LEVITON

CAPTAIN CODE®

2023

NEC® Code Changes

Includes Expert Commentary on Over 80 Code Changes

This Guide Contains Licensed NEC Text

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Introduction

NFPA 70®, also known as The National Electrical Code® (herein after "NEC®") and the contents of this Pocket Guide are intended for qualified electrical and low-voltage professionals with an existing understanding of electrical theory, terminology and safety practices. This includes electrical inspectors, electrical contractors, electrical engineers and other similarly qualified professionals. This Pocket Guide is intended to be used with the National Electrical Code and not as a replacement for it. Obtain the 2023 NEC® to ensure compliance.

Source of the Expert Analysis and Illustrations used in this Pocket Guide
The Expert Analysis found in this publication is copyrighted property of Grayboy Inc. This Pocket Guide does not contain the complete Grayboy analysis of the 2023 NEC® which can only be found in the full printed Grayboy "Analysis of Changes" text book. Grayboy did not produce the Leviton Pocket Guide and assumes no responsibility for the application or use of any NEC® related material set out herein.

Scope, Purpose and Cautions

This Guide was developed to illustrate the primary changes to the 2023 NEC when compared to the 2020 NEC®. This enables electrical and low-voltage professionals to keep informed and stay in Code compliance from one Code cycle to the next. Articles covered primarily relate to Wiring Devices, Over-Current Protection and Communications Systems with limited discussion of Raceways, Wires, Luminaries, Emerging Markets and other mainstream requirements.

Note: Leviton Manufacturing Company assumes no responsibility for interpretation or application of this publication and its contents.

Text Legend

Category	Color/Style
Summary of Change	Standard black text
Actual NEC® Text from NFPA 70	Serif-style font within green box
Expert Analysis	Standard black text
New NEC® Text for 2023	Shaded serif-style font within green box
Previous 2020 NEC® Text Removed for 2023	~~Crossed-out text~~
Leviton Commentary	Insights from Leviton Manufacturing are in green text
Leviton Solutions	Leviton solutions which address applicable code articles are in blue text

Vertical Market Legend

Global (Applies to all applications)

Agricultural

Commercial & Industrial

Education

Entertainment

Healthcare

Hospitality

Institutional

Recreational

Residential

Vertical market icons appear to help identify and categorize specific code changes

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

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Revision

100 Definitions

Change Summary

- All definitions will now be located in Article 100. In previous code cycles, definitions could be found throughout the code. In addition, and as a result, the subdivisions within Articles were removed.

NEC® Text

100 Definitions

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

~~**Part II. Over 1000 Volts, Nominal.**~~

~~**Part III. Hazardous (Classified) Locations. (CMP14)**~~

Expert Analysis

A revision has been made to the scope of Article 100 and modified by removing language for those terms used in two or more articles.

This revision now requires all definitions in one location and the changes to the scope reflect these changes.

New

100 Definition – Class 4 Circuits

Change Summary

- Definition of Class 4 circuits has been added to the NEC. Class 4 circuits are new, and the definition correlates with new article 726 – Class 4 Power Systems.

NEC® Text

100 Definitions

Class 4 Circuit. The portion of the wiring system between the load side of a Class 4 transmitter and the Class 4 receiver or Class 4 utilization equipment, as appropriate. Due to the active monitoring and control of the voltage and current provided, a Class 4 circuit considers safety from a fire initiation standpoint and provides acceptable protection from electric shock. (726) (CMP-3)

Informational Note: A Class 4 circuit is also commonly referred to as a fault-managed power circuit.

Expert Analysis

The NEC previously addressed Class 1, 2 and 3 Power systems and now the new Class 4 Power System. There is more info given in the NEC to include Cass 4

continued on page 12

continued from page 11

Devices, Receivers, Transmitters, etc. If you are involved in this work, please reference Article 726 in this guide and the actual NEC 70.

Revision

110.21(A)(2) Reconditioned Equipment

Leviton Comment: Article 110.21(A)(2) is covered with Article 240.2 found on page 53

Revision

110.26 Spaces About Electrical Equipment

Change Summary

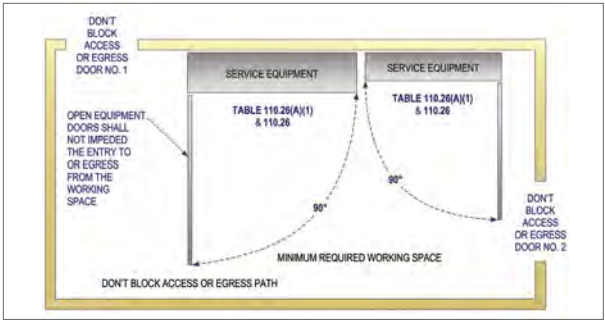
- Revision made to ensure ample space around equipment.

NEC® Text

Article 110 General Requirements for Electrical Installations

110.26 Spaces About Electrical Equipment.

Working space, and access to and egress from 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 610 mm (24 in.) wide and 2.0 m (6-1/2 ft) high.



Expert Analysis

A revision has been made to clarify that the requirements in 110.26(A)(2)(b) be relocated to 110.26, due to the fact

that it relates to more than just working space width. This revision also clarifies the condition caused by open equipment door(s) which would impede access to and egress from the working space.

New and Revision

110.29 "Within Sight" Defined and Clarified

Change Summary

- The term "Within Sight" has been used many times previously in the NEC. Now the term has been defined and clarified as being within a distance of not more than 50 feet from the equipment it serves.

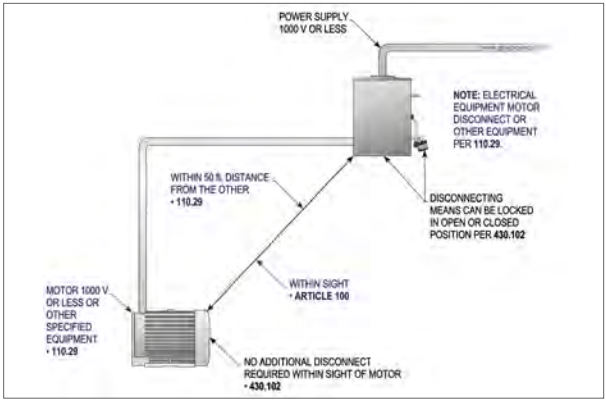
NEC® Text

Article 110 General Requirements for Electrical Installations

110.29 In Sight From (Within Sight From, Within Sight). Where this Code specifies that one equipment shall be "in sight from," "within sight from," or "within sight of" another equipment, the specified equipment shall be visible and not more than 15 m (50 ft) distant from the other.

Expert Analysis

A new section has been added to address the requirements for "in sight from" for general use throughout the National Electrical Code.



Revision

210.8(A)(6)(7) GFCI Requirements in Dwelling Unit Kitchens Modified and Expanded

Change Summary

- The GFCI requirements for receptacles in kitchens expanded to include all 125 – 250V receptacles 150V to ground or less, not just those that serve countertop surfaces.

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal
210.8 Ground-Fault Circuit-Interrupter Protection for Personnel.
(A) Dwelling Units.
(6) Kitchens – ~~where the receptacles are installed to serve the countertop surfaces~~
(7) Areas with sinks and permanent provisions for food preparation, beverage preparation, or cooking

Expert Analysis

A revision has been made to clarify that GFCI protection is required for all 125 through 250 Volt receptacles supplied by circuits rated 150 volts to ground or less in the kitchen, regardless of whether the receptacle serves the countertop. The CPSC database demonstrates 104 electrocutions from 2011-2020, of which 81 percent were working on an appliance or other type of appliance or equipment. GFCI protection can be provided to provide protection for those who are working on cord-and-plug appliances and/or cord-and-plug-connected equipment. Electrical hazards are not just due to the proximity of the appliance to water. These appliances and equipment have both the power supply and the grounded frame to complete the current path, creating the hazard to the individual.

continued on page 16

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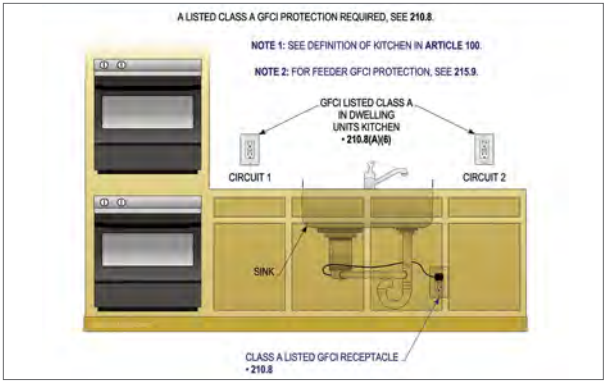
continued from page 14



Leviton Solution

While GFCI Receptacles are required by Code, USB receptacles are required by people. Leviton brings it all together with the new 15A and 20A SmartlockPro® Self-Test GFCI Combination 24W(4.8A) Type A/C USB In-Wall Charger Outlet.

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- INSTALL — Requires extra deep wallbox for installation

Revision/New

210.8(B)(2)(3)(4) and (7) GFCI Requirements in Non-Dwelling Kitchens Modified and Expanded

Change Summary

The GFCI requirements for receptacles in non-dwelling kitchens were expanded

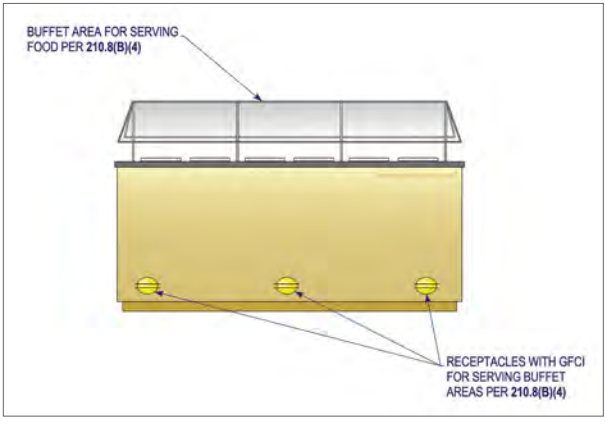
- The definition of kitchen clarified to include "beverage preparation"
- Buffets are addressed and require GFCI protection
- Cord-and-Plug appliances need GFCI protection

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal
210.8 Ground-Fault Circuit-Interrupter Protection for Personnel.
(B) Other Than Dwelling Units.
(2) Kitchens – ~~or areas with a sink and permanent provisions for either food preparation or cooking~~
(3) Areas with sinks and permanent provisions for food preparation, beverage preparation, or cooking
(4) Buffet serving areas with permanent provisions for food serving, beverage serving, or cooking
(7) Sinks where receptacles or cord-and-plug connected fixed or stationary appliances are installed within 1.8 m (6ft) from the top inside edge of the bowl of the sink

Expert Analysis

Revisions have been made to clarify several points on GFCI protection in non-dwelling kitchens:
In non-dwelling kitchens, GFCI protection is required for all 125 through 250 Volt receptacles supplied by single phase 50 A or less circuits rated 150 volts to ground or less, and 3-Phase 100 A or less.
The text in (3) closely parallels the definition of a kitchen, but the words “beverage preparation” has been added. This prevents locations like coffee and ice cream shops from avoiding GFCI requirements.
In (4) the NEC addresses buffet serving areas which are popular and previously not directly addressed in the NEC.
Lastly, in (7) text was added to include cord-and-plug appliances. The NEC makes it clear that they want GFCI protection in the kitchen.



New

210.8(B)(13) GFCI Protection for Non-Dwelling Aquariums and Bait Wells

Change Summary

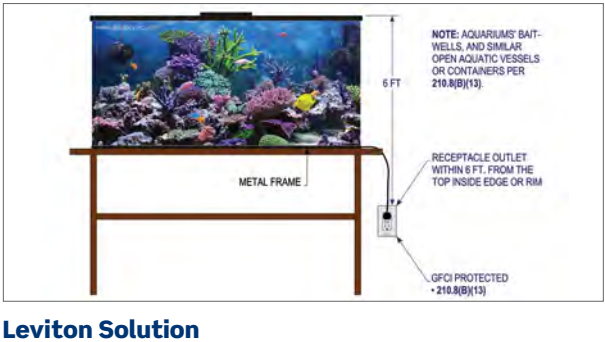
- The GFCI requirements for receptacles within 6 ft of fish tanks and bit wells.

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal
210.8 Ground-Fault Circuit-Interrupter Protection for Personnel.
(B) Other Than Dwelling Units.
(13) Aquariums, bait wells, and similar open aquatic vessels or containers, such as tanks or bowls, where receptacles are installed within 1.8 m (6 ft.) from the top inside edge or rim or from the conductive support framing of the vessel or container

Expert Analysis

A new list item has been added to clarify aquariums, bait wells, and similar open aquatic vessels or containers, such as tanks or bowls, where receptacles are installed within 6 ft (1.8 m) from the top inside edge or rim or from the conductive support framing of the vessel or container, in other than dwelling units, are required to have GFCI protection for personnel. A significant shock and electrocution hazard exists in other than dwelling occupancies where aquariums or live bait wells are located near receptacle outlets. This hazard is very similar to receptacles within 6 ft (1.8 m) of a sink, bathtubs or shower stalls which are all required to be GFCI protected.



Leviton Solution

For wet or damp environments Leviton recommends the Weather-Resistant (WR) SmartlockPro GFCI

Available in 15 or 20 Amp, 125 volt, features self-test circuitry and slim design. For Residential/Commercial applications, back and side wired.

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- SELF TESTING — Automatically self-tests to ensure it can respond to ground fault
- SIMPLE — Status indicator light provides simple, intuitive feedback

Cat. No. GFRW2-W

New

210.8(D) GFCI Protection for Specific Appliances

Change Summary

- GFCI protection is required for the branch circuit or outlets supplying appliances. The appliances are put in list format.

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal

210.8 Ground-Fault Circuit-Interrupter Protection for Personnel.

(D) Specific Appliances. GFCI protection shall be provided for the branch circuit or outlet supplying the following appliances rated 150 volts or less to ground and 60 amperes or less, single- or 3-phase:

(1) Automotive vacuum machines
(2) Drinking water coolers and bottle fill stations
(3) High-pressure spray washing machines
(4) Tire inflation machines
(5) Vending machines
(6) Sump pumps
(7) Dishwashers
(8) Electric ranges
(9) Wall-mounted ovens
(10) Counter-mounted cooking units
(11) Clothes dryers
(12) Microwave ovens

Expert Analysis

A revision has been made to clarify that GFCI protection

continued on page 20

continued from page 19

for specific appliances is located in the branch circuit or outlet to provide protection for the listed appliances regardless of vintage and whether or not GFCI protection is included in the appliance or in the cord. This revision adds clarity to what specific appliances shall be required to have GFCI protection and the methods the installer can use to provide this GFCI protection.

Due to the nature of the hazard with these installations, this requirement was placed in 210.8(D) to address all outlets and not be limited to only receptacle outlets found in 210.8(A).

