 220.42

- AND, the minimum unit loads for Schools/Universities and Sports Arenas dropped from 3 VA each to only 1.5 VA in 2023 NEC, due to more energy-efficient lighting!



2023 NEC Changes

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220.57 Electric Vehicle Supply Equipment (EVSE) Load.

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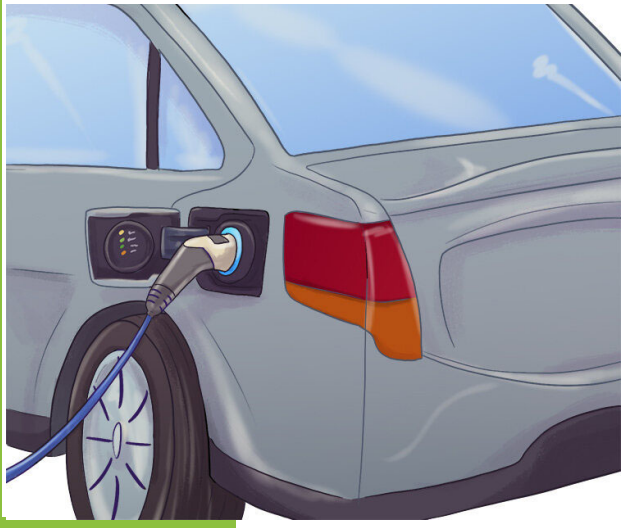

- With the increasing popularity of Electric Vehicles, **the 2023 NEC** has added ***Section 220.57*** to specify load calculation requirements for Electric Vehicle Supply Equipment (EVSE)
  - ***The EVSE Load shall be calculated at either 7200 Watts (Volt-Amperes) or the nameplate rating of the equipment, whichever is larger***

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220.110 Receptacle Loads.

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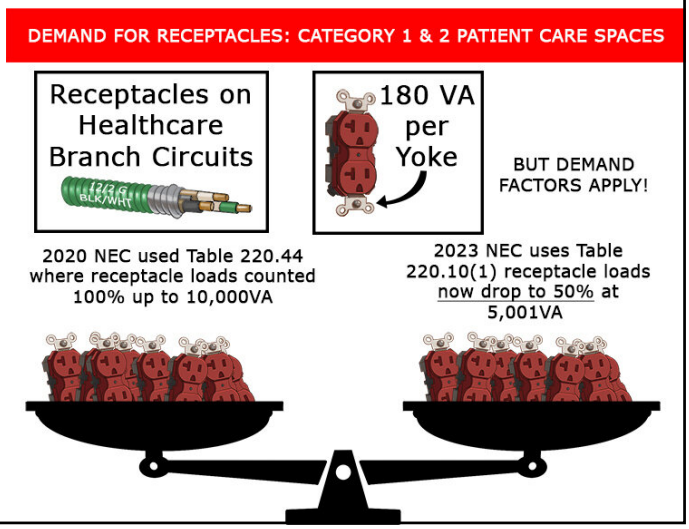
The 2023 NEC adds new ***Part VI, Healthcare facilities*** and new ***Section 220.110.***

New ***Section 220.110, Receptacle Loads***, states:

- *Receptacle Loads calculated in accordance with 220.14(H) and (I) and supplied by branch circuits not exceeding 150 volts to ground shall be subjected to the demand factors provided in table 220.110(1) and table 220.110(2) for healthcare facilities.*

The new section includes two informational notes sending electricians to Article 100 and 220.14(I)



62

220.120 Receptacle Loads.

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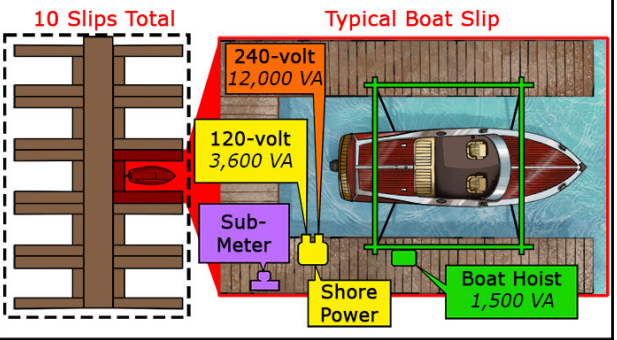
The 2023 NEC adds new ***Part VII*** and ***Section 220.120*** to Article 220.

New Part VII, ***Marinas, Boatyards, Floating Buildings, and Commercial and Noncommercial Docking Facilities***:

New ***Section 220.120, Receptacle Loads*** discusses the following:

- Loads in the aforementioned locations shall be calculated in accordance with Part III of Article 220 and the demand factor of Table 220.120
- The calculations are permitted to be modified as indicated in notes (1) and (2) of Table 220.120

2023 NEC Changes



	SP-120	SP-240	Hoist	Subtotal per Slip
2020 NEC	3.6 kVA	12 kVA	1.5 kVA	13.5 kVA
2023 NEC	3.6 kVA	12 kVA	1.5 kVA	12 kVA

	x 10 Slips	80% Demand	0.9 for Meter	Total Amps
2020 NEC	135 kVA	108 kVA	97.2 kVA	405
2023 NEC	120 kVA	96 kVA	86.4 kVA	360
		(x0.8)	*(x0.9)*	*(÷240x1000)*

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Article 225.
Outside Branch Circuits and Feeders

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64

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225.41 Emergency Disconnects.

Section 225.41, ***Emergency Disconnects*** is new **in the 2023 NEC**.

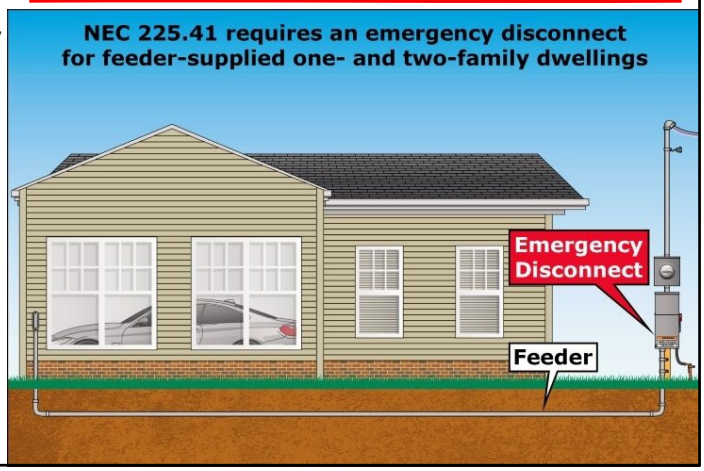
225.41 focuses on emergency disconnect requirements for one- and two-family dwellings supplied by feeders, as follows:

225.41(A) General
- (A)(1) Location
- (A)(2) Rating
- (A)(3) Grouping

225.41(B) Identification of Other Isolation Disconnects

225.41(C) Marking

New NEC 225.41 rules are just like 230.85 rules, except they apply to feeders!



2023 NEC Changes

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225.42 Surge Protection.

Another new section **in 2023 NEC** is ***225.42, Surge Protection.***

It declares where surge protection devices are required as follows:

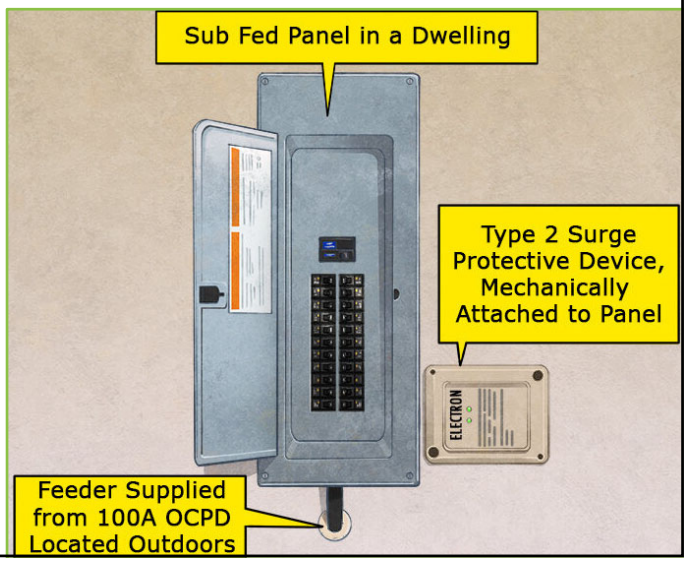
225.42(A) Surge Protection Device—
- (A)(1) Dwelling Units
- (A)(2) Dormitory Units
- (A)(3) Hotel/Motel Guest Rooms
- (A)(4) Areas of nursing homes

225.42(B) Location

225.42(C) Type

225.42(D) Replacement

225.42(E) Ratings



2023 NEC Changes

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Article 230
Services

JADE LEARNING

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230.24(A) Above Roofs.

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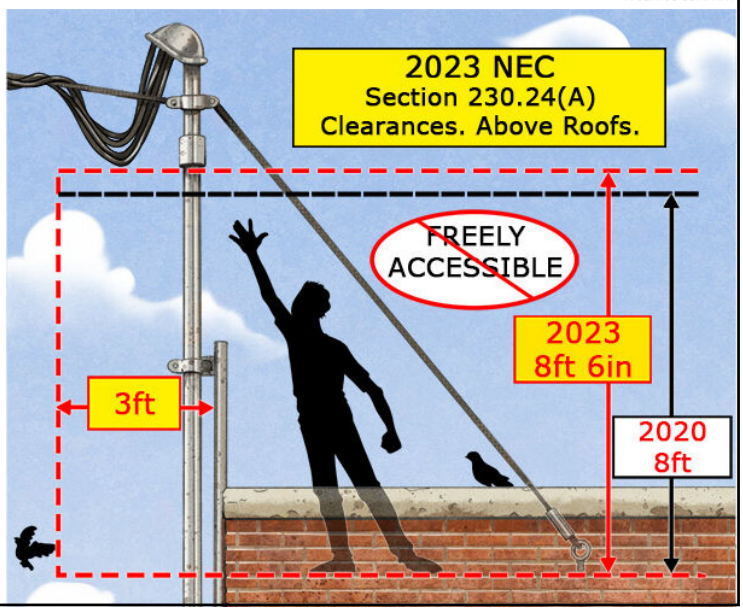
The 2023 NEC changes the vertical clearance required for conductors above a roof.

- The 2020 NEC required 2.5m (8ft)
- The 2023 NEC requires ***2.6m (8ft 6in)***



2023 NEC Changes

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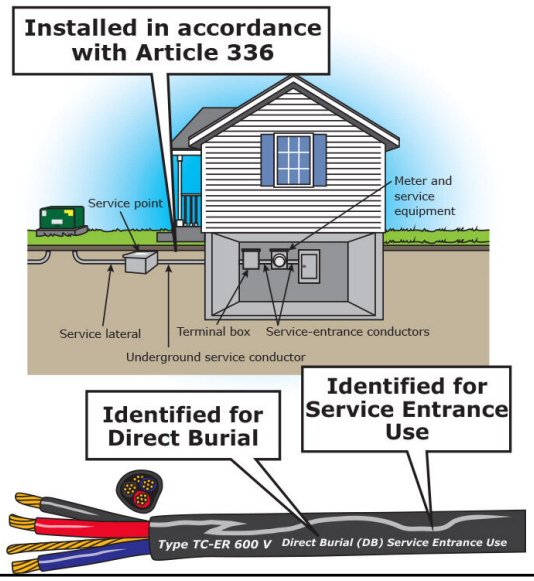
230.30(B) Wiring Methods.

The 2023 NEC approves an additional type of wiring method for services, as follows:

- 230.30(B)(11) Type TC-ER cable, where identified for service entrance use and direct burial applications **[This is NEW!]**

NOTE: Wire types in 230.30(B)(1)-(10) remain the same as in 2020 NEC.



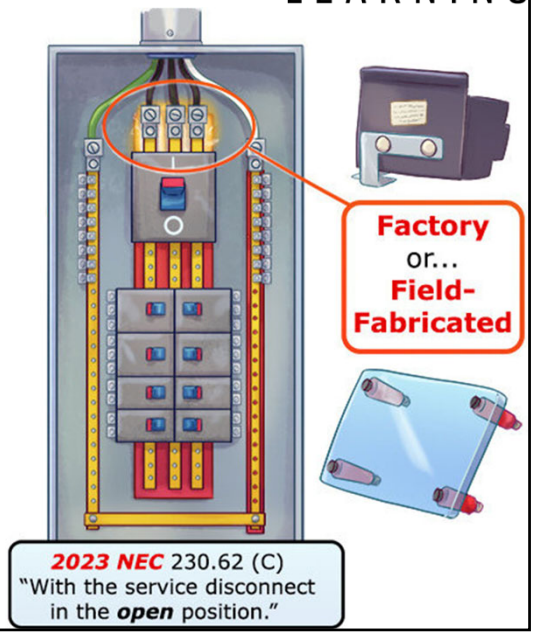
2023 NEC Changes

69

230.62(C) Barriers.

Section 230.62(C) existed in 2020 NEC. However, the **2023 NEC adds** to it the following new text :

230.62(C)—*Barriers shall be placed in service equipment such that no uninsulated, ungrounded service busbar or service terminal is exposed to inadvertent contact by persons or maintenance equipment while servicing load terminations with the service disconnect in the open position.*



2023 NEC Changes

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230.71(B) Two to Six Service Disconnecting Means.

In 2020 NEC, Section 230.71(B) allowed up to as many as six service disconnect switches [as permitted in Section 230.2], and [as permitted in Section 230.40] to turn on/off electrical service equipment.
Those six switches could be any combination of the switches and switch scenarios presented in 230.71(B)(1)-(4)

The 2023 NEC adds two NEW switch scenarios to 230.71(B)(1)-(4)

- ***(B)(5) Metering centers with a main service disconnecting means in each metering center***
- ***(B)(6) Motor Control Center(s) where there is only one service disconnect in a motor control center unit and a maximum of two service disconnects provided in a single motor control center with barriers provided between each motor control center unit or compartment containing a service disconnect to maintain the inadvertent contact protection required in 230.62 based on access from adjacent motor control center unit(s) or compartment(s)***

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230.85 Emergency Disconnects

While section 230.85 ***Emergency Disconnects*** was previously included in the 2020 NEC, it has received an overhaul for **the 2023 NEC** to include much more information.

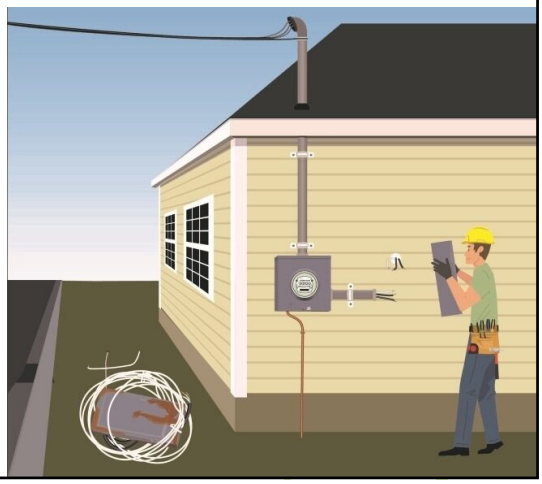
230.85 now includes the following sections (new sections ***bold and italicized***):

230.85(A) General
- ***(A)(1) Location***
- ***(A)(2) Rating***
- ***(A)(3) Grouping***