Section 210.8(D) now includes new list items (8) through (12), as these are sometimes hard wired to outlets and would not be a part of the GFCI requirements found for receptacles in laundry areas as part of 210.8(A) and 210.8(B). The shock hazard does not go away due to hard wired versus cord-and-plug connected equipment.

Leviton Comment: This requirement largely parallels and exceeds the requirements in 422.5(A) and (B). The appliance list here in 210.8(D) seems to have come from 422.5 (A) with list items (8) through (12) added. Code making panels 2 and 4 could probably better coordinate this text.

GFCI PROTECTION FOR PERSONNEL (SPECIFIC APPLIANCES)
NEC 210.8(D)(1) THRU (D)(12)

New

210.8(F) Dwelling Unit Outdoor Outlets

Change Summary

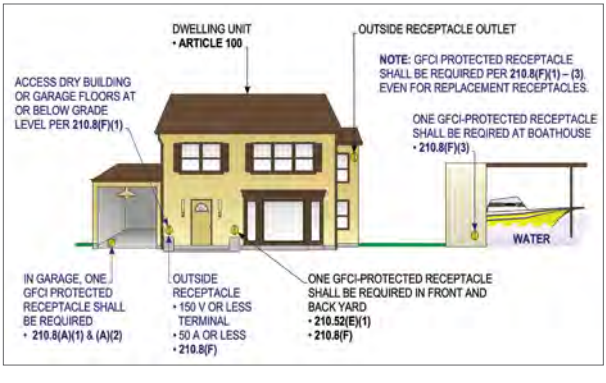
- The NEC has included Garages with below grade floors, accessory buildings and boathouses in this article that relates to outdoor outlets. An exception was added for HVAC equipment with a Sept 2026 expiration date.

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal
210.8 Ground-Fault Circuit-Interrupter Protection for Personnel.
(F) Outdoor Outlets. For dwellings, all outdoor outlets, other than those covered in 210.8(A), Exception No. 1, including outlets installed in the following locations, and supplied by single-phase branch circuits rated 150 volts or less to ground, 50 amperes or less, shall be provided with GFCI protection:
(1) Garages that have floors located at or below grade level
(2) Accessory buildings
(3) Boathouses
If equipment supplied by an outlet covered under the requirements of this section is replaced, the outlet shall be supplied with GFCI protection.
Exception No. 1 *GFCI Protection shall not be required on lighting outlets other than those covered in 210.8(C)*
Exception No. 2 *GFCI Protection shall not be required for listed HVAC equipment. This exception shall expire September 1, 2026*

Expert Analysis

A revision has been made to clarify that all outdoor outlets for dwellings, other than those covered in 210.8(A), Exception No. 1, including outlets installed in garages that have floors located at or below grade level, accessory building, or boathouses, are required to have GFCI protection for personnel.



continued on page 22

continued from page 21

Leviton Solution

The Leviton line of GFCI receptacles offer installation advantages over the competition.

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Our GFCIs sit closer to the wallplate for a polished appearance.

Extra room for new construction and retrofit applications.

Only 1.026" protrusion into wallbox.

New

210.11(C)(4) Dwelling Unit Garage Branch Circuits

Change Summary

- Another code cycle, another subtle change to Article 210.11(C)(4). The NEC once again is trying to clarify branch circuit and receptacle requirements in residential garages.

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal

210.11 Branch Circuits Required.

(C) Dwelling Units.

(4) Garage Branch Circuits. In addition to the number of branch circuits required by other parts of this section, at least one 120-volt, 20-ampere branch circuit shall be installed to supply receptacle outlets, including those required by 210.52(G)(1) for attached garages and in detached garages with electric power. This circuit shall have no other outlets. Additional branch circuits rated 15 amperes or greater shall be permitted to serve receptacle outlets other than those required by 210.52(G)(1).

Exception No. 1: *This circuit shall be permitted to supply outdoor receptacle outlets.*

Exception No. 2: *Where the 20-ampere circuit supplies a single vehicle bay garage, outlets for other equipment within the same garage shall be permitted to be supplied in accordance with 210.23(A)(1) and (A)(2).*

Expert Analysis

A revision has been made to clarify that the required receptacle outlets from 210.52(G)(1) must be served from at least one 120-volt, 20-ampere branch circuit, and that this 20-ampere branch circuit is also permitted to serve other receptacle outlets within the garage. Other kinds of outlets within the garage or in other space(s) not included by Exception 1 are prohibited from being connected to the required 120-volt, 20-ampere branch circuit. Additional text provides clarification that receptacle outlets, other than those required by 210.52(G)(1), can be served by additional 120-volt branch circuit(s) rated either 15- or 20-amperes.

A new Exception Number 2 was added to permit a single bay garage to have all outlets within that garage to be served by the required 120-volt, 20-ampere branch circuit in accordance with 210.23(A)(1) or (A)(2). The existing numbering of the exceptions is modified to account for these changes.

New

210.12(D) Arc-Fault Requirements Expanded in Fire, Police, Ranger Stations and Similar Areas

Change Summary

- Arc-Fault requirements have been expanded to fire, police, ambulance, and similar areas.

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal

210.12 Arc-Fault Circuit-Interrupter Protection.

(D) Other Occupancies. All 120-volt, single-phase, 10-, 15-, and 20-ampere branch circuits supplying outlets or devices installed in the following locations shall be protected by any of the means described in 210.12(A)(1) through (A)(6):

(1) Guest rooms and guest suites of hotels and motels

(2) Areas used exclusively as patient sleeping rooms in nursing homes and limited-care facilities

(3) Areas designed for use exclusively as sleeping quarters

continued on page 24

continued from page 23

NEC® Text

in fire stations, police stations, ambulance stations, rescue stations, ranger stations, and similar locations.

Expert Analysis

A revision has been made to clarify that areas designed for use exclusively as sleeping quarters in fire stations, police stations, ambulance stations, rescue stations, ranger stations, and similar locations are required to be AFCI protected.

This new language addresses the ambiguity regarding these sleeping locations that are not fully defined as a dormitory unit but have the same electrical fire risk. These locations present similar hazards regarding electrical fires on these circuits.

Leviton Comment: Also note that 10 Amp circuits have also been added to this article. Allowances for 10 Amp circuits have been added throughout the NEC for 2023. See article 210.23(A) for more on this.

Leviton Solution

Leviton offers AFCI receptacles and dual function AFCI/GFCI receptacles. The SmartlockPro® Dual Function AFCI/GFCI Receptacle offers protection both from electrical fires that could result from arc-faults and from electrical shock or electrocution due to ground faults in one smart device.

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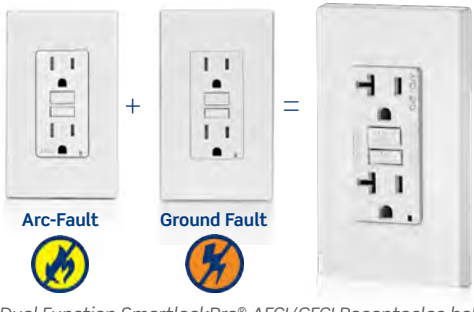


Dual Function SmartlockPro® AFCI/GFCI Receptacles help protect against BOTH electrical fires and shocks

Through advanced technology, the SmartlockPro® Dual Function AFCI/GFCI Receptacle helps protect home and family by working to detect arc-fault and ground fault hazards and, if detected, quickly cuts off power to help avoid a potential fire or shock/electrocution occurrence. The SmartlockPro® Dual

Function AFCI/GFCI Receptacle offers a National Electrical Code® (NEC®) compliant option for AFCI/GFCI protection in residential kitchens and laundry areas for new construction, modifications/extensions and replacement receptacles. It is also ideal as a replacement for ungrounded receptacles, satisfying NEC® requirements for both AFCI and GFCI protection. Leviton's AGTR1 is rated at 15-Amp, 125-Volt, 20-Amp Feed-Through. It is Tamper-Resistant, back and side wired and a self-grounding clip is included.

Revision/New

210.17 Branch Circuit Requirements - Hotel/Motel and Assisted Living Facilities

Change Summary

- Assisted living facilities added to list of places that need to meet the same branch circuit requirements as dwelling units.

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal

210.17 Guest Rooms and Guest Suites.

Guest rooms and guest suites in the following occupancies that are provided with permanent provisions for cooking shall have branch circuits installed to meet the rules for dwelling units:

(1) Hotels

(2) Motels

(3) Assisted living facilities

Informational Note No. 1: See 210.11(C)(2) and 210.52(F), Exception No. 2, for information on laundry branch circuits and receptacle outlets.

Informational Note No. 2: See NFPA 101-2021, Life Safety Code, 3.3.198.12 and A.3.3.198.12(5), for the definition of assisted living facilities

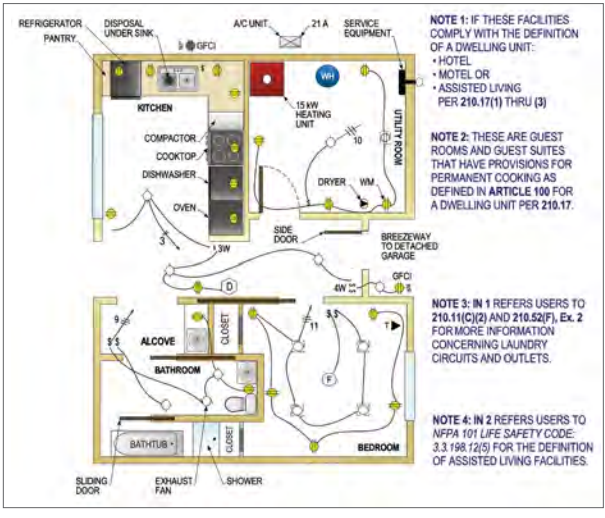
Expert Analysis

A revision has been made to clarify that assisted living facilities are now included in the list of occupancies, where guest rooms and guest suites, have the same branch circuit requirements as dwelling units. The section was reformatted in a list to add clarity. Informational Notes were added to provide appropriate

continued on page 26

continued from page 25

guidance in the application of this section.
The revision was made to distinguish between facilities that are equipped with or without permanent cooking apparatus.



Revision/New

210.23(A)(1)(2), 210.24, 240.4(D)(3), 310.3 (A)(B) and 406.3(C)(D) 10 Amp Branch Circuits

Leviton Comment: Articles 210.23(A)(1)(2), 210.24, 240.4(D)(3), 310.3(A)&(B) and 406.3 (summarized here) have been revised to include accommodations for 10 amp circuits and associated electrical apparatus. The intent of the original submittal seemed to be to enable the installer to realize cost savings through the use of copper-clad aluminum wire on certain circuits (primarily lighting and definitely not receptacles) with limitations.
However, the NEC did NOT approve the use of 16 AWG copper or 14 AWG copper-clad aluminum in Article 310.3(A) or the associated wire sizing table found at 210.24(2). Without the ability to use a smaller gauge copper wire, or the same size copper-clad aluminum wire, no real savings can be realized. Maybe the 2026 NEC will ease the limitation and further acknowledge copper-clad aluminum and thus opening-up its use to installers.

continued on page 28

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continued from page 26

There are additional places in the 2023 NEC where 10 Amp circuits and aluminum wire are added, however due to space limitations in this guide we only cover these. We think that this is adequate to convey the intent.

Change Summary

- The NEC is introducing text to recognize 10 Amp circuits with limitations.

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal

210.23 Permissible Loads, Multiple-Outlet Branch Circuits. In no case shall the load exceed the branch-circuit ampere rating. A branch circuit supplying two or more outlets or receptacles shall supply only the loads specified according to its size in accordance with 210.23(A) through (E) and as summarized in 210.24.

(A) 10-Ampere Branch Circuits. A 10-ampere branch circuit shall comply with the requirements of 210.23(A)(1) and (A)(2).

(1) Loads Permitted for 10-Ampere Branch Circuits. A 10-ampere branch circuit shall be permitted to supply one or more of the following:

(1) Lighting outlets

(2) Dwelling unit exhaust fans on bathroom or laundry room lighting circuits

(3) A gas fireplace unit supplied by an individual branch circuit

(2) Loads Not Permitted for 10-Ampere Branch Circuits. A 10-ampere branch circuit shall not supply any of the following:

(1) Receptacle outlets

(2) Fixed appliances, except as permitted for individual branch circuits

(3) Garage door openers

(4) Laundry equipment

210.24 Branch-Circuit Requirements — Summary. The requirements for circuits that have two or more outlets or receptacles, other than the receptacle circuits of 210.11(C)(1), (C)(2), and (C)(3), are summarized in Table 210.24(1) for copper conductors and Table 210.24(2) for aluminum and copper-clad aluminum conductors. Table 210.24(1) and Table 210.24(2) provide only a summary of minimum requirements. See 210.19, 210.20, and 210.21 for the specific requirements applying to branch circuits.

Article 240 Overcurrent Protection

240.4 Protection of Conductors.

(D) Small Conductors. Unless specifically permitted in 240.4(E) or (G), the overcurrent protection shall not exceed

NEC® Text

that required by 240.4(D)(1) through (D)(8) after any correction factors for ambient temperature and number of conductors have been applied.

(3) 14 AWG Copper-Clad Aluminum. 10 amperes, provided all the following conditions are met:

(1) Continuous loads do not exceed 8 amperes

(2) Overcurrent protection is provided by one of the following:

a. Branch-circuit-rated circuit breakers are listed and marked for use with 14 AWG copper-clad aluminum conductor.

b. Branch-circuit-rated fuses are listed and marked for use with 14 AWG copper-clad aluminum conductor.

Article 310 Conductors for General Wiring

310.3 Conductors.

(A) Minimum Size of Conductors. The minimum size of conductors for voltage ratings up to and including 2000 volts shall be 14 AWG copper, 12 AWG copper-clad aluminum, or 12 AWG aluminum, except as permitted elsewhere in this Code.