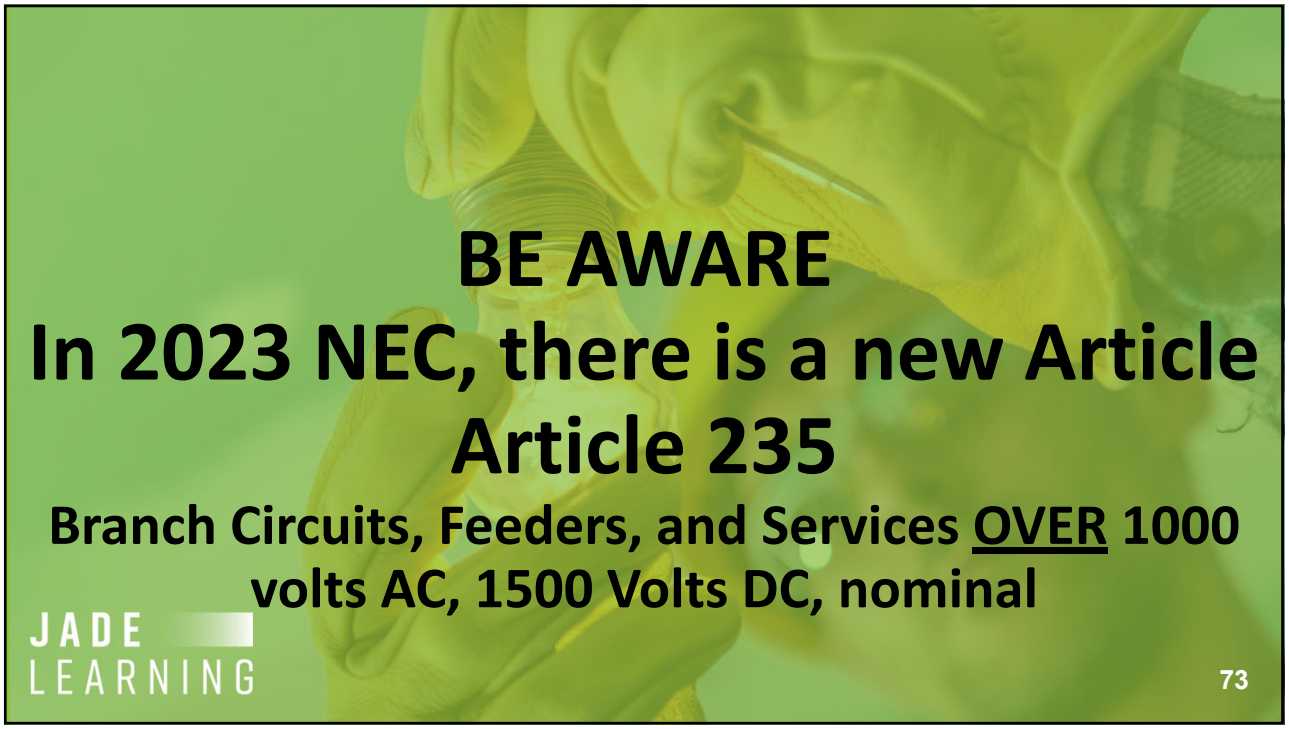
230.85(B) Disconnects
- ***(B)(1) Service Disconnect***
- ***(B)(2) Meter Disconnect …***
- ***(B)(3) Other listed Disconnect …***

230.85(C) Replacement

230.85(D) Identification of Other Isolation Disconnects



72


BE AWARE
In 2023 NEC, there is a new Article
Article 235
Branch Circuits, Feeders, and Services OVER 1000 volts AC, 1500 Volts DC, nominal
JADE LEARNING
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Article 240.
Overcurrent Protection.
JADE LEARNING
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240.4(B) Overcurrent Devices Rated 800 Amperes or Less

The 2023 NEC adds a rule to apply to all of Section 240.4(B), as follows—

If the overcurrent protective device is an adjustable trip device installed in accordance with 240.4(B)(1), (B)(2), and (B)(3), it shall be permitted to be set to a value that does not exceed the next higher standard value above the ampacity of the conductors being protected as shown in table 240.6(A) where restricted access in accordance with 240.6(C) is provided.

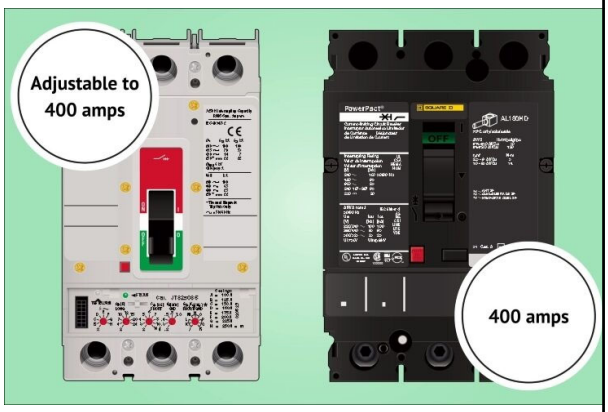

Table 240.6(A) Standard Ampere Ratings for Fuses and Inverse Time Circuit Breakers.

In 2020 NEC, the 10-amp overcurrent device was not included in Table 240.6(A).

- Previously, the smallest branch circuit rating was 15 amperes

The 2023 NEC revises the Table to include 10-amp circuit breakers and fuses!

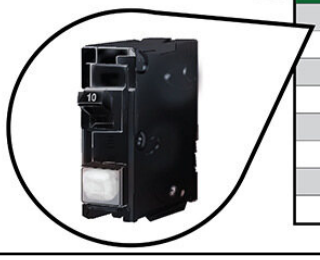

Table 240.6 A — Standard Ampere Ratings for Fuses and Inverse Time Circuit Breakers

Standard Ampere Ratings				
10	15	20	25	30
35	40	45	50	60
70	80	90	100	110
125	150	175	200	225
250	300	350	400	450
500	600	700	800	1000
1200	1600	2000	2500	3000
4000	5000	6000	—	—

Article 242
Overvoltage Protection

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242.9 Indicating.

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Section 242.9 was not a part of 2020 NEC requirements.

The 2023 NEC introduces Section 242.9, requiring all surge-protection devices (SPDs) permanently installed on premises wiring systems rated not more than 1000 volts to have ***an indication*** **[indicator]** ***that it is functioning properly.***

2023 NEC Changes

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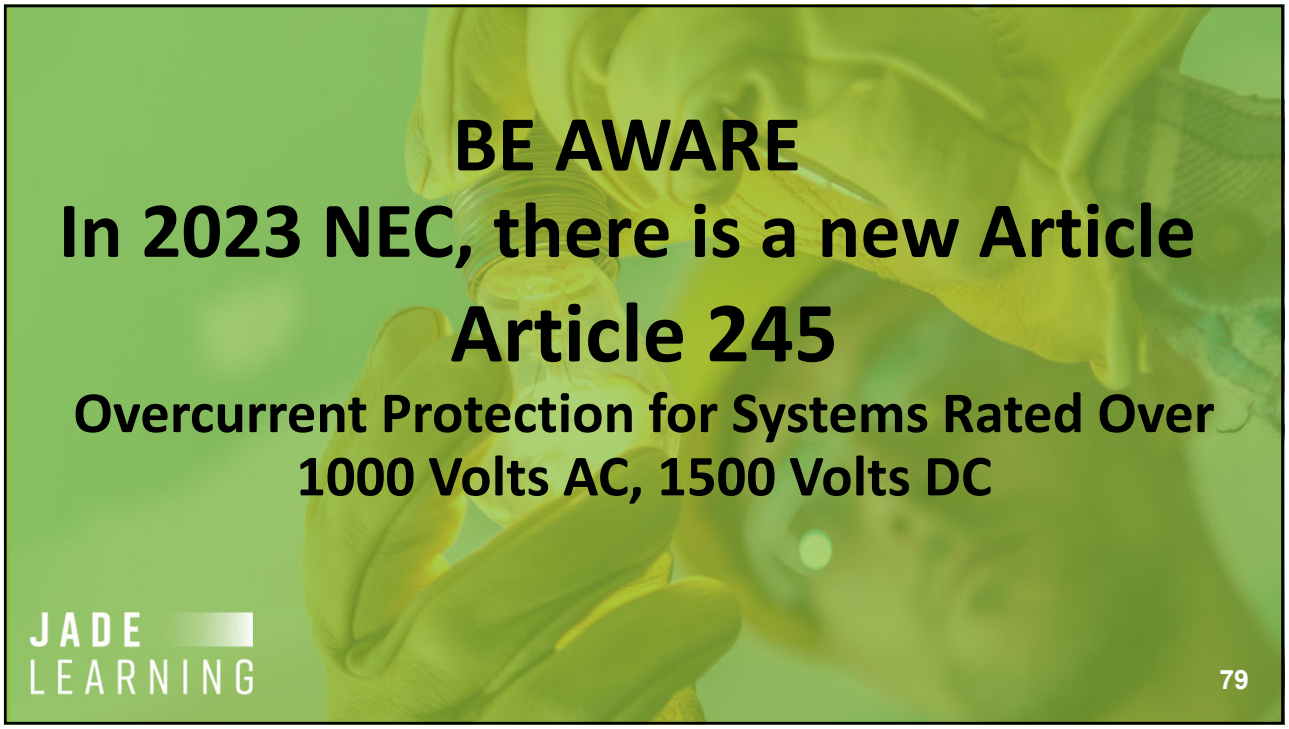
BE AWARE
In 2023 NEC, there is a new Article
Article 245
Overcurrent Protection for Systems Rated Over 1000 Volts AC, 1500 Volts DC
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Article 250
Grounding and Bonding
JADE LEARNING
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250.64(G) Enclosures with Ventilation Openings.

2020 NEC did not include Section 250.64(G).

2023 NEC adds 250.64(G), and it makes it clear regarding transformer heat dissipation vents:

> ***Grounding Electrode Conductors shall not be installed through a ventilation opening of an enclosure***

2023 NEC Changes

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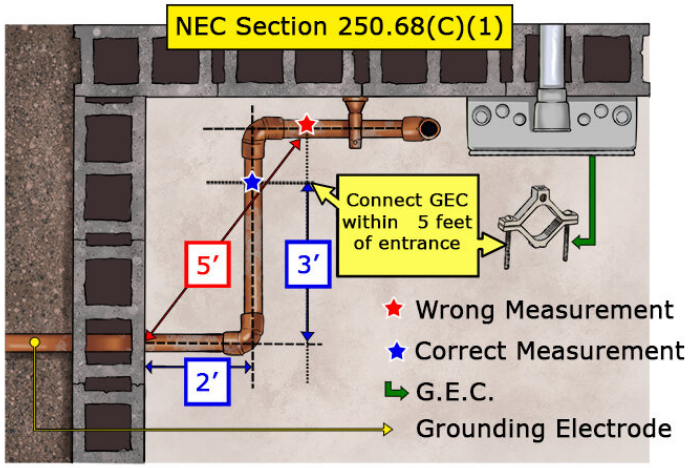
250.68(C) Grounding Electrode Conductor Connections.

Section 250.68(C)(1) has been modified from the 2020 NEC version to help us measure water piping used for grounding.

2023 NEC says the length requirement (5ft) stays the same but adds this to tell us HOW to measure it:

- ***as measured along the water piping***



2020 NEC *(5 ft) from the point of entrance...*

2023 NEC *(5 ft) from the point of entrance... as measured along the water piping...*

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250.118 Types of Equipment. Grounding Conductors.

In 2020 NEC, Section 250.118 declared 14 types of approved equipment grounding conductors (EGC)—that has not changed!

New in 2023 NEC:

250.118(A)(6)(e) now allows various bonding jumpers to serve as EGC in metal flex installations.

250.118(B) now declares two components NOT approved for use as equipment grounding conductors:

250.118(B), Not Permitted—

- ***Grounding Electrode Conductor [With an exception]***
- **Structural Metal frame of a building or structure**

250.130 Equipment Grounding. Conductor Connections.

New in 2023 NEC, snap switches are added to section 250.130 with the following NEW statement:

- ***… or snap switches without an equipment grounding terminal with snap switches with an equipment grounding terminal …***

This new statement adds snap switches to the grounding discussion when replacing devices!

250.130(C) Replacement of Non-grounding Receptacle or Snap Switch and Branch Circuit Extensions.

Since *Snap Switches* were not included in Section 250.130(C) in 2020 NEC, it was not included in the title of the section.

2023 NEC adds snap switches to the title of the section.

There is also new *Informational Note No. 2* at the end of the section referring to Section 404.9(B) for requirements for the grounding of snap switches.

"When replacing non-grounding snap switches with grounding type, one should refer to Section 404.9(B) for switch grounding requirements."

2023 NEC Changes

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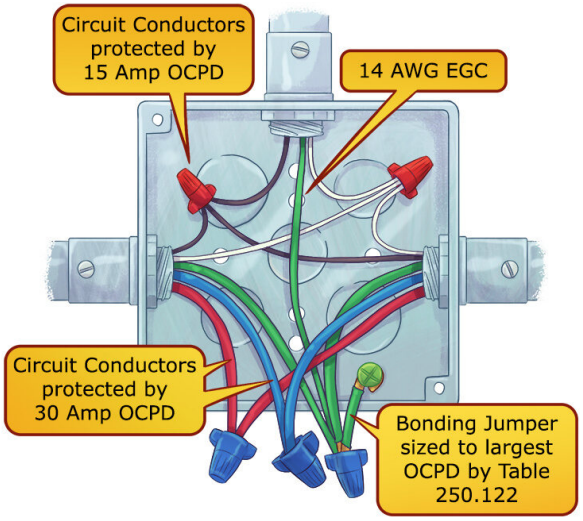
250.148 Continuity of Equipment Grounding Conductors and Attachment in Boxes.

In 2023 NEC, electricians must now adhere to the following according to Section 250.148:

The EGC that is always required to bond a metal box must now be sized per Table 250.122 based on the largest branch-circuit overcurrent protective device (OCPD) protecting the circuits in that box.



2023 NEC Changes

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Article 300
General Requirements for Wiring Methods and Materials

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300.4(E) Cables, Raceways, or Boxes Installed in or Under Metal-Corrugated Roof Decking

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2023 NEC adds ***listed steel or malleable iron fittings and boxes*** to Exception No. 1.

- It now reads: ***Rigid metal conduit and intermediate metal conduit, with listed steel or malleable iron fittings, shall not be required to comply with 300.4(E)***

2023 NEC also adds *Exception No. 2:*

- *It reads—**The 38mm (1½ in.) spacing is not required where metal-corrugated sheet roof decking is covered with a minimum thickness 50mm (2in) concrete slab, measured from the top of the corrugated roofing.***

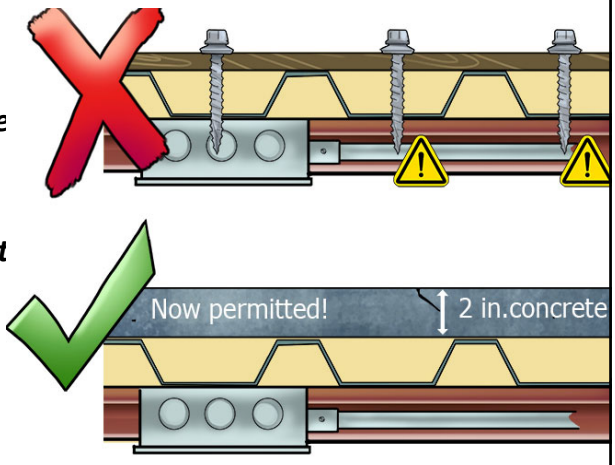

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Table 300.5(A) Minimum Cover Requirements

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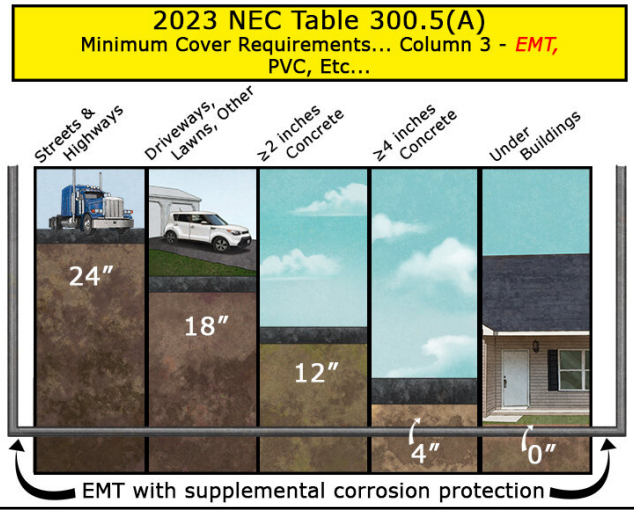
2023 NEC includes a few changes for Table 300.5 (The burial depth Table)