(B) Conductor Material. Conductors in this article shall be of copper, aluminum, or copper-clad aluminum, unless otherwise specified. Aluminum and copper-clad aluminum shall comply with the following; (see NEC text)

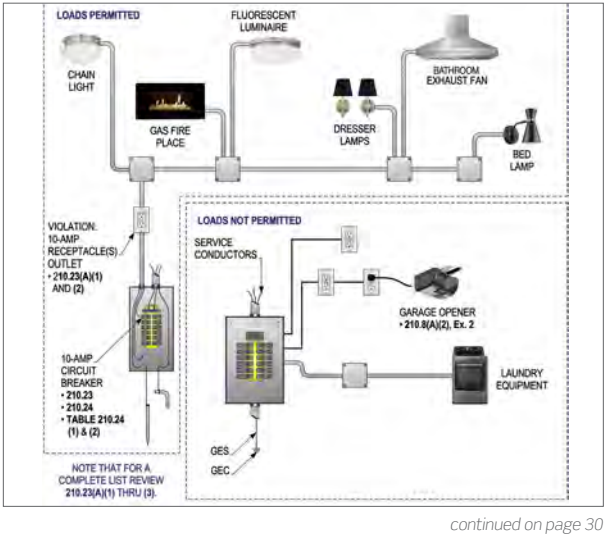
Article 406 Receptacles, Cord Connectors, and Attachment Plugs (Caps)

406.3 Receptacle Rating and Type.

Leviton Note: See 406.3 later in this guide for complete text

Expert Analysis

A new subsection has been added to address the



continued on page 30

continued from page 29

requirements for loads permitted and not permitted for 10-ampere branch circuits. The application of adopted Energy Code(s) and energy efficiencies in general are bringing forward the possible applications of 10-ampere branch circuits for loads such as LED lighting and specific equipment that are identified.
A new chart was added at 210.24(2) that identifies appropriate aluminum and copper clad aluminum wire sizing for specific circuit sizes.

Revison/New

210.52(C) Receptacle Requirements for Islands and Peninsulas

Change Summary

- Rules for receptacles around countertops and peninsulas have been modified and tightened. The calculations used in previous code cycles are gone and seemingly not mandatory.

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal
210.52 Dwelling Unit Receptacle Outlets…
210.52(C) Countertops and Work Surfaces.
(2) Island and Peninsular Countertops and Work Surfaces. Receptacle outlets, if installed to serve an island or peninsular countertop or work surface, shall be installed in accordance with 210.52(C)(3). if a receptacle outlet is not provided to serve an island or peninsular countertop or work surface, provisions shall be provided at the island or peninsula for future addition of a receptacle outlet to serve the island or peninsular countertop or work surface.
(3) Receptacle Outlet Location. Receptacle outlets shall be located in one or more of the following:
(1) On or above, but not more than 500mm (20 in.) above, a countertop or work surface.
(2) In a countertop using receptacle outlet assemblies listed for use in countertops
(3) In a work surface using receptacle outlet assemblies listed for work surfaces or listed for use in countertops

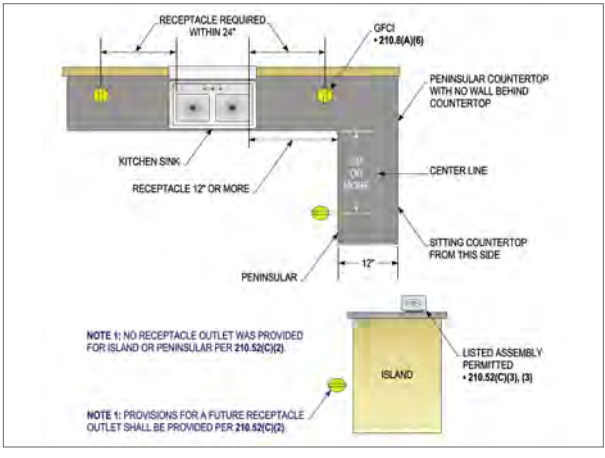
Expert Analysis

A revision has been made to not require receptacles in countertop or work surface areas, however if receptacle outlets are not provided, provisions shall be made at the

island or peninsula, for future addition of a receptacle outlet to serve the island or peninsular countertop or work surface.

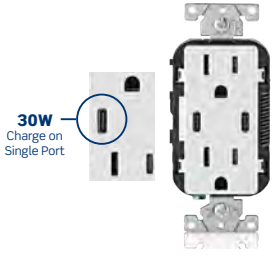
If receptacles are installed in countertop or work surface areas, the receptacles must be listed for the purpose, and they are not permitted to be installed on the sides of the cabinet below the countertop.

The reason for not requiring receptacles in countertops and work surfaces is due to the incidences of children pulling on cords draped over the countertop and thus pulling down hot cooking appliances on themselves.



Leviton Solution

When laying-out receptacle placement in countertop areas, don't forget to include USB receptacles. While these USB receptacles are not listed as countertop assemblies and thus don't comply with 210.52(C)(3), they can be installed in backsplashes or walls behind countertops. Today's consumers demand these convenient devices for charging smartphones and other electronic equipment. Adapter-free charging eliminates unsightly clutter contributing to a neat appearance on countertops, Leviton's USB Charger Devices feature a



USB Wall Charger Dual Type-C™ with Power Delivery

With up to 2X the charging power (up to 30W*) of typical USB chargers, our USB In-Wall Charger Dual Type-C™ with Power Delivery is the most advanced, powerful in-wall charger on the market.

*On a single port

continued on page 32

continued from page 31

smart chip that recognizes and optimizes the charging power of your electronic devices for fast and efficient charging. The latest offering incorporates "Type C" ports which many newer phones call for. The Type C platform gives increased power and faster charges.
Leviton USB devices are available in many configurations and many colors and Hospital Grade.

Compare USB Wall Outlets/Chargers

	USB Charger	Total Charging Power	Single Port Charging Power	Outlet Power	USB Cable Compatible	Wiring
GUAC1/GUAC2 SmartlockPro® Self-Test GFCI Combination Type A/C 	4.8A	24W	12W	15A, 20A	3.1, 3.0, 2.0, 1.1	Wire leads
GUSB1/GUSB2 SmartlockPro® Self-Test GFCI Combination Type A 				15A, 20A		Wire leads
T5636/T5836 60W Dual Type-C with Power Delivery (PD) 	6A	60W	60W			Wire leads
T5635/T5835 30W Dual Type-C with Power Delivery (PD) 		30W	30W			Back and side wiring
T5633/W5633/T5833 Type A/C, WR Type A/C 	5.1A	25+W	15W			Back and side wiring
T5632/T5832 Dual Type A 	3.6A	18W	12W			Back and side wiring

Revision

210.52(G) Receptacle Requirements in Residential Basements, Garages, and Accessory Buildings

Change Summary

- A receptacle installed for permanent premises security system doesn't count toward required receptacle requirements for basements, garages, and accessory buildings.

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal
210.52 Dwelling Unit Receptacle Outlets.
(G) Basements, Garages, and Accessory Buildings.
For one- and two-family dwellings, and multifamily dwellings, at least one receptacle outlet shall be installed in the areas specified in 210.52(G)(1) through (G)(3). These receptacles shall be in addition to receptacles required for specific equipment. Receptacles supplying only a permanently installed premises security system shall not be considered as meeting these requirements.

Expert Analysis

A new sentence has been added to clarify that if a receptacle was installed in these areas to serve a premises security system, then that receptacle doesn't count as the required receptacle. It's also worth pointing out that receptacles are not required in detached garages or accessory buildings if they do not have power.

Revision/New

210.70(A)(1) Limitations on Battery Powered Light Switches and Laundry Area Switch

Change Summary

- Battery powered light switches are allowed, but switch can't rely exclusively on battery unless it defaults to the "ON" position upon battery failure.
  Laundry rooms added to the list of rooms that are required to have light switches.

continued on page 34

continued from page 33

LEVITON

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal

210.70 Lighting Outlets Required. Lighting outlets shall be installed where specified in 210.70(A), (B), and (C). 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.

(A) Dwelling Units…

(1) Habitable Rooms, Kitchens, Laundry Areas, and Bathrooms. At least one lighting outlet controlled by a listed wall-mounted control device shall be installed in every habitable room, kitchen, laundry area, and bathroom. The wall-mounted control device shall be located near an entrance to the room on a wall.

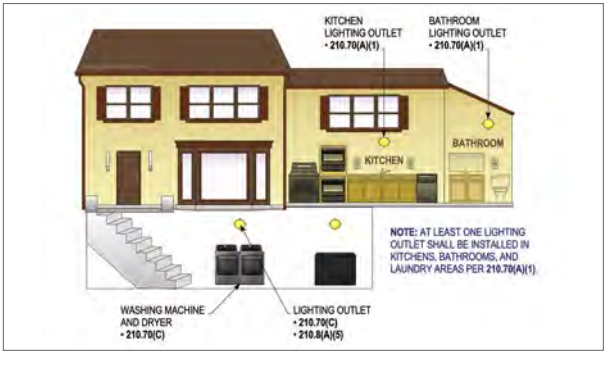
Exception No. 1: *In other than kitchens, laundry areas, and bathrooms, one or more receptacles controlled by a listed wall-mounted control device shall be permitted in lieu of lighting outlets.*

Exception No. 2: *Lighting outlets shall be permitted to be controlled by occupancy sensors that are (1) in addition to listed wall-mounted control devices or (2) located at a customary wall switch location and equipped with a manual override that will allow the sensor to function as a wall switch.*

Expert Analysis

A new sentence has been added to clarify the need to support illumination upon failure of a control device powered exclusively by a battery to insure safe egress. The failure mode of a battery powered device must ensure illumination. The new sentence is included to permit battery powered control where the lighting outlets are automatically energized upon battery failure.

A revision has been made to clarify that laundry areas be illuminated, as the use of these areas often result in the occupant carrying clothing and baskets. The area should also have a lighting means other than the options provided by a switched receptacle.



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Decora Smart® Makes Every Home a Smart Home

works with my leviton

Control and schedule lighting via app or voice command.

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continued from page 34

Leviton Note: The Leviton solution provided below relates to Leviton's current line of battery switches. PLEASE NOTE that at the time this guide was printed these devices DO NOT default to the "ON" position when the battery dies.

Leviton Solution

How the Anywhere Companions Work

1. Install Decora Smart® 2nd Gen Device
2. Add the Anywhere Dimmer or Switch to any interior wall surface
3. Pair the Anywhere Companion to the 2nd Gen Device to control the same light

Choosing the Right Companion

The Anywhere Companions are intended to be used in wire-free 3-way or multi-location applications. They must be paired with a Decora Smart® Wi-Fi 2nd Gen Device in order to function.

The charts below identify which primary devices they can be used with.

DAWDC-1BW
Decora Smart® Anywhere Dimmer Companion

DAWDC Switch Companion use with	
Primary Dimmer	D26HD, DN6HD*, D23LP
Primary Fan Speed Control	D24SF
Primary Sensor	D2MSD

DAWSC-1BW
Decora Smart® Anywhere Switch Companion

DAWSC Switch Companion use with	
Primary Switch	D215S, DN15S*, D2SCS, D215P
Primary Fan Speed Control	D24SF
Primary Dimmer (On/Off Only)	D26HD, DN6HD*, D23LP
Primary Sensor	D2MSD
Primary Outlet	D215R

*Requires a MLWSB Decora Smart® Wi-Fi Bridge to enable smart features

Revison/New

210.70(A)(2) Lighting Outlet Locations and Limitations

Change Summary

- This article clarifies what areas require a light switch and limitations on dimmer use.

NEC® Text

Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal

210.70 Lighting Outlets Required.

(A) Dwelling Units.

(2) Additional Locations.

Additional lighting outlets shall be installed in accordance with the following:

(1) At least one lighting outlet controlled by a listed wall-mounted control device shall be installed in hallways, stairways, attached garages, detached garages, and accessory buildings with electric power.

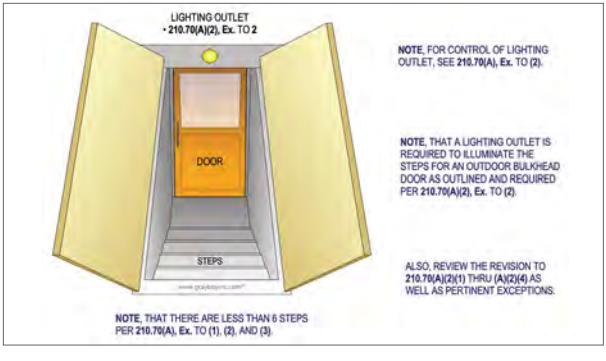
(2) For dwelling units, attached garages, and detached garages with electric power, at least one exterior lighting outlet controlled by a listed wall-mounted control device shall be installed to provide illumination on the exterior side of outdoor entrances or exits with grade-level access. A vehicle door in a garage shall not be considered as an outdoor entrance or exit.

Exception to (2): *For an outdoor, grade bulkhead door with stairway access to a sub-grade-level basement, the required lighting outlet that provides illumination on the stairway steps shall be permitted to be located in the basement interior within 1.5 m (5 ft) horizontally of the bottommost stairway riser. This interior lighting outlet shall be permitted to be controlled by a listed wall-mounted control device or by a unit switch of the interior luminaire or interior lampholder.*

(3) Where lighting outlets are installed for an interior stairway with six or more risers between floor levels, there shall be a listed wall-mounted control device at each floor level and at each landing level that includes a stairway entry to control the lighting outlets.

Exception to (1), (2), and (3): *Remote, central, or automatic control of lighting shall be permitted in hallways, in stairways, and at outdoor entrances.*

(4) Dimmer control of lighting outlets installed in accordance with 210.70(A)(2)(3) shall not be permitted unless the listed control devices can provide dimming control to maximum brightness at each control location for the interior stairway illumination.



continued on page 38

continued from page 37

LEVITON

Expert Analysis

A revision has been made to clarify that accessory structures are similar to attached and detached garages and have been added to the list in Section 210.70(A)(2). Requiring lighting in these areas enhances safety. In addition, the exception to (2) recognizes bulkhead doors with stairway access to basements. The NEC clarifies that they want these steps illuminated and controlled by a switch.

Leviton Solution

For dark, less traveled areas, motion sensors can be a safe and convenient option. In addition, when using bulkhead doors people are typically carrying storage items. This also makes motion sensors a good choice.

Cat. No. DOS15-1LZ

Features 180° PIR field of view, automatic-on/off, single pole, 3-way or multi-location (multi-way) when used with DD0SR switch companions or multi-sensor with two DOS15 sensors. Can be used to comply with 2019 California Title 24, Part 6 Vacancy Control Device Requirements — White with ivory and light almond faceplates included.

- CONVENIENT — turns lights on/off automatically based on motion
- EASY TO INSTALL — slim profile fits in most wallboxes
- FLEXIBLE — multi-sensor application where two sensors are needed for the coverage area, such as an "L-shaped" room
- VERSATILE — for higher wattage fixtures and exhaust fan
- 600W LED/CFL, 1800W Inc/Halogen 1200VA ELV/MLV/FL, 1/2HP Motor, 15A Resistive

New

215.15 Barriers in Electrical Equipment

Change Summary

- New section requires barriers over uninsulated ungrounded busbars or terminals that are exposed in panelboards, switchgear, or motor control centers.

NEC® Text

Article 215 Feeders

215.15 Barriers.

Barriers shall be placed such that no energized uninsulated, ungrounded busbar or terminal is exposed to inadvertent

NEC® Text

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 the disconnecting device, to which the tap conductors are terminated, is in the open position.

Expert Analysis

A new section has been added to clarify that barriers can mitigate the potential for shock for personnel working on electrical equipment. The new requirement for barriers to provide protection against inadvertent contact mirrors the requirements in 230.62(C).