- The title changed from 0 to 1000 volts to ***0 to 1000 volts ac, 1500 volts dc***
- Column 3 now applies to ***Electrical Metallic tubing (EMT)***, which was not included in the 2020 NEC
- Note No. 6 is new, which states: ***Directly buried electric metallic tubing (EMT) shall comply with 358.10***



2023 NEC Changes

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BE AWARE
In 2023 NEC, there is a new Article
Article 305
General Requirements for Wiring Methods and Materials for Systems Rated OVER 1000 Volts AC, 1500 Volts DC, Nominal

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Article 310
Conductors for General Wiring

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310.15(B)(2) Rooftop

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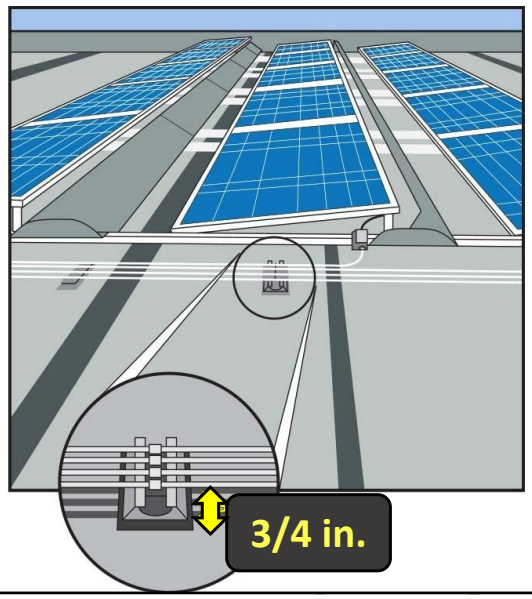
- Section 310.15(B)(2) is included in ***Part III, Installation,*** of Article 310.
- Ambient Temperature Correction Factors for Rooftops have CHANGED in 2023 NEC.
- **In 2020 NEC,** for raceways or cables exposed to direct sunlight, the required distance from the roof surface to the bottom of the raceway or cable was 7/8 in.
- **In 2023 NEC,** the required distance from the surface of the roof to the bottom of the raceway has changed to 3/4 in!



2023 NEC Changes

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Article 312
Cabinets, Cutout Boxes, and Meter Socket Enclosures

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312.10 Screws or Other Fasteners

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The 2023 NEC now gives the following three new requirements for screws or fasteners installed in the field (through boxes and enclosures and such) where they enter the wiring space.

1. *Screws shall be machine type with blunt ends.*
2. *Other fasteners shall have blunt ends.*
3. *Screws or other fasteners shall extend into the enclosure no more than 6mm (1/4 in) unless the end is protected with an approved means. [or not more than 7/16 in if located within 3/8 in. of another enclosure wall (in the corner of a box).*

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Article 314

Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Handhold Enclosures

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314.27(E) Weight-Supporting Ceiling Receptacle and Weight-Supporting Attachment Fitting

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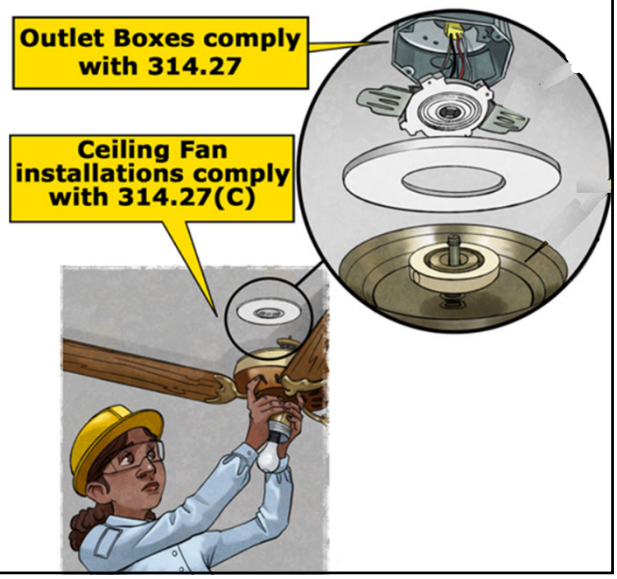
In 2023 NEC, Section 314.27(E) was retitled due to the added terms: ***Weight-Supported Ceiling Receptacle (WSCR)*** and ***Weight-Supporting Attachment Fitting (WSAF).***

In 2023 NEC, Section 314.27(E) added this new rule:

Listed WSCR used in combination with compatible WSAF shall be permitted to be installed in outlet boxes for the soul support of ceiling-suspended (paddle) fans, in accordance with 314.27(C)



2023 NEC Changes

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314.29(B) Underground

Regarding identifying buried electrical boxes, the *Exception* to Section 314.29(B) has changed!

In 2020 NEC, the *Exception* allowed for boxes in the ground to be covered over if their location was effectively identified and accessible.

In 2023 NEC the *Exception* allows boxes in the ground to be covered over if their location is effectively described and accessible. That location description must be available to those authorized to access, maintain, or inspect the wiring.

- The description can be in the form of a map and/or written description.
- This does not mean the method for covering the box has changed, it still allows for only gravel, light aggregate, or noncohesive granulated soil.

2023 NEC Changes

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Article 334
Nonmetallic-Sheathed Cable: Types NM and NMC

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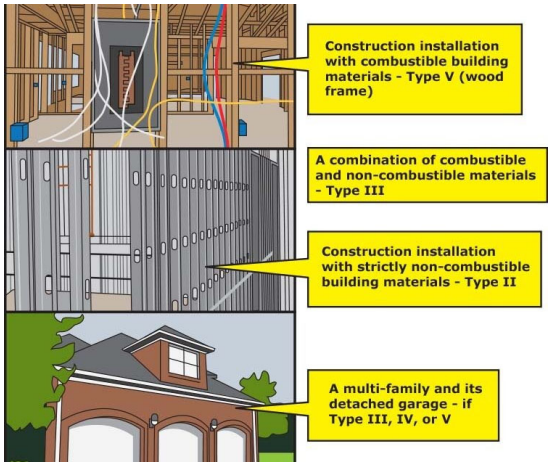
334.10 Uses Permitted

NEC 334.10 covers uses permitted for nonmetallic-sheathed cable (aka Romex).

In 2023 NEC, Section 334.10(2) adds ***multi-family dwelling-unit detached garages*** as a structure allowed to use Types III, IV, and V Construction.



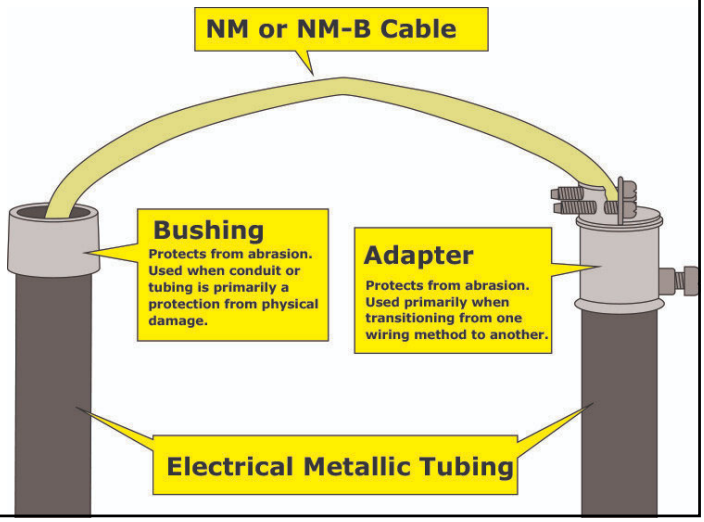
334.15(B) Protection from Physical Damage

NEC 334 addresses nonmetallic-sheathed cable (aka Romex).

The 2023 NEC adds the following requirement to Section 334.15(B) which was not found in 2020 NEC:

- ***Conduit or tubing shall be provided with a bushing or adapter that provides protection from abrasion at the point the cable enters and exits the raceway.***

This is additional protection from damage for the cable and wiring at the edges of the conduit.



334.40(B) Boxes and Fittings

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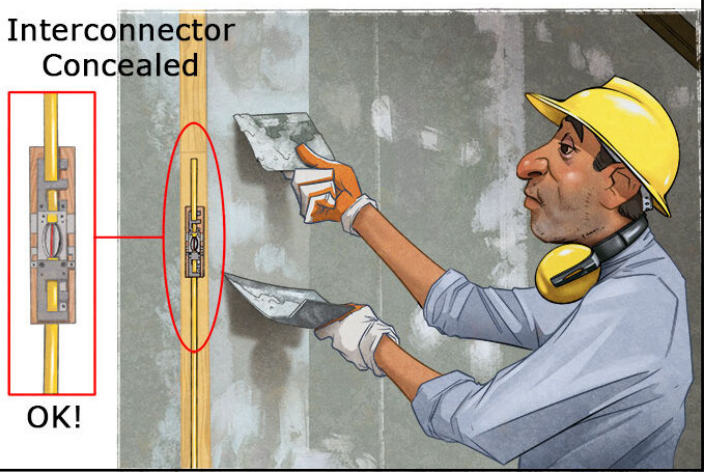
NEC 334 addresses nonmetallic-sheathed cable (aka Romex).

The 2023 NEC revises requirements for where Romex interconnectors can be used.

No longer does the installation need to be a part of repair wiring for the installer to use an interconnector to join two NM cables in a concealed space

- ***They are now approved for use within a wall, floor, or ceiling***

In 2023 NEC, the only requirement for the use of an interconnector is that the interconnector is ***listed for use without a box.***



2023 NEC Changes

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Article 344
Rigid Metal Conduit

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344.28 Reaming and Threading

NEC 344.28 covers PVC-Coated Rigid Metal Conduit (RMC).

In the 2023 NEC this section has added the following NEW requirement:

PVC-Coated RMC shall be threaded in accordance with the manufacturer's instructions to prevent damage to the exterior coating

- The section also adds ***Informational Note No. 2*** directing code users to NECA 101-2013 for more information relating to RMC and PVC-Coated RMC.

Article 352
Rigid Polyvinyl Chloride Conduit

352.10 Uses Permitted

NEC 352 addresses Polyvinyl Chloride Conduit (PVC).

Section 352.10 **in the 2023 NEC** adds two new sections:

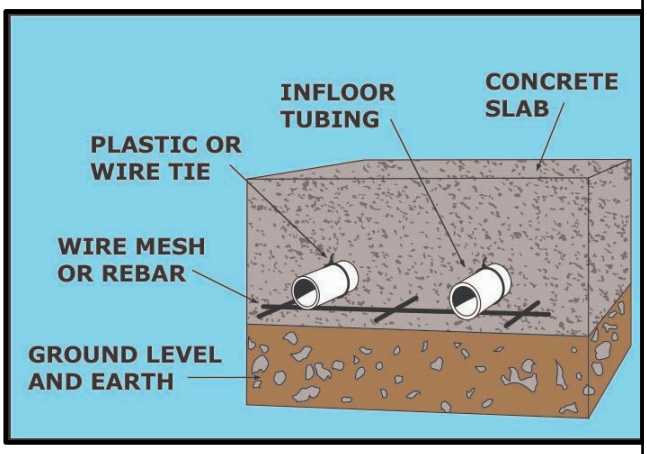
352.10(B) *Encased in Concrete:*

- ***PVC Conduit shall be permitted to be encased in concrete.***

352.10(K) *Physical Damage*

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

  An included informational note says that all listed PVC fittings are suited for both Schedule 40 and Schedule 80 PVC uses.



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352.44 Expansion Fittings

NEC 352 addresses Polyvinyl Chloride Conduit (PVC).

In 2020 NEC, Section 352.44 contained no subsections.

In 2023 NEC, 352.44 has expanded to include:

- **352.44(1) *Thermal Expansion and Contraction,*** which includes the original text from 2020 NEC.
- **352.44(2) *Earth Movement,*** which is all NEW and requires the following:

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.

Also includes an *Informational Note* to see 300.5(J)

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Article 404 Switches

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404.1 Scope

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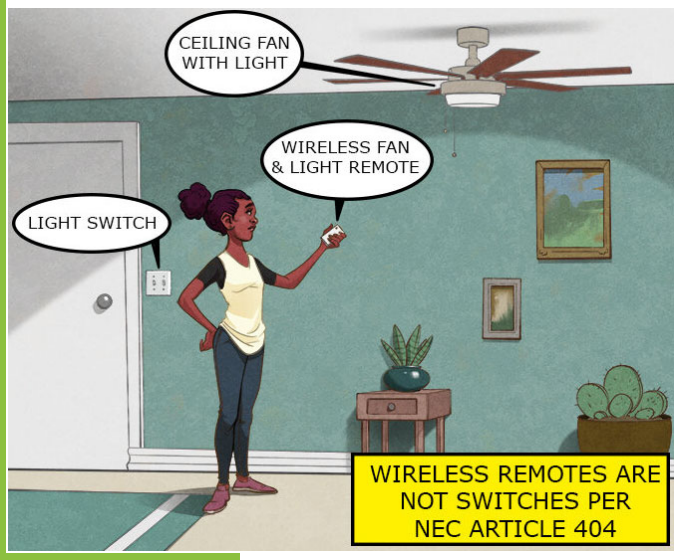

The 2023 NEC expands the scope of Article 404 to clarify NEC coverage of certain types of switches:

The new text in 2023 NEC states that *article 404 does not cover wireless control equipment to which circuit conductors are not connected!*

- There was also an additional note added that advises users to see 210.70 for more information on branch circuits that include switches or listed wall-mounted control devices.

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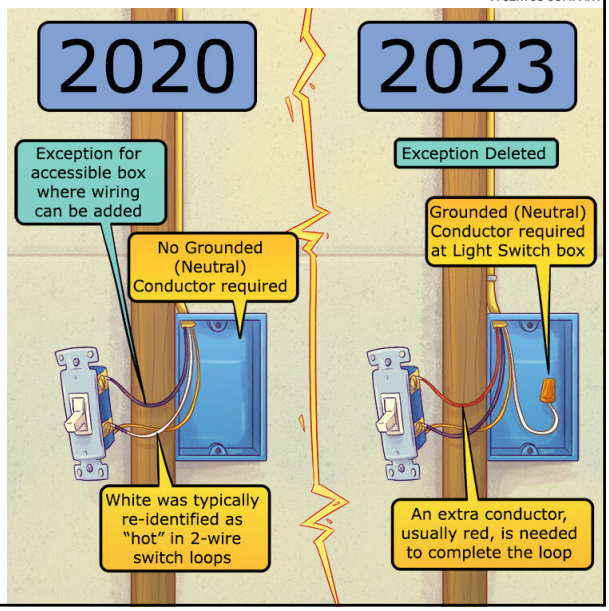
404.2(C) Switches Controlling. Lighting Loads

The 2020 NEC held 5 conditions where a grounded (white-colored) conductor is not required at a lighting outlet switch box.

The 2023 NEC removed one of the 5 conditions.

The following was removed and is no longer applicable in 2023—
(Condition 2 from the 2020 NEC):

- Where the box enclosing the switch is accessible for the installation of an additional or replacement cable without removing any finish materials.