This requirement is limited to panelboards, switchboards, switchgear, or motor control centers supplied by feeder taps in 240.21(B) or transformer secondary conductors in 240.21(C). Where the tap rules are applied it is unlikely that the source of supply to the overcurrent protective device can be deenergized during maintenance and other tasks. This revision ensures the exposed energized parts on the line side of the overcurrent protective device are protected against inadvertent contact. When the disconnecting device to which the tap conductors are terminated is in the open position, the likelihood of contact with energized parts is significantly reduced.

Revision/New

215.18(A)-(E), 225.42(A)-(E) and 230.67(A)-(E) Surge Protection Requirements Expanded

Leviton Comment: This guides purpose is to simplify and condense the NEC changes. In that spirit we have merged Articles 215.18(A)-(E), 225.42(A)-(E) and 230.67(A)-(E). This was done because the text is almost the same in each article. The text just resides in different Articles of the NEC and while few words differ in (A), the intent is the same. The broader significance of these changes is the fact that dormitories, guest rooms and nursing homes have been added to the list of places that need surge protection.

continued on page 40

continued from page 39

Change Summary

- Surge protection requirements have been expanded to dormitories, guest rooms/suites of hotel/motels and sleeping rooms of nursing homes and limited care facilities.

NEC® Text

Articles: *215 Feeders;
***225 Outside Branch Circuits and Feeders;**
***230 Services**
215.18; 225.42; 230.67 Surge Protection.
(A) Surge-Protective Device. Where a feeder and all services supplies any of the following, a surge-protective device (SPD) shall be installed:
(1) Dwelling units
(2) Dormitory units
(3) Guest rooms and guest suites of hotels and motels
(4) Areas of nursing homes and limited-care facilities used exclusively as patient sleeping rooms
(B) Location. The SPD shall be installed in or adjacent to distribution and service equipment, connected to the load side of the feeder, that contains branch circuit overcurrent protective device(s) that supply the location specified in 215.18(A), 225.42(A) and 230.67(A).
Informational Note: Surge protection is most effective when closest to the branch circuit. Surges can be generated from multiple sources including, but not limited to, lightning, the electric utility, or utilization equipment.
(C) Type. The SPD shall be a Type 1 or Type 2 SPD.
(D) Replacement. Where the distribution equipment supplied by the feeder is replaced, all of the requirements of this section shall apply.
(E) Ratings. SPDs shall have a nominal discharge current rating (In) of not less than 10 kA.

Expert Analysis

A new section has been added to clarify the proper protection of areas served by feeders and outside branch circuits that are extended distances away from services which can can result in limited surge protection. The new section addresses the surge-protective device, location, type, replacement, and ratings.

The current exception in 230.67 achieves the goals of this exception by not requiring the surge-protective device at the service when surge protection is provided at each next level distribution equipment downstream towards the load.

It's also worth noting that the required SPD's nominal discharge rating must be at least 10 kA. This is a

continued on page 42

SURGE PROTECTION

is **required** for Safety Circuits

Protect valuable equipment and electronics.

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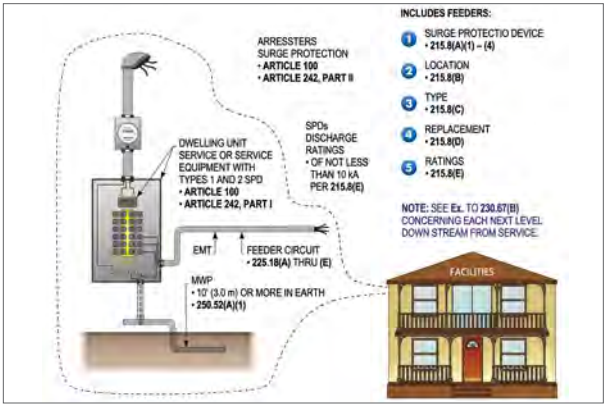
continued from page 40

new and significant change from the previous 2020 NEC language.



Leviton Solution

Type 2 Surge Protection Devices (SPDs) would typically be the type of device most often associated with this Code article. See Type 2 Below.

Here we have provided an explanation of the different levels of surge protection and their applications:

Type 1 SPDs for the supply side of service entrance.

Surge Breakers *Cat. No. 51120* *Cat. No. 51110-SGR*

Type 2 SPDs are typically service entrance SPD panels or branch circuit SPD panels that are connected on the load side of the service disconnect overcurrent device (main service panel).

Surge Receptacles and Strips

Type 3 SPDs are typically surge receptacles or cord connected point-of use devices. Leviton offers a complete assortment in duplex and quad in many styles and colors.

Type 4 SPDs are component assemblies consisting of one or more Type 5 components together with a disconnect (integral or external) or a means of complying with the limited current tests in UL 1449.

Type 5 SPDs Discrete component surge suppressors connected by its leads or provided with an enclosure with mounting means and wiring terminations.

Type 1 and Type 2 SPDs shunt external surges that originate from utilities or disturbances outside the home or facility. Type 2 SPDs can protect for both internal and external surges when located at the branch. Type 3 SPDs can shunt surges that originated internally within the home or facility. So a comprehensive strategy for surge protection typically involves a Type 1 or Type 2 SPD and also a Type 3 SPD at point of use.

Revision/New

220.53, 220.57
EVSE Demand Factor Calculations

Leviton Comment: This guides purpose is to simplify and condense the NEC changes. In that spirit we have merged Articles 220.53 and 220.57. This was done because they both relate to load calculations for EVSE. Placing both articles here in one passage hopefully simplifies understanding to readers.

Change Summary

- As electric vehicles increase in popularity, guidelines for installing supply equipment is critical. The two articles below address the topic.

NEC® Text

220.53 Appliance Load — Dwelling Unit(s). Applying a demand factor of 75 percent to the nameplate rating load of four or more appliances rated 1⁄4 hp or greater, or 500 watts or greater, that are fastened in place, and that are served by the same feeder or service in a one-family, two-family, or multifamily dwelling shall be permitted. This demand factor shall not apply to the following:

(1) Household electric cooking equipment that is fastened in place
(2) Clothes dryers
(3) Space heating equipment
(4) Air-conditioning equipment
(5) Electric vehicle supply equipment (EVSE)

220.57 Electric Vehicle Supply Equipment (EVSE) Load. The EVSE load shall be calculated at either 7200 watts (volt-amperes) or the nameplate rating of the equipment, whichever is larger.

Leviton Comment: Since 220.57 above doesn't designate dwelling or non-dwelling, it would apply to all locations.
Please also reference Articles 625 in this guide for more on EVSE.

Expert Analysis

A revision has been made to clarify that electric vehicle supply equipment (EVSE) shall not be included in the fixed appliance load when performing calculations for the appliance load in a one-family, two-family, or multifamily dwelling.

continued on page 44

continued from page 43

To do load calculations for EVSE, a new section has been added that dictates that the load shall be calculated at either 7200 watts (volt-amperes) or the nameplate of the equipment, whichever is larger. The 7200 watt (volt-amperes) minimum requirement is based on a 30 ampere, 240 volt, single-phase circuit.

Leviton Solution

Leviton offers EVSE for residential and commercial applications. The unit below incorporates RFID technology that restricts use to only those who have the RFID card. This is great for apartment buildings to control use by authorized tenants.

For residential applications
Compatible with My Leviton App, allowing you to control the whole home, including electric vehicle charging, lighting and load center

For workplace and light commercial applications
All stations can activate optional access control, preventing unauthorized use with RFID cards

EV Series Level 2 Charging Stations

Catalog #: EV320
32 Amp, 208/240 VAC, 7.6 kW, 18' Cable, Optional RFID

Catalog #: EV480
48 Amp, 208/240 VAC, 11.6 kW, 18' Cable, Optional RFID

Catalog #: EV800
80 Amp, 208/240 VAC, 19.2 kW, 18' Cable, Optional RFID

Catalog #: EV32W
32 Amp, 208/240 VAC, 7.6 kW, 18' Cable, Optional RFID, Wi-Fi, My Leviton Compatibility

Catalog #: EV48W
48 Amp, 208/240 VAC, 11.6 kW, 18' Cable, Optional RFID, Wi-Fi, My Leviton Compatibility

Catalog #: EV80W
80 Amp, 208/240 VAC, 19.2 kW, 18' Cable, Optional RFID, Wi-Fi, My Leviton Compatibility

Catalog #: ERFID
Additional RFID card

Revision/New

220.70
Energy Management Systems (EMS)

Change Summary

- New section classifies a single value equal to the maximum ampere setpoint of the energy management system shall be permitted to be used in load calculations for the feeder or service.

NEC® Text

Article 220 Branch-Circuit, Feeder, and Service Load Calculations

220.70 Energy Management Systems (EMSs). If an energy management system (EMS) is used to limit the current to a feeder or service in accordance with 750.30, a single value equal to the maximum ampere setpoint of the EMS shall be permitted to be used in load calculations for the feeder or service.

The setpoint value of the EMS shall be considered a continuous load for the purposes of load calculations.

Expert Analysis

A new section has been added to address the load calculations of energy management systems that is used to limit the current to a feeder or service in accordance with 750.30. When performing the load calculations, a single value equal to the maximum ampere setpoint of the energy management system shall be permitted to be used in load calculations for the feeder or service.

Leviton Solution

The first step when managing energy is to measure it and start a baseline. From there you can continually monitor energy usage to evaluate effectiveness of energy saving measures that you have undertaken. Organizations can monitor, control, and manage energy

VerifEye® Submetering Code Solution

continued on page 46

continued from page 45

usage through submetering strategies, which track energy usage and power consumption for individual tenants, departments, and pieces of equipment or other loads to account for their actual energy usage. From tenant billing to energy measurement & verification (M&V), Verifeye™ offers a seamless solution that enables smart metering and simplifies the complexities of monitoring energy usage, allocating energy costs and billing tenants.

New

225.41(A)(B)(C) Emergency Disconnects - 1 and 2 Family Homes

Change Summary

- The Code Making Panel (CMP) has accepted and added requirements for designing and installing outdoor emergency disconnects.

NEC® Text

Article 225 Outside Branch Circuits and Feeders

225.41 Emergency Disconnects. For one-and two-family dwelling units, an emergency disconnecting means shall be installed.

(A) General.

(1) Location. The disconnecting means shall be installed in a readily accessible outdoor location on or within sight of the dwelling unit.

(2) Rating. The disconnecting means shall have a short-circuit current rating equal to or greater than the available fault current.

(3) Grouping. If more than one disconnecting means is provided, they shall be grouped.

(B) Identification of Other Isolation Disconnects. Where equipment for isolation of other energy source systems is not located adjacent to the emergency disconnect required by this section, a plaque or directory identifying the location of all equipment for isolation of other energy sources shall be located adjacent to the disconnecting means required by this section.

Informational Note: See 445.18, 480.7, 705.20, and 706.15 for examples of other energy source system isolation means.

(C) Marking. The disconnecting means shall be marked as EMERGENCY DISCONNECT.

Markings shall comply with 110.21(B) and all of the following:

(1) The marking or labels shall be located on the outside

continued on page 48

EV CHARGING
FROM THE BRAND YOU TRUST

Home Charging Stations

- Level 2 - 80, 48 & 32 Amp
- Modern look and feel
- Fast and secure charging
- Optional access control via RFID
- For indoor and outdoor use

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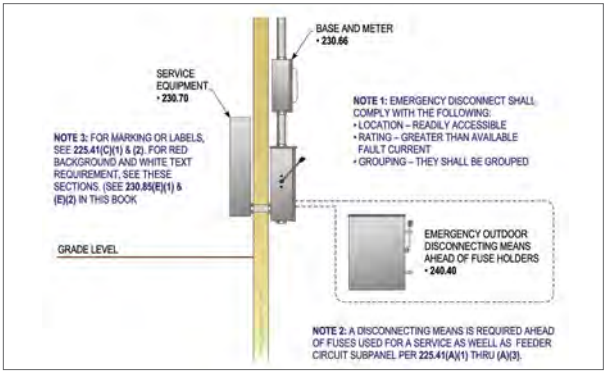
continued from page 46

NEC® Text

front of the disconnect enclosure with red background and white text.
(2) The letters shall be least 13 mm (1/2 in.) high.

Expert Analysis

A new section has been added to correlate with existing requirements for service supplied dwelling units and the revisions in 230.85. The new section will help first responders and provide the ability to disconnect the power to the dwelling without regard to whether it's a feeder or service supplied.



Revision

225.42(A)-(E), 230.67(A)-(E) Surge Protection Requirements Expanded

Leviton Comment: Articles 225.42(A)-(E) and 230.67(A)-(E) are covered with Article 215.18(A)-(E) found on page 39

Revision

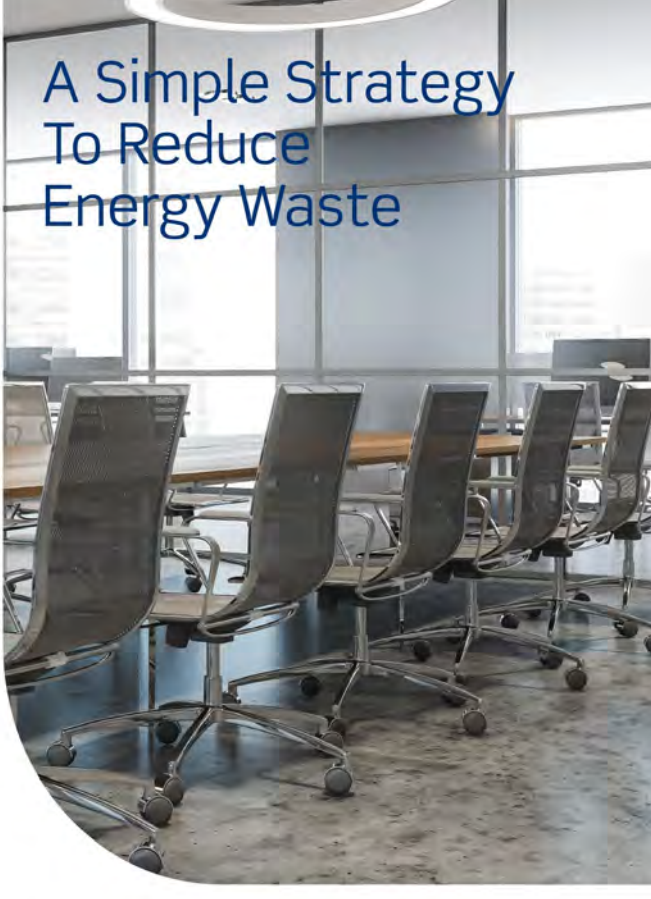
230.85(A)(B)(C)(D)(E) Emergency Disconnects – 1 and 2 Family Homes

Change Summary

- A revision was made to clarify the location, rating and grouping of the required residential emergency disconnect.

continued on page 50

A Simple Strategy To Reduce Energy Waste



Touchless Lighting Controls

COMMERCIAL OCCUPANCY SENSORS

Occupancy sensors deliver one of the most effective methods of reducing energy waste. These touchless lighting controls automatically turn lights on and off. Use them as one of the first lines of defense against energy waste or as a tool in compliance and sustainability efforts.