2023 NEC Changes

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404.14(D) Snap Switch Terminations

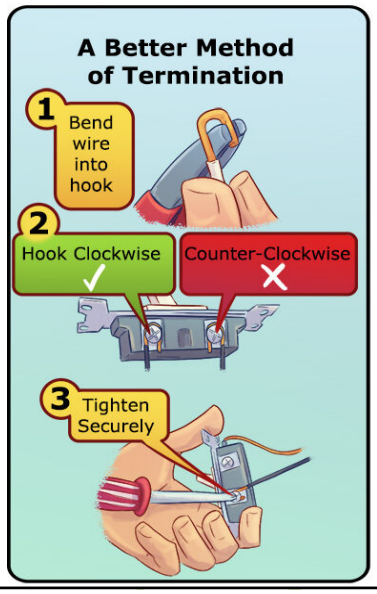
The requirements previously found in 404.14(D) *Alternating-Current General Use Snap Switches Rated for 347 Volts,* have moved to 404.14(E) in the 2023 NEC.

MEANWHILE..

In 2023 NEC, 404.14(D) is now titled *Snap Switch Terminations*.

In this newly formed code section, is the new requirement stating:

Push terminations on the back of snap switches are now declared to be limited to wires no larger than 14 AWG copper, and circuits no greater than 15 amps.



2023 NEC Changes

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404.16 Reconditioned Equipment

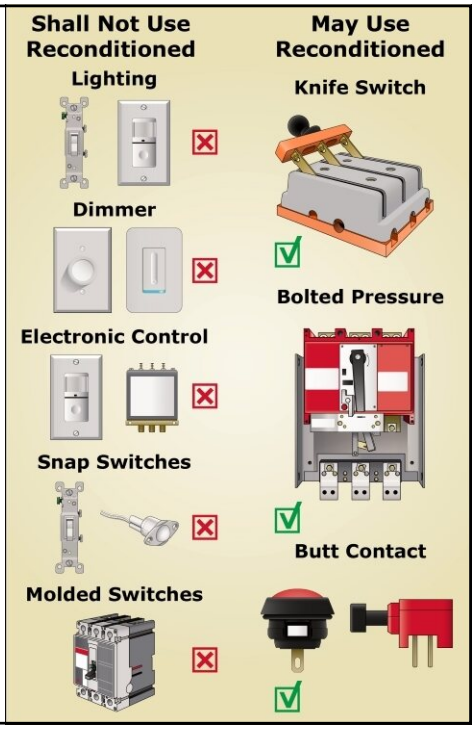
Article 404 is all about electrical switches. Section 404.16 covers the requirements for electrical switch reconditioning.

NEC 404.16 *Reconditioned Equipment* is brand-new **in the 2023 NEC**.

It has 4 sections covering switch reconditioning:

- ***(A) Lighting, Dimmer, and Electronic Control Switches***
- ***(B) Snap Switches***
- ***(C) Knife Switches, Switches with Butt Contacts, and Bolted Pressure Contact Switches***
- ***(D) Molded-Case Switches***

2023 NEC Changes



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404.30 Switch Enclosures with Doors

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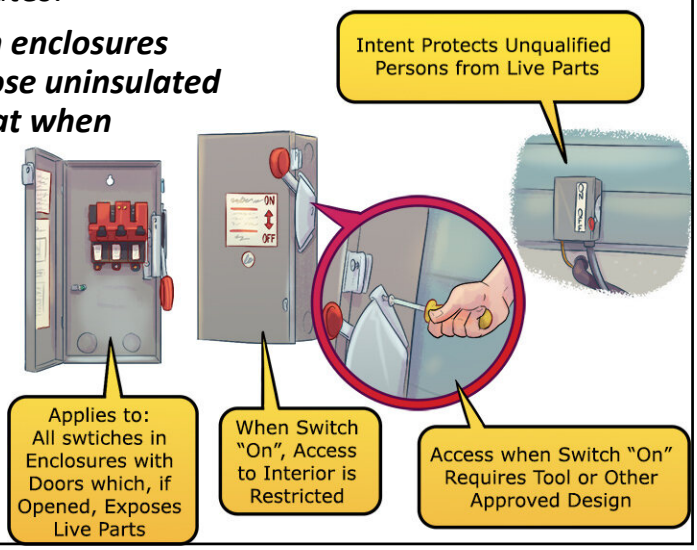
Section 404.30, *Switch Enclosures with Doors,* is brand-new **in the 2023 NEC,** it states:

Switch mechanisms mounted within enclosures with doors that, when opened, expose uninsulated live parts shall be constructed so that when the switch is in the closed position access to the switch interior is restricted. Access to the interior with the switch in the closed position shall require the use of a tool or an approved design that provides equivalent protection from access by unqualified persons.

2023 NEC Changes



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Article 406
Receptacles, Cord Connectors, and Attachment Plugs (Caps)

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406.3(D) Receptacle Terminations

Article 406 covers all things to do with RECEPTACLES!

The 2023 NEC adds new Section ***406.3(D), Receptacle Terminations.***

- It includes three new rules for terminating conductors on receptacles [see 406.3(D)].
- It adds a new *Informational Note* to see UL 498, *Attachment Plugs and Receptacles*, for information on screwless terminals.

2023 NEC Changes

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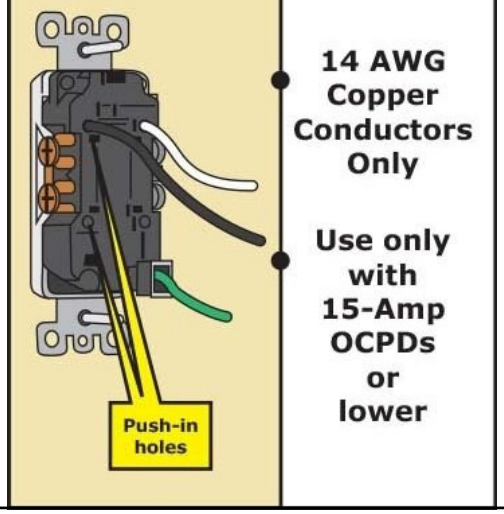
NEW Push-in Termination Rules



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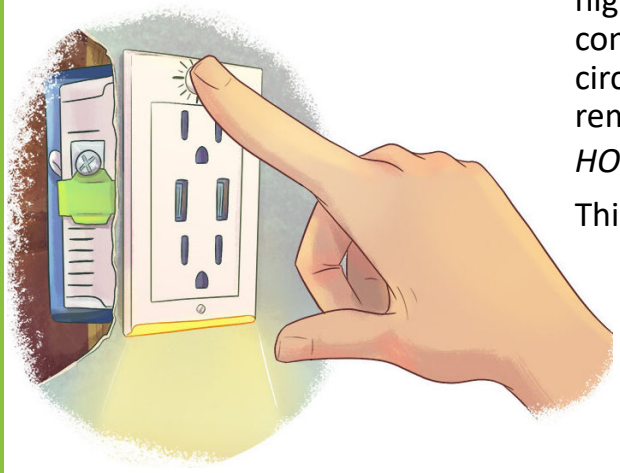
406.6(D) Receptacle Faceplate (Cover Plates) with Integral Night Light and/or USB Charger



Section 406.6(D) in 2020 NEC required nightlight faceplates to be listed and constructed so the nightlight and Class 2 circuitry was integral to the faceplate. This remains unchanged in 2023.