Leviton offers a broad line of sensors to meet virtually any application–in fixture, fixture mount, wireless, dimming, daylighting, IP65 rated, cold storage and more.

Learn more at
leviton.com/sensors

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continued from page 48

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NEC® Text

Article 230 Services

230.85 Emergency Disconnects. For one- and two-family dwelling units, an emergency disconnecting means shall be installed.

(A) General.

(1) Location. The disconnecting means shall be installed in a readily accessible outdoor location on or within sight of the dwelling unit.

Exception: *Where the requirements of 225.41 are met, this section shall not apply.*

(2) Rating. The disconnecting means shall have a short-circuit current rating equal to or greater than the available fault current.

(3) Grouping. If more than one disconnecting means is provided, they shall be grouped.

(B) Disconnects. Each disconnect shall be one of the following:

(1) Service disconnect

(2) A meter disconnect integral to the meter mounting equipment not marked as suitable only for use as service equipment installed in accordance with 230.82

(3) Other listed disconnect switch or circuit breaker that is marked suitable for use as service equipment, but not marked as suitable only for use as service equipment, installed on the supply side of each service disconnect

Informational Note 1: Conductors between the emergency disconnect and the service disconnect in 230.85(2) and 230.85(3) are service conductors.

Informational Note 2: Equipment marked “Suitable only for use as service equipment” includes the factory marking "Service Disconnect".

(C) Replacement. Where service equipment is replaced, all of the requirements of this section shall apply.

Exception: *Where only meter sockets, service entrance conductors, or related raceways and fittings are replaced, the requirements of this section shall not apply.*

(D) Identification of Other Isolation Disconnects. Where equipment for isolation of other energy source systems is not located adjacent to the emergency disconnect required by this section, a plaque or directory identifying the location of all equipment for isolation of other energy sources shall be located adjacent to the disconnecting means required by this section.

Informational Note: See 445.18, 480.7, 705.20, and 706.15 for examples of other energy source system isolation means.

(E) Marking.

(1) Marking Text. The disconnecting means shall marked as follows:

(1) Service disconnect

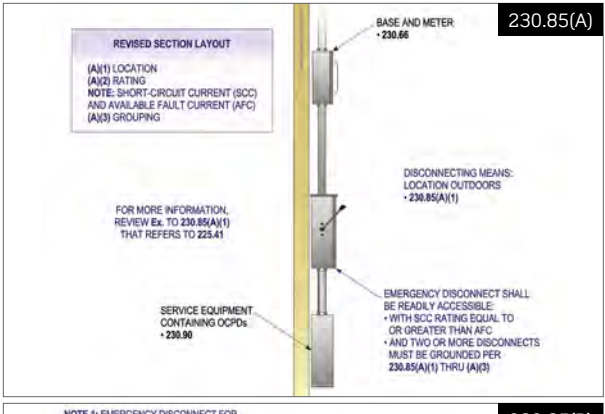
EMERGENCY DISCONNECT,
SERVICE DISCONNECT

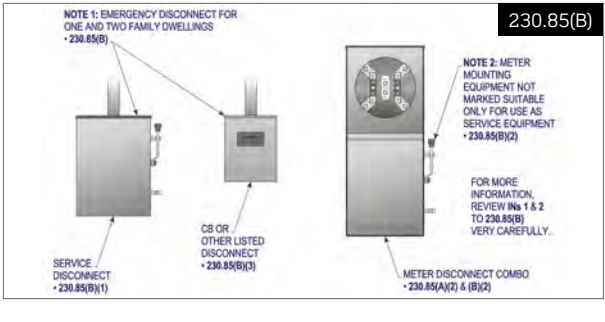
NEC® Text

(2) Meter disconnects installed in accordance with 230.82(3) and marked as follows:
EMERGENCY DISCONNECT,
METER DISCONNECT,
NOT SERVICE EQUIPMENT
(3) Other listed disconnect switches or circuit breakers on the supply side of each service disconnect that are marked suitable for use as service equipment and marked as follows:
EMERGENCY DISCONNECT,
NOT SERVICE EQUIPMENT
(2) Marking Location and Size. Markings shall comply with 110.21(B) and both of the following:
(1) The marking or labels shall be located on the outside front of the disconnect enclosure with red background and white text.
(2) The letters shall be at least 13 mm (1/2 in.) high.

Expert Analysis

A revision has been made to clarify the location, rating, and grouping of an emergency disconnecting means for one- and two-family dwelling units.
Clarification was given on the type of each emergency disconnecting means for one- and two-family dwelling units.





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Revision/New

110.21(A)(2), 240.2, 404.16(A)(B)(C)(D) and 406.2 Reconditioned Equipment

Change Summary

- The NEC has changed and added to the list of what types of electrical equipment can and can't be reconditioned throughout the Code. The equipment identified here are the most commonly used in everyday installations. Do to space constraints in this guide, we did not list all of the less common equipment but if reconditioning is your thing, you may want to look to 410.2 (Lamps), 411.2 (Low Volt Lighting), 430.2 (Motors), 700.2 (Transfer Switches).

NEC® Text

110.21 Marking

(A) Equipment Markings.

(2) Reconditioned Equipment. Reconditioned equipment shall be marked with the following:

(1) Name, trademark, or other descriptive marking of the organization that performed the reconditioning

(2) The date of the reconditioning

(3) the term reconditioned or other approved wording or symbol indicating that the equipment has been reconditioned.

The original listing mark shall be removed or made permanently illegible. The equipment nameplate shall not be required to be removed or made permanently illegible, only the part of the nameplate that includes the listing mark if applicable. Approval of the reconditioned equipment shall not be based solely on the equipment's original listing.

240.2 Reconditioned Equipment.

(A) Reconditioning Not Permitted. The following equipment shall not be reconditioned:

(1) Equipment providing ground-fault protection of equipment

(2) Ground-fault circuit interrupters

(3) Low-voltage fuseholders and low-voltage renewable fuses

(4) Molded-case circuit breakers

(B) Reconditioning Permitted. The following equipment shall be permitted to be reconditioned:

(1) Low-voltage power circuit breakers

(2) Electromechanical protective relays and current transformers

Reconditioned equipment shall be listed as reconditioned and comply with 110.21(A)(2).

continued on page 54

continued from page 53

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~~**210.15 Reconditioned Equipment.**~~
~~**(A) Reconditioning Not Permitted.** The following equipment shall not be reconditioned:~~
~~(1) Equipment that provides ground-fault circuit-interrupter protection for personnel~~
~~(2) Equipment that provides arc-fault circuit-interrupter protection for personnel~~
~~(3) Equipment that provides ground-fault circuit-interrupter protection of equipment~~

404.16 Reconditioned Equipment.
(A) Lighting, Dimmer, and Electronic Control Switches. Reconditioned lighting, dimmer, and electronic control switches shall not be permitted.
(B) Snap Switches. Reconditioned snap switches of any type shall not be permitted.
(C) Knife Switches, Switches with Butt Contacts, and Bolted Pressure Contact Switches. Reconditioned knife switches, switches with butt contacts, and bolted pressure contact switches shall be permitted. If equipment has been damaged by fire, products of combustion, corrosive influences, or water, it shall be specifically evaluated by its manufacturer or a qualified testing laboratory prior to being returned to service.
(D) Molded-Case Switches. Reconditioned molded-case switches shall not be permitted.

406.2 Reconditioned Equipment. Reconditioned receptacles, attachment plugs, cord connectors, and flanged surface devices shall not be permitted.

Expert Analysis

Several new sections have been added and relocated to address equipment that is permitted to be reconditioned and equipment not permitted to be reconditioned. The reconditioned equipment shall be listed as reconditioned and comply with the additional marking requirements per 110.21(A)(2).

Leviton Comment: The NEC struck Article 210.15 which specifically disallowed reconditioning of both ground-fault and arc-fault devices. However, the NEC added 240.2 which adds back in ground-fault devices, but not arc-fault devices. Unless we missed another new article regarding reconditioning of arc-fault devices, it appears the NEC no longer prohibits reconditioning arc-fault devices.
All this makes the reader wonder who is doing all this reconditioning or remanufacturing. The NEC is directed

at electrical installers, inspectors and alike. It's unclear how many of these individuals are doing reconditioning to the level described in these code articles (probably few to none). Some inspectors interpret reconditioning as when an installer installs a device outside of the manufacturer's instructions, thus in a different condition or reconditioned. Sometimes retailers use the remanufactured and reconditioned terms loosely on returned products that they can't sell as new, so they sell it "reconditioned" at a discount.
Leviton does not recondition or remanufacture any devices or products. To bring used products back to the same level of quality and safety as new products, it would cost more than simply making a new product.

Revision

240.4(D)(3) 10 Amp Circuits - Overcurrent Protection

Leviton Comment: Article 240.4(D)(3) is covered with Article 210.23(A) found on page 26.

Revision

240.24(E) Overcurrent Devices Not Permitted in Locker Rooms or Showering Facilities

Change Summary

- The NEC previously prohibited overcurrent devices in bathrooms and now they clarify and include showering facilities and locker rooms with showering facilities.

NEC® Text

Article 240 Overcurrent Protection
240.24 Location in or on Premises.
(E) Not Located in Bathrooms. Overcurrent protective devices, other than supplementary overcurrent protection shall not be located in bathrooms, showering facilities, or locker rooms with showering facilities.

Expert Analysis

A revision has been made to prohibit overcurrent protective devices in all bathrooms. Also overcurrent protective devices are prohibited in showering facilities,

continued on page 56

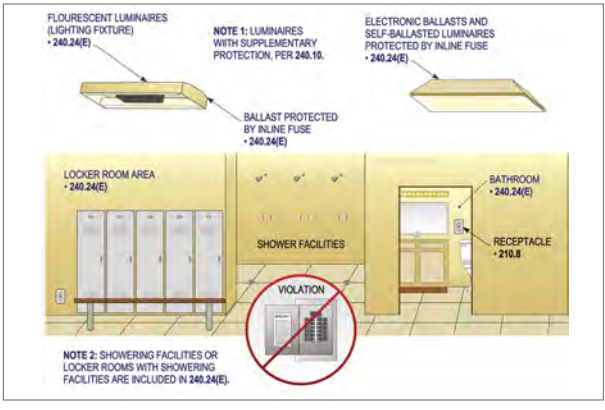
continued from page 55

or locker rooms with showering facilities, as they represent similar hazards.

This revision recognizes the difficulty of accessing occupied bathrooms.

Supplemental overcurrent devices are allowed.

Examples of supplemental overcurrent devices are identified in illustration below.



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Energy Use
- View real-time energy consumption: total aggregate, individual circuit, or trends by week, month, and year
- Calculate your approximate total energy cost per month

Control
- Remotely turn OFF any circuit breaker
- View system status in real time and detect if critical loads need to be addressed

Alerts & Updates
- Know when and why a circuit breaker trips
- Be informed if a load is ON or not drawing power for an extended time

Revision/New

245 Overcurrent Protection – Systems Over 1000V ac/1500V dc
305 General Requirements – Systems Over 1000V ac/1500V dc

Leviton Comment: We combined these two articles here because they both relate to the same area.

Change Summary

- Back in the 1920 NEC the voltage threshold increased from 550 volts to 600 volts. Then in 2017 the NEC included content addressing thresholds to 1000 volts. Today electrical technology is expanding quickly with technologies like photovoltaics and others. The NEC is keeping up and this article is an example.

NEC® Text

Article 245 Overcurrent Protection for Systems Rated Over 1000 Volts ac, 1500 Volts dc.
245.1 Scope.

continued on page 58

continued from page 57

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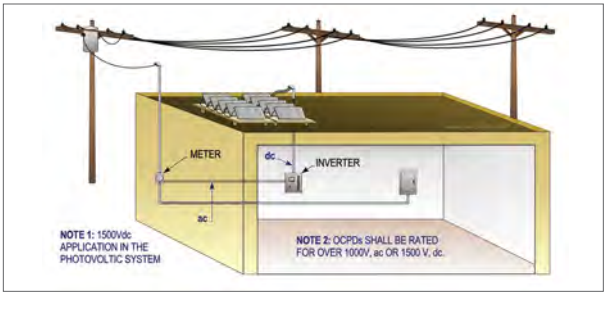
NEC® Text

245.2 Reconditioned Equipment.
245.21 Circuit-Interrupting Devices.
245.26 Feeders and Branch Circuits.
245.27 Additional Requirements for Feeders.

Article 305 General Requirements for Wiring Methods and Materials for Systems Rated Over 1000 Volts ac, 1500 Volts dc, Nominal
305.1 Scope.
305.3 Other Articles.
305.4 Conductors of Different Systems.
305.5 Conductor Bending Radius.
305.6 Protection Against Induction Heating.
305.7 Covers Required.
305.8 Raceways in Wet Locations Above Grade.
305.9 Braid-Covered Insulated Conductors - Exposed Installation.
305.10 Insulation Shielding.
305.11 Moisture or Mechanical Protection for Metal-Sheathed Cables.
305.12 Danger Signs.
305.15 Underground Installations.

Expert Analysis

New articles have been added to address the requirements for overcurrent protection for systems rated over 1000 volts ac, 1500 volts dc.
Many consider these voltage levels as medium voltage (MV) and these articles provide guidance to the electrical industry, including inspectors, with more guidance in terms of medium voltage installations.



Revision

300.14 Clarification of 6” Out of Box Conductors Rule… Spliced or Unspliced?

Change Summary

- A new sentence was added to clarify that the mandatory 6 inches of conductors out of the box can be spliced or unspliced.

NEC® Text

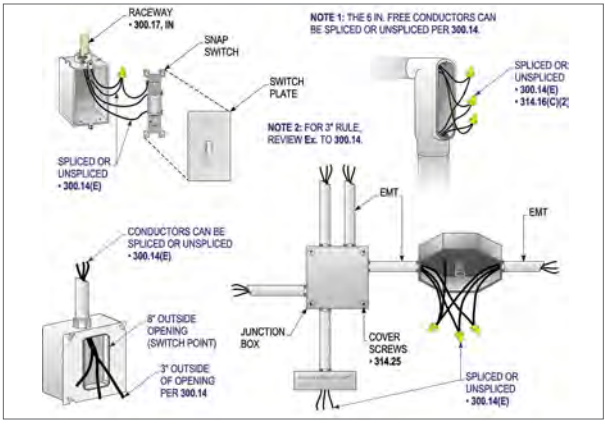
Article 300 General Requirements for Wiring Methods and Materials

300.14 Length of Free Conductors at Outlets, Junctions, and Switch Points. At least 150 mm (6 in.) of free conductor, measured from the point in the box where it emerges from its raceway or cable sheath, shall be left at each outlet, junction, and switch point for splices or the connection of luminaires or devices. The 150 mm (6 in.) free conductor shall be permitted to be spliced or unspliced. Where the opening to an outlet, junction, or switch point is less than 200 mm (8 in.) in any dimension, each conductor shall be long enough to extend at least 75 mm (3 in.) outside the opening.

Exception: *Conductors that are not spliced or terminated at the outlet, junction, or switch point shall not be required to comply with 300.14.*

Expert Analysis

A new sentence has been added to clarify that the free conductor is permitted to be a splice. The addition of this text makes that clear and free of interpretation.



Revision/New

305 General Requirements - Systems Over 1000V ac/1500V dc

Leviton Comment: Article 305 is covered with Article 245 on page 57.

Revision/New

310.3(A)(B) Reconditioned Equipment

Leviton Comment: Article 310.3(A)(B) is covered with Article 210.23(A) found on page 26.

Revision/New

312.10, 314.5 Screws Protruding into Boxes - How Much is Allowable

Leviton Comment: We are covering Articles 312.10 and 314.5 together because they are very similar, and both relate to screws protruding into boxes.

Change Summary

- The NEC has set limits on how far screws can protrude into boxes.

NEC® Text

Article 312 – Cabinets, Cutout Boxes, and Meter Socket Enclosures

312.10 Screws or Other Fasteners. Screws or other fasteners installed in the field that enter wiring spaces shall be as provided by or as specified by the manufacturer or shall comply with the following as applicable:

(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 6 mm (1⁄4 in.) unless the end is protected with an approved means.

Exception to (3): *Screws or other fasteners shall be permitted to extend into the enclosure not more than 11 mm (7⁄16 in.) if located within 10 mm (3⁄8 in.) of an enclosure wall.*

Article 314 – Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings and Handhole Enclosures

314.5 Screws or Other Fasteners. Screws or other fasteners installed in the field that enter wiring spaces shall be as provided by or specified by the manufacturer or shall

NEC® Text

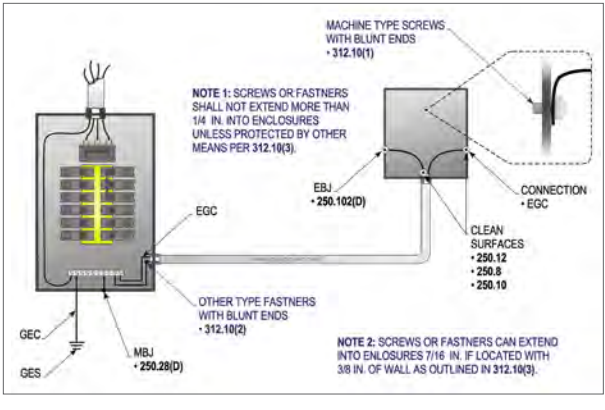
comply with the following as applicable.:
(1) Screws shall be machine type with blunt ends.
(2) Other fasteners shall have blunt ends.
(3) Screws attaching a cover shall extend no more than 10 mm (3/8 in.).
(4) Screws or other fasteners, other than in (3), penetrating a cover shall extend no more than 8 mm (5/16 in.).
(5) Screws or other fasteners penetrating a wall of a box exceeding 1650 CM^3 (100 $in.^3$) shall extend no more than 6 mm (1/4 in.), or more than 11 mm (7/16 in.) if located within 10 mm (3/8 in.) of an adjacent box wall.
(6) Screws or other fasteners penetrating the wall of a box not exceeding 1650 CM^3 (100 $in.^3$) and not covered in 314.23(B)(1) shall be made flush with the box interior.
(7) Screws or other fasteners penetrating the wall of a conduit body shall be made flush with the conduit body interior.

Exception to (3) through (6): *A screw shall be permitted to be longer if the end of the screw is protected with an approved means.*

Expert Analysis

A new section has been added to address the possibility of screws and fasteners damaging conductors within boxes. In all instances the only permitted style of screws are the type with machine threads and a blunt end. This reduces the likelihood of damage to conductors due to coarse threads and sharp points typically found on sheet metal screws. The penetrating length varies depending on the application and location.

Any screw sanctioned by the equipment manufacturer will be automatically acceptable. Other screws, such as those used to attach identifying medallions, must have machine threads and have blunt ends.



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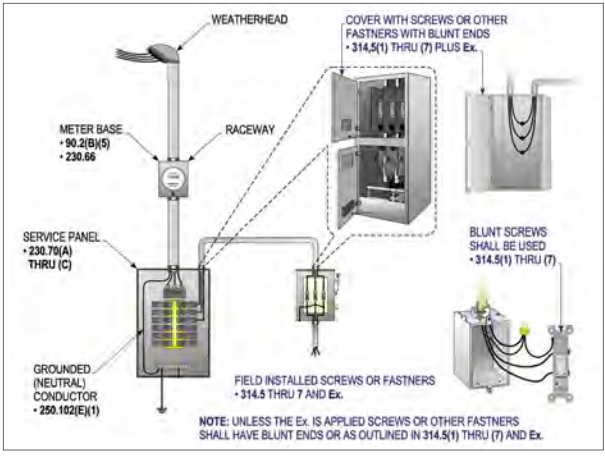

Revision/New

314.24(B)(C) Box Depth/Conductor Clearance from Devices - Rear and Side Entry

Change Summary

- The NEC has set direction on conductors entering boxes

NEC® Text

Article 314 Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Handhole Enclosures

314.24 Dimensions of Boxes.

(B) Depth of Outlet and Device Boxes with Enclosed Devices or Utilization Equipment.

(4) Conductors 12 or 10 AWG. Boxes that enclose devices or utilization equipment supplied by 12 or 10 AWG conductors shall have an internal depth that is not less than 30.2 mm ($1^3/_{16}$ in.). Where the equipment projects rearward from the mounting plane of the box by more than 25 mm (1 in.), the box shall have a depth not less than that of the equipment plus 6 mm (1/4 in.). Where wiring enters the center portion of the rear of a box opposite to the equipment, the minimum clearance shall be increased to 13 mm (1/2 in.).

(C) Clearances for Side-Wiring Entrances. Where devices or equipment are mounted in boxes having side-wiring entries, the conductors entering from the side shall be protected as covered in (1) or (2), as follows. The term *side* applies to any wall of a box other than the one opposite to the opening.

continued on page 64

Article 406.4

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- Forged brass ultra heavy-duty cover plates can withstand a beating.
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continued from page 62

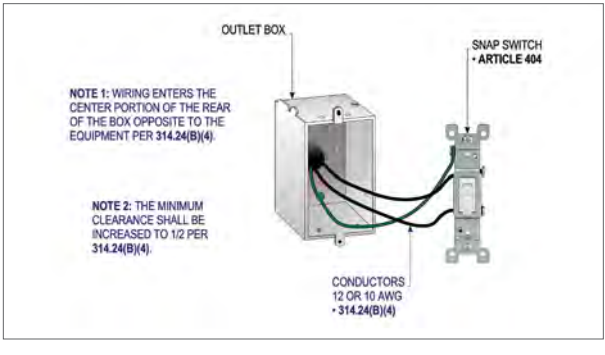
NEC® Text

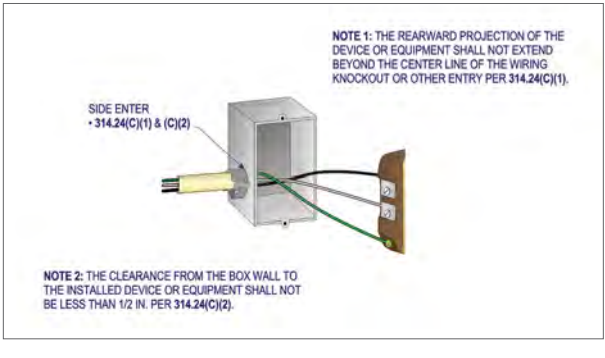
(1) The rearward projection of the device or equipment shall not extend beyond the centerline of the wiring knockout or other entry.
(2) The clearance from the box wall to the installed device or equipment shall be not less than 13 mm (1/2 in.).

Expert Analysis

A new sentence has been added at 314.24(B) to clarify that conductor sizes 12 or 10 AWG, entering from the center portion of the rear of a box opposite to the equipment, the minimum clearance shall be increased to 1/2 in.

In addition, a new subsection has been added to 314.24(C) to address the protection techniques where devices or equipment are mounted in boxes having side-wiring entries. The protection techniques include the rearward projection of the device or equipment shall not extend beyond the centerline of the wiring knockout or other entry, or the clearance from the box wall to the installed device or equipment shall not be less than 1/2 in. The term side applies to any wall of a box other than the one opposite to the opening.





Revision/New

334.15(B), 334.19 Protecting Conductors – Bushings and Sheath Length

Change Summary

- The NEC has added language intended to protect conductors.

NEC® Text

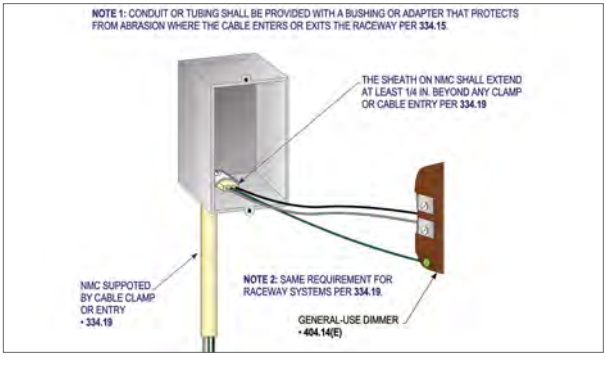
Article 334 Nonmetallic-Sheathed Cable: Types NM and NMC

334.15 Exposed Work.

(B) Protection from Physical Damage. Cable shall be protected from physical damage where necessary by rigid metal conduit, intermediate metal conduit, electrical metallic tubing, Schedule 80 PVC conduit, RTRC marked with the suffix -XW, or other approved means. Where passing through a floor, the cable shall be enclosed in rigid metal conduit, intermediate metal conduit, electrical metallic tubing, Schedule 80 PVC conduit, RTRC marked with the suffix -XW, or other approved means extending at least 150 mm (6 in.) above the floor. 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.

Type NMC cable installed in shallow chases or grooves in masonry, concrete, or adobe shall be protected in accordance with the requirements in 300.4(F) and covered with plaster, adobe, or similar finish.

334.19 Cable Entries. The sheath on nonmetallic-sheathed cable shall extend not less than 6 mm (1/4 in.) beyond any cable clamp or cable entry.



Expert Analysis

A new section has been added at 334.15 to ensure

continued on page 66

continued from page 65

protection of the insulated conductors when they enter any type of electrical component.
A new sentence has been added at 334.19 to provide consistency with other abrasion protection requirements when cable is installed in conduit or tubing.

Revision/New

404.14(D), 406.3(D) Switches and Receptacles with Push-In Terminals & Wire Types

Leviton Comment: To simplify and condense content in this guide we combine Articles 404.14(D) and 406.3(D). The text is very similar except 404.14(D) covers switches and 406.3(D) covers receptacles.

Change Summary

- Once again the NEC is addressing aluminum wire (see 210.23 for more on this). The NEC also clarifies push-in conductors used on snap switches and receptacles.

NEC® Text

Article 404 Switches
404.14 Rating and Use of Switches
(D) Snap Switch Terminations. Snap switch terminations shall be in accordance with the following:
(1) Terminals of 15-ampere and 20-ampere snap switches not marked CO/ALR shall be used with copper and copper-clad aluminum conductors only.
(2) Terminals marked CO/ALR shall be permitted to be used with copper, aluminum, and copper-clad aluminum conductors.
(3) Snap switches connected using screwless terminals of the conductor push-in type construction (also known as conductor push-in terminals) shall be installed on not greater than 15-ampere branch circuits and shall be connected with 14 AWG solid copper wire only unless listed and marked for other types of conductors.

Article 406 Receptacles, Cord Connectors and Attachment Plugs (Caps)
406.3 Receptacle Rating and Type.
(D) Receptacle Terminations. Receptacle terminations shall be in accordance with the following:
(1) Terminals of 15-ampere and 20-ampere receptacles not marked CO/ALR shall be used with copper and copper-clad aluminum conductors only.
(2) Terminals marked CO/ALR shall be permitted to

NEC® Text

be used with aluminum, copper, and copper-clad aluminum conductors.

(3) Receptacles installed using screwless terminals of the conductor push-in type construction (also known as *push-in-terminals*) shall be installed on not greater than 15-ampere branch circuits and shall be connected with 14 AWG solid copper wire only unless listed and marked for other types of conductors.

Informational Note: See UL 498, *Attachment Plugs and Receptacles,* for information regarding screwless terminals of various type constructions employed on receptacles. Screwless terminals of the separable-terminal assembly, spring-action clamp, and insulation-displacement type constructions are not classified in UL 498 as screwless terminals of the conductor push-in type construction (also known as push-in terminals).

Expert Analysis

New text has been added to address the installation of snap switches and receptacles with push-in terminal terminations. This new subsection clarifies that wiring devices rated 15 and 20 amperes are suitable for installation with copper and copper-clad aluminum as provided in the UL guide information. Terminals marked CO/ALR are suitable to be used with copper, aluminum, and copper-clad aluminum conductors. Snap switches connected using screwless terminals of the conductor push-in type construction (also known as conductor push-in terminals) shall be installed on not greater than 15-ampere branch circuits and shall be connected with 14 AWG solid copper wire only unless listed and marked for other types of conductors.

Revision

404.16(A)(B)(C)(D) Reconditioned Equipment - Switches/Dimmers

Leviton Comment: Article 404.16(A)(B)(C)(D) is covered with Article 240.2 on page 53.

Revision

406.2 Reconditioned Equipment – Receptacles, Plugs and Connectors

Leviton Comment: Article 406.2 is covered with Article 240.2 on page 53.

Revision

406.3(D) Receptacle Terminations

Leviton Comment: Article 406.3(D) is covered with Article 404.14(D) on page 66.

New

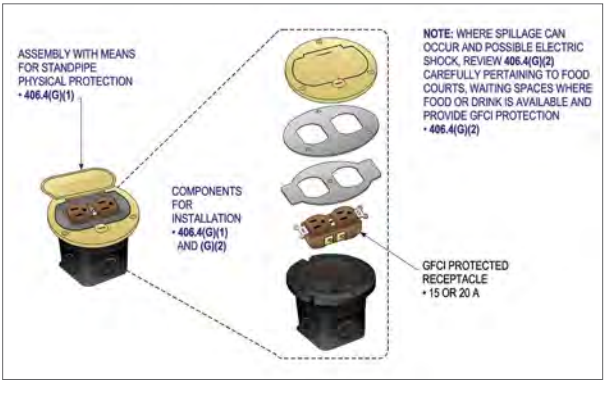
406.4(G) Protecting Floor Receptacles and GFCI Required if Located in Food Court or Transportation Areas

Change Summary

- The NEC added a new subsection that requires GFCI protection of all 125-volt, single phase, 15 and 20-Amp floor receptacles installed in specific locations to provide public protection against potential electric shock due to accidental spillage of refreshments.