HOWEVER…

This 406.6(D) text is new in 2023 NEC:

> ***Listed receptacle faceplates with integral night light, USB charger, or both, that rely solely on spring-tensioned contacts shall be connected to only brass or copper alloy receptacle terminal screws and shall be rated 1 watt or less.***

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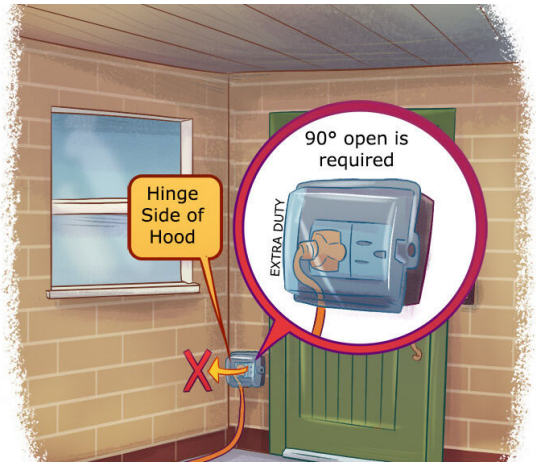
406.9(A),(B) Damp Locations, Wet Locations



The 2023 NEC retains the same requirements as the previous Code cycle for 406.9(A) *Damp Locations* and 406.9(B) *Wet Locations.*

HOWEVER…

It adds the following requirement to both 406.9(A) and 406.9(B):

> *Hinged covers of outlet box hoods shall be able to open at least 90 degrees, or fully open if the cover is not designed to open 90 degrees from the closed to open position, after installation.*

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406.9(C) Bathtub and Shower Space

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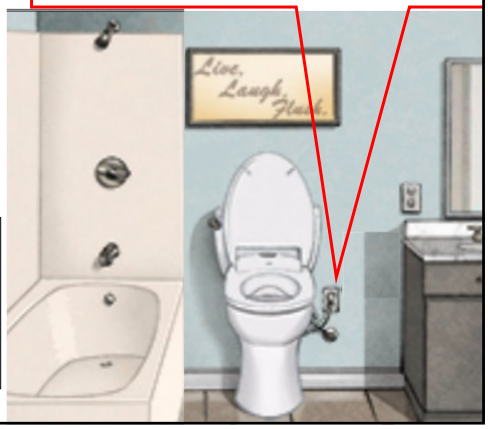
In 2020 NEC, 406.9(C) said: *Receptacles shall not be installed within a zone (3 ft) horizontally and (8 ft) vertically from the top of the bathtub rim or shower stall.*

In 2023 NEC, 406.9(C) says: *Receptacles shall not be installed inside of the tub or shower or within a zone(3 ft) horizontally from any outside edge of the bathtub or shower stall. The zone also includes the space measured vertically from the floor to (8 ft) above the top of the bathtub rim or shower stall threshold.*

A new 406.9(C) *Exception* allows a receptacle within the prohibited bathtub zone if it is for an electronic toilet seat, but it can NOT be between the tub and toilet!

THIS IS OK WITHIN 3 FEET OF THE TUB BECAUSE IT IS NOT INSTALLLED BETWEEN THE TUB AND TOILET



2023 NEC Changes

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406.12 Tamper-Resistant Receptacles.

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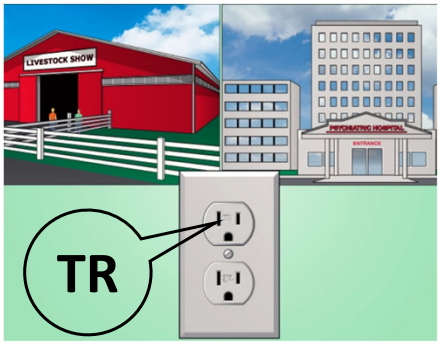
In the 2023 NEC, these NEW locations now require Tamper-Resistant (TR) receptacles!

- ***Boathouses (at dwellings)***
- ***Mobile homes***
- ***Manufactured homes***
- ***Business offices accessible to the general public***
- ***Nursing homes***
- ***Fitness centers***
- ***Social and substance abuse rehabilitation facilities***
- ***Group homes***
- ***Foster care facilities***
- ***Psychiatric hospitals***
- ***Areas of agricultural buildings accessible to the general public***



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408.4(B) *Descriptions Required, Source of Supply.*

In 2023 NEC, Section 408.4(B), *Descriptions Required, Source of Supply,* includes the following NEW highlighted requirement:

All switchboards, switchgear, & panelboards supplied by a feeder(s) in other than one- or two-family dwellings shall be permanently marked in accordance with the following:

1. *With the identification & physical location of where the power originates.*
2. *With a label that is permanently affixed & of a sufficient durability to withstand the environment involved.*
3. *Using a method that is not handwritten.*

2023 NEC Changes

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408.43 Panelboard Orientation.

The 2020 NEC required: *Panelboards shall not be installed in the face-up position.*

The 2023 NEC requires: *Panelboards shall not be installed in the face-up or face-down position.*

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410.10(D) Bathtub and Shower Areas.

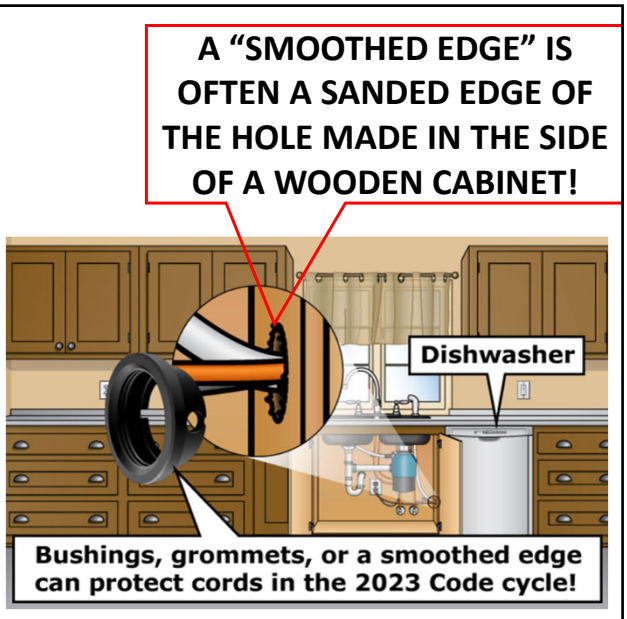
In the 2020 NEC, Section 410.10(D)(1) prohibited the following in bathtub or shower areas:
No parts of cord-connected luminaires, chain-, cable-, or cord-suspended luminaires, lighting track, pendants, or ceiling-suspended (paddle) fans.

In the 2023 NEC, Section 410.10(D)(1) requires the same, except the section now only prohibits ceiling-suspended (paddle) fans in tub and shower areas when they are equipped with a luminaire (a light kit)!

422.16(B) Specific Appliances

In the 2020 NEC, Section 422.16(B)(2)(5) said: *Where the* [appliance's] *flexible cord passes through an opening, it shall be protected against damage by a bushing, grommet, or other approved means.*

In the 2023 NEC, the code now says: *If a* [appliance's] *flexible cord passes through an opening, it shall be protected against damage by a bushing, grommet, smoothed edge, or other approved means.*

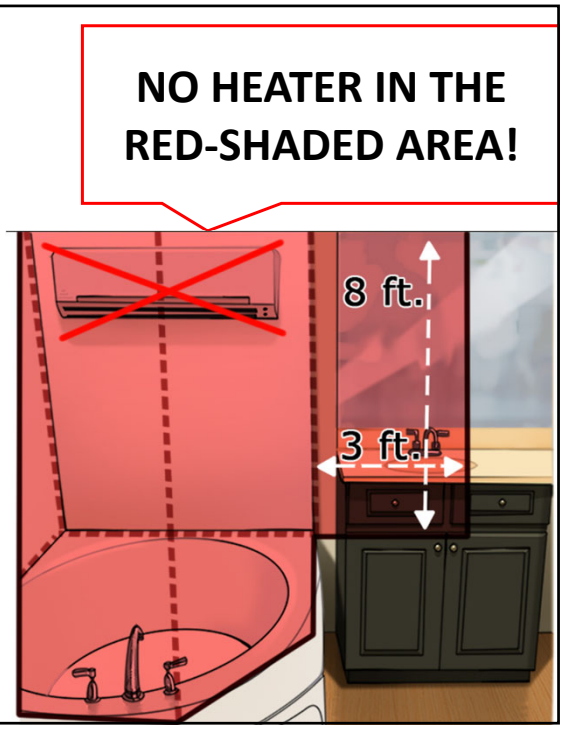


440.8 Single Machine and Location.

Article 440 covers air-conditioning and refrigerating equipment!

In the 2023 NEC, 440.8 includes a NEW requirement that states:
Air conditioning and refrigeration equipment shall not be installed within a zone measured (3ft.) horizontally and (8 ft.) vertically from the top of a bathtub rim or shower stall threshold. The zone shall be all-encompassing and include the space directly over the tub or shower stall.

2023 NEC Changes



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THANK YOU FOR ATTENDING!

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