NEC® Text

Article 406 Receptacles, Cord Connectors and Attachment Plugs (Caps)
406.4 General Installation Requirements.
(G) Protection of Floor Receptacles. Protection for floor receptacles shall be in accordance with the following:
(1) Physical protection of floor receptacles shall allow floor-cleaning equipment to be operated without damage to receptacles.
(2) All 125-volt, single-phase, 15- and 20-ampere floor receptacles installed in food courts and waiting spaces of passenger transportation facilities where food or drinks are allowed shall be GFCI protected.



Expert Analysis

A new subsection has been added to clarify the requirements for protection of floor receptacles. The addition of GFCI protection of all 125-volt, single-phase, 15- and 20-ampere floor receptacles installed in specified locations is intended to provide public protection against potential electric shock due to accidental spillage of refreshments.

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Leviton offers floor boxes for residential and commercial applications including food courts. Designed for ease of installation, easy access and good looks, the Leviton line of floor boxes is unmatched. Our superior performance meets or exceeds UL 514A including scrub water test.

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Poke Through Floor Boxes

Pop-Up Floor Boxes

Traditional Wood Frame Floor Boxes

- **Solutions for all floor types**
  Tile, stone, wood, laminate carpet, concrete, vinyl
- **Applications include**
  Residential, multi dwelling units, restaurants, hotels, meeting rooms, shopping malls, offices

Many finishes and configurations available

Revision/New

406.6(D) Restrictions on Wallplates with USB or Nightlight

Change Summary

- A new sentence and exception (Ex.) have been

continued on page 70

continued from page 69

accepted and added ty the CMP to address the use of spring-tension contacts with power receptacle faceplate accessories.

NEC® Text

Article 406 Receptacles, Cord Connectors and Attachment Plugs (Caps)
406.6 Receptacle Faceplates (Cover Plates).
(D) Receptacle Faceplate (Cover Plates) with Integral Night Light and/or USB Charger. A flush device cover plate that additionally provides a night light and/or Class 2 output connector(s) shall be listed and constructed such that the night light and/or Class 2 circuitry is integral with the flush device cover plate.
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.
Exception: *Effective January 1, 2026, spring-tensioned contact connections to steel receptacle terminal screws shall be permitted if the receptacle faceplate is specifically listed and identified for connection to steel receptacle terminal screws*

Expert Analysis

A new sentence has been added to clarify and provide clear prescriptive requirements on the use of spring-tensioned contacts to power receptacle faceplate accessories. These requirements do not currently exist in UL 514D.
The implementation date for the exception, is to provide time to evaluate a possible conflict with UL 498, regarding the use of steel screws to carry current, and to develop safety requirements in UL 514D for faceplate connection methods.

Leviton Solution

Captain Code says the best solution here is NOT to use these toy USB wallplate devices described in this article. For safety's sake and faster charging, offer your customers the best... ***Leviton.*** Leviton even offers Weather-Resistant USB devices.

NEW Weather-Resistant Type A/C USB In-Wall Charger

Available in 15 and 20A configurations. Weather-Resistant USB Receptacles with Type A and Type-C Ports. Type-C Port can charge maximum 3 Amps @ 5V. Type A Port can charge maximum 2.4 Amps @ 5V. Combined total of 5.1A of charging power.

Revision

406.9(A)(B) While-in-Use Cover Requirements

Change Summary

- Revision made regarding how much bubble type covers must open.

NEC® Text

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

406.9 Receptacles in Damp or Wet Locations.

(A) Damp Locations. A receptacle installed outdoors in a location protected from the weather or in other damp locations shall have an enclosure for the receptacle that is weatherproof when the receptacle is covered (attachment plug cap not inserted and receptacle covers closed).

An installation suitable for wet locations shall also be considered suitable for damp locations.

A receptacle shall be considered to be in a location protected from the weather where located under roofed open porches, canopies, marquees, and the like, and will not be subjected to a beating rain or water runoff. All 125- and 250-volt nonlocking receptacles shall be a listed weather-resistant type. 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.

Informational Note: See ANSI/NEMA WD 6–2016, Wiring Devices — Dimensional Specifications, for the types of receptacles covered by this requirement.

(B) Wet Locations.

(1) Receptacles of 15 Amperes and 20 Amperes in a Wet Location. Receptacles of 15 amperes and 20 amperes, 125 volts and 250 volts installed in a wet location shall have an enclosure that is weatherproof whether or not the attachment plug cap is inserted. An outlet box hood installed for this purpose shall be listed and shall be identified as "extra-duty." Other listed products, enclosures, or assemblies providing weatherproof protection that do not utilize an outlet box hood need not be identified extra duty. 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.

Informational Note No. 1: See ANSI/UL 514D–2016, Cover Plates for Flush-Mounted Wiring Devices, for extra-duty outlet box hoods. "Extra duty" identification and requirements are not applicable to listed receptacles, faceplates, outlet boxes, enclosures, or assemblies that are identified as either being suitable for wet locations or rated as one of the outdoor enclosure–type numbers of Table 110.28 that does not utilize an outlet box hood.

continued on page 72

continued from page 71

NEC® Text

Exception: *15- and 20-ampere, 125- through 250-volt receptacles installed in a wet location and subject to routine high-pressure spray washing shall be permitted to have an enclosure that is weatherproof when the attachment plug is removed.*

All 15- and 20-ampere, 125- and 250-volt nonlocking-type receptacles shall be listed and so identified as the weather-resistant type.

Informational Note No. 2: See ANSI/NEMA WD 6–2016, Wiring Devices — Dimensional Specifications, for receptacle configurations. The configuration of weather-resistant receptacles covered by this requirement are identified as 5-15, 5-20, 6-15, and 6-20.

Expert Analysis

A revision has been made pertaining to receptacles in damp or wet locations to require hinged covers of outlet box hoods to be installed to allow the cover to open to either 90 degrees, or fully open depending on cover type. The significance is that the covers swing can't be blocked by any obstruction.

Leviton Solution

Leviton Extra Duty While-In-Use Covers

Built to withstand the elements and tough enough to comply with 406.9(B)(1) for "Extra-Duty"

- Accommodates Decora® GFCI devices. Adapter plates are included for duplex and single receptacles
- Heavy-duty gasket protects from moisture and adds to ease of installation
- Includes two inserts to cover cord openings to prevent insects and debris from entering the cover
- Safety lock feature

Leviton Extra Duty While-In-Use Covers

Revision

406.9(C) Space Around Shower Stalls and Bathtub

Change Summary

Revision made to clarify that receptacles shall not be installed inside of the tub or shower or within a zone measured 3 Ft. (900 mm) horizontally from any outside edge of the bathtub or shower stall, which includes the space outside the bathtub or shower stall below the 8 ft. zone. For a Smart toilet, see Ex. 4 to 406.9(C).

NEC® Text

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

406.9 Receptacles in Damp or Wet Locations.

(C) Bathtub and Shower Space. Receptacles shall not be installed inside of the tub or shower or within a zone measured 900 mm (3 ft) horizontally from any outside edge of the bathtub or shower stall, including the space outside the bathtub or shower stall space below the zone. The zone also includes the space measured vertically from the floor to 2.5 m (8 ft) above the top of the bathtub rim or shower stall threshold. The identified zone is all-encompassing and shall include the space directly over the bathtub or shower stall and the space below this zone, but not the space separated by a floor, wall, ceiling, room door, window, or fixed barrier.

Exception No. 1: *Receptacles installed in accordance with 680.73 shall be permitted.*

Exception No. 2: *In bathrooms with less than the required zone, the receptacle(s) required by 210.52(D) shall be permitted to be installed opposite the bathtub rim or shower stall threshold on the farthest wall within the room.*

Exception No. 3: *Weight supporting ceiling receptacles (WSCR) shall be permitted to be installed for listed luminaires that employ a weight supporting attachment fitting (WSAF) in damp locations complying with 410.10(D).*

Exception No. 4: *In a dwelling unit, a single receptacle shall be permitted for an electronic toilet or personal hygiene device such as an electronic bidet seat. The receptacle shall be readily accessible and not located in the space between the toilet and the bathtub or shower.*

Informational Note No. 1: See 210.8(A)(1) for GFCI requirements in a bathroom.

Informational Note No. 2: See 210.11(C) for bathroom branch circuits.

Informational Note No. 3: See 210.21(B)(1) for single receptacle on an individual branch.

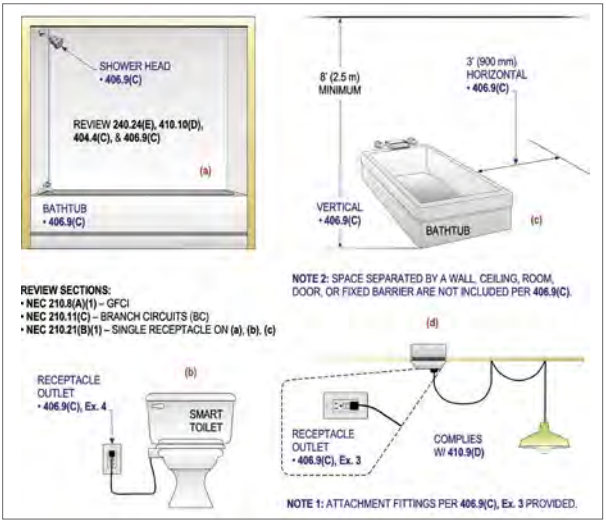
continued on page 74

continued from page 73

Expert Analysis

A revision has been made to clarify that receptacles shall not be installed inside of the tub or shower or within a zone measured 3 ft (900 mm) horizontally from any outside edge of the bathtub or shower stall, which includes the space outside the bathtub, or shower stall, or within the space below the zone.

A new exception 4 has been added to recognize, that it is quite common for a toilet to be located next to a bathtub or shower in a residential bathroom. Existing text could prevent the installation of a receptacle, that is necessary for the operation of an electronic toilet (also known as a "smart toilet") or personal hygiene device (e.g., electronic bidet seat) where a toilet is located within 3 ft (900 mm) horizontally of a bathtub or shower.



Revision

406.12 Tamper-Resistant (TR) Receptacle Requirements Expanded

Change Summary

- The places where TR receptacles are required has been revised and expanded. Among the new areas are nursing homes, fitness centers, substance abuse/rehab, foster care, psych hospitals, and areas of agricultural buildings that are accessible to the general public.

NEC® Text

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

406.12 Tamper-Resistant Receptacles. All 15- and 20-ampere, 125- and 250-volt nonlocking-type receptacles in the following locations shall be listed tamper-resistant receptacles:

(1) All dwelling units, boathouses, mobile homes and manufactured homes, including their attached and detached garages,
accessory buildings, and common areas

(2) Guest rooms and guest suites of hotels, motels, and their common areas

(3) Child care facilities

(4) Preschools and education facilities

(5) Within clinics, medical and dental offices, and outpatient facilities, the following spaces:
a. Business offices accessible to the general public
b. Lobbies and waiting spaces
c. Spaces of nursing homes and limited care facilities covered in 517.10(B)(2)

(6) Places of awaiting transportation, gymnasiums, skating rinks, fitness centers, and auditoriums

(7) Dormitory units

(8) Residential care/assisted living facilities, social and substance abuse rehabilitation facilities, and group homes

(9) Foster care facilities, nursing homes, and psychiatric hospitals

(10) Areas of agricultural buildings accessible to the general public and any common areas

Informational Note No. 1: See ANSI/NEMA WD 6-2016, Wiring Devices — Dimensional Specifications. This requirement would include receptacles identified as 5-15, 5-20, 6-15, and 6-20.

Informational Note No. 2: See NFPA 5000-2021, Building Construction and Safety Code, and the International Building Code (IBC)-2021 for more information on occupancy classifications for the types of facilities covered by this requirement.

continued on page 76

continued from page 75

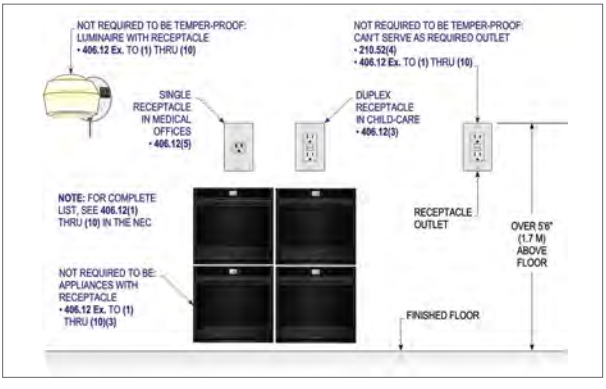
NEC® Text

Informational Note No. 3: Areas of agricultural building are frequently converted to hospitality areas. These areas can include petting zoos, stables, and buildings used for recreation or educational purposes where receptacles are installed.

Exception to (1) through (10): *Receptacles in the following locations shall not be required to be tamper resistant:*
(1) Receptacles located more than 1.7 m (5 1/2 ft) above the floor
(2) Receptacles that are part of a luminaire or appliance
(3) Where the receptacle outlet is installed within the space occupied by or designated for each appliance that, in normal use, is not easily moved from one place to another and is cord-and-plug-connected in accordance with 400.10(A)(6), (A)(7), or (A)(8) the following are permitted:
a. A single receptacle that is not readily accessible and supplies one appliance
b. A duplex receptacle that is not readily accessible and supplies two appliances
(4) Nongrounding receptacles used for replacements as permitted in 406.4(D)(2)(a)

Expert Analysis

A revision has been made to clarify the locations where tamper-resistant receptacles are required to be installed.



Leviton Solution

Leviton tamper-resistant receptacles, have proven effective in preventing electrical injuries resulting from foreign objects being inserted into receptacles. Available residential and commercial grade in 15- and 20-Amp, 125-Volt, Duplex and Decora® in several colors.

Cat. No. TR5320

Cat. No. GFNT1-W

Cat. No. T5625

New

409.70 Surge Protection for Safety Circuits in Industrial Control Panels

Change Summary

- New section calls for surge protection of safety circuits within control panels.

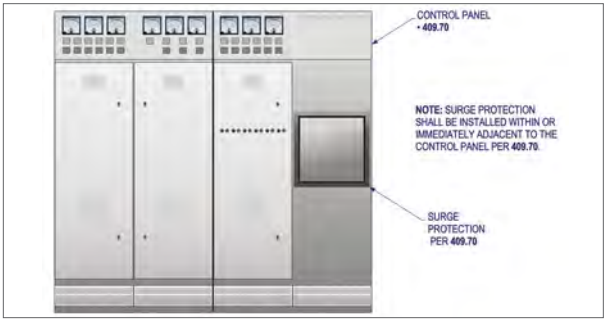
NEC® Text

Article 409 Industrial Control Panels

409.70 Surge Protection. Safety circuits for personnel protection that are subject to damage from surge events shall have surge protection installed within or immediately adjacent to the control panel.

Expert Analysis

A new section has been added to clarify that surge protection shall be installed within or immediately adjacent to the control panel to protect safety circuits for personnel protection. The surge protective devices address a documented safety issue that has been reported by the Electrical Safety Foundation.



Leviton Solution

51120-1

Type 2 Single Phase Surge Panel with 4-Mode Protection

120/240V Single Phase Panel Mount Surge Protective Device, 4-Mode Protection, 50kA Max Surge Current Rating, NEMA 1 Enclosure, UL 1449 4th Edition Type 2.

Leviton's Surge Protection Devices can be used individually or as part of a coordinated application strategy, to protect sensitive electronic equipment, in industrial, commercial and residential locations, from the stress and degradation inflicted by voltage transients. Transients are diverted away from sensitive micro circuitry, providing protection against catastrophic failure, costly downtime and data disruptions.

New

410.71 Disconnecting Means for Double-Ended Fluorescent or LED Lamps

Change Summary

- New section addresses disconnecting means for double-ended lamps — LED and Fluorescent.

NEC® Text

Article 410 Luminaires, Lampholders, and Lamps

410.71 Disconnecting Means for Fluorescent or LED Luminaires that Utilize Double-Ended Lamps.

(1) General. In indoor locations other than dwellings and associated accessory structures, fluorescent or LED luminaires that utilize double-ended lamps and contain ballast(s) or LED driver(s) that can be serviced in place shall have a disconnecting means either internal or external to each luminaire. For existing installed luminaires without disconnecting means, at the time a ballast or LED driver is added or replaced a disconnecting means shall be installed. The line side terminals of the disconnecting means shall be guarded.

Exception No. 1: *A disconnecting means shall not be required for luminaires installed in hazardous (classified) location(s).*

Exception No. 2: *A disconnecting means shall not be required for luminaires that provide emergency illumination required in 700.16.*

Exception No. 3: *For cord-and-plug-connected luminaires, an accessible separable connector or an accessible plug and receptacle shall be permitted to serve as the disconnecting means.*

Exception No. 4: *Disconnecting means shall not be required for every luminaire in a building area if all of the following conditions apply:*
(1) More than one luminaire is installed in the building area
(2) The luminaires are not connected to a multiwire branch circuit
(3) The design of the installation includes disconnecting means
(4) The building area will not be left in total darkness should only one disconnect be opened

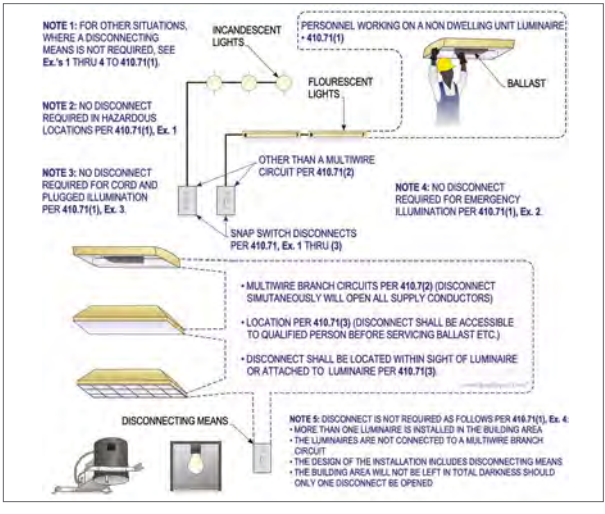
(2) Multiwire Branch Circuits. When connected to multiwire branch circuits, the disconnecting means shall simultaneously break all the supply conductors to the ballast, including the grounded conductor.

(3) Location. The disconnecting means shall be located so as to be accessible to qualified persons before servicing or maintaining the ballast. Where the disconnecting means is external to the luminaire, it shall be a single device, and it shall be attached to the luminaire or the luminaire shall be located within sight of the disconnecting means.

Expert Analysis

A new section has been added to address the disconnecting means requirements for fluorescent or LED luminaires that utilize double-ended lamps. The original requirements for double-ended lamp fluorescent ballast replacements were due to an

accident. Lighting systems have evolved since that time, and fluorescent lamps are being discontinued and replaced with LED lamps to meet energy conversion requirements. The additional requirements have been added to address hazards that would exist with either style luminaire. The requirements have been expanded to address LED type luminaires that are equivalent to fluorescent luminaires that utilize double-ended lamps.



New

411.3 Voltage Limitations on Low-Voltage Lighting

Change Summary

- Voltage limitations on Low-voltage lighting and differentiates when the lighting is likely to come in contact with water.

NEC® Text

Article 411 Low-Voltage Lighting

411.3 Voltage Limitations. The operating voltage of low-voltage lighting systems and their associated components shall not exceed 30 volts ac or 60 volts dc. If wet contact is likely to occur, the operating voltage of low-voltage lighting systems and their associated components shall not exceed 15 volts ac or 30 volts dc.

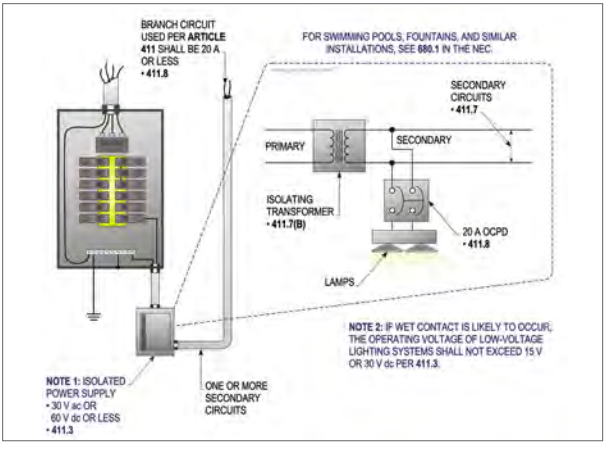
Informational Note: See 680.1 for swimming pools, fountains, and similar installations.

continued on page 80

continued from page 79

Expert Analysis

A new section has been added to address the voltage limitations for low-voltage lighting systems and their associated components.



New

422.18(B) Locating Paddle Fans in Bathrooms

Change Summary

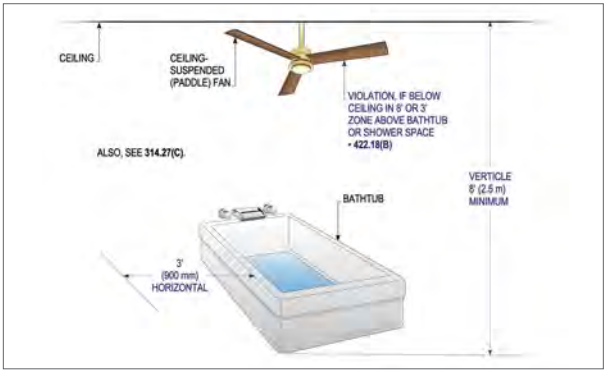
- The NEC has set boundary limitations between paddle fans and bathtub or shower.

NEC® Text

Article 422 Appliances
422.18 Ceiling-Suspended (Paddle) Fans.
(B) Location. No metal parts of ceiling-suspended (paddle) fans in bathrooms and shower spaces shall be located within a zone measured 900 mm (3 ft) horizontally and 2.5 m (8 ft) vertically from the top of the bathtub rim or shower stall threshold. This zone is all-encompassing and shall include the space directly over the tub or shower stall.

Expert Analysis

A new subsection has been added to address the requirements pertaining to ceiling-suspended (paddle) fans located in bathrooms and shower spaces.



New

424.48 Requirements for Heating Cables in Walls

Change Summary

- It seems that heating cables are now being installed in walls, so the NEC is addressing it with new requirements.

NEC® Text

Article 424 Fixed Electric Space-Heating Equipment

424.48 Installation of Cables in Walls. Unless prohibited by 424.38(B), heating cables and cable sets shall be permitted to be installed in, on, or behind walls provided all of the following are met:

(1) Heating cables and cable sets shall be identified as suitable for installation in, on, or behind walls.

(2) Heating cables and cable sets shall be GFCI protected.

(3) Grounding means, such as copper braid, metal sheath, or other approved means, shall be provided.

(4) Heating cables and cable sets shall be AFCI protected.

(5) Heating cables and cable sets shall be permitted to be installed no more than 1.2 m (4 ft) above the floor.

This requirement shall become effective January 1, 2026.

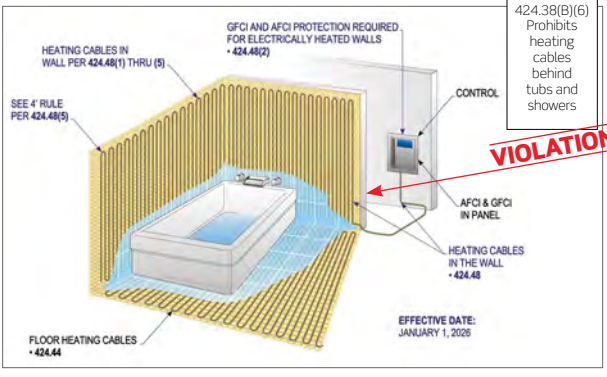
Expert Analysis

A new section has been added to address the requirements for installation of heating cables in,

continued on page 82

continued from page 81

on, or behind walls. Also, review 424.93(C) for similar installation requirements.



Revision

430.6(A) Sizing Conductors and Switches for Motors

Change Summary

- The NEC has made a revision to clarify when to use table values or nameplate when sizing conductors, switches and other electrical apparatus for motors.

NEC® Text

Article 430 – Motors, Motor Circuits and Controllers
430.6 Conductor Ampacity and Motor Rating Determination.
(A) General Motor Applications.
(1) Table Values. Other than for motors built for low speeds (less than 1200 RPM) or high torques, and for multispeed motors, the values given in Table 430.247, Table 430.248, Table 430.249, and Table 430.250 shall be used instead of the actual current rating marked on the motor nameplate to determine the following:
(1) Ampacity of conductors
(2) Current ratings of switches
(3) Current ratings of branch-circuit short-circuit and ground-fault protection
Where a motor is marked in amperes, but not horsepower, the horsepower rating shall be assumed to be that corresponding to the value given in Table 430.247, Table 430.248, Table 430.249, and Table 430.250, interpolated if necessary.
Exception No. 1: *Multispeed motors shall be in accordance with 430.22(B) and 430.52.*
Exception No. 2: *For equipment that employs a shaded-pole or permanent-split capacitor-type fan or blower motor that is marked with the motor type,*

NEC® Text

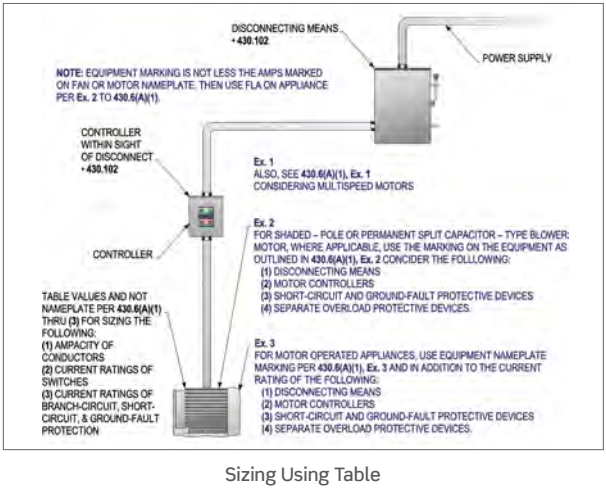
and the marking on the equipment nameplate is not less than the current marked on the fan or blower motor nameplate, the full-load current marked on the nameplate of the appliance shall be used to determine the ampacity of branch-circuit conductors, in addition to the current ratings of the following:
(1) Disconnecting means
(2) Motor controllers
(3) Short-circuit and ground-fault protective devices
(4) Separate overload protective devices

Exception No. 3: *For a listed motor-operated appliance that is marked with both motor horsepower and full-load current, the motor full-load current marked on the nameplate of the appliance shall be used instead of the horsepower rating on the appliance nameplate to determine the ampacity of branch-circuit conductors, in addition to the current ratings of the following:*
(1) Disconnecting means
(2) Motor controllers
(3) Short-circuit and ground-fault protective devices
(4) Separate overload protective devices

(2) Nameplate Values. The motor nameplate current ratings shall be used to determine the values for the following:
(1) Separate motor overload protection
(2) For motors built for low speeds (less than 1200 RPM), high torques, canned pumps, or multispeed motors, the following:
a. Ampacity of conductors
b. Current ratings of switches
c. Current ratings of branch-circuit short-circuit and ground-fault protection
(3) Large motors exceeding the values in Part XIV shall use the nameplate current rating for conductor sizing.

Expert Analysis

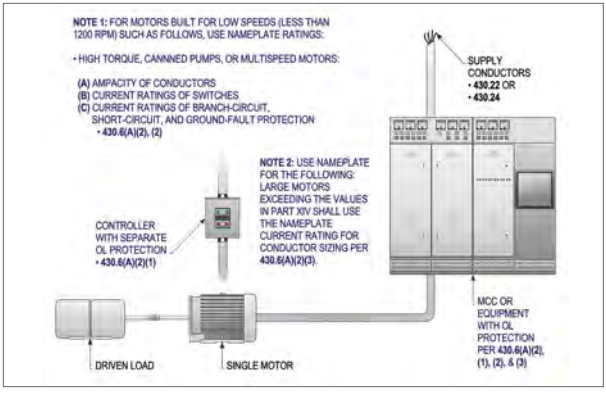
A revision has been made to clarify the requirements when applying nameplate or table values for general motor applications.



Sizing Using Table

continued on page 84

continued from page 83



Sizing Using Nameplate

Leviton Solution

Powerswitch® Manual Motor Controllers

Heavy-duty horsepower rated switches capable of providing manual ON/OFF control to higher motor loads than standard toggle switches. Built for commercial and industrial installations up to 60 Amps, Leviton offers a line of industrial grade AC single-phase and three-phase manual motor controllers with a continuous current rating at all voltages up to 600V AC and maximum horsepower ratings of 30HP.

Our 30 Amp and 40 Amp motor switches are UL 508 listed "Suitable as Motor Disconnect", which means they may be used in place of a standard disconnect switch in line-of-sight applications in factory settings.

Revision

440.11 AC/Refrigeration Disconnect Requires Lock or Tool to Access

Change Summary

- Where the disconnecting means is readily accessible to an unqualified person per 440.11, a tool to open is required, or be capable of being locked.

NEC® Text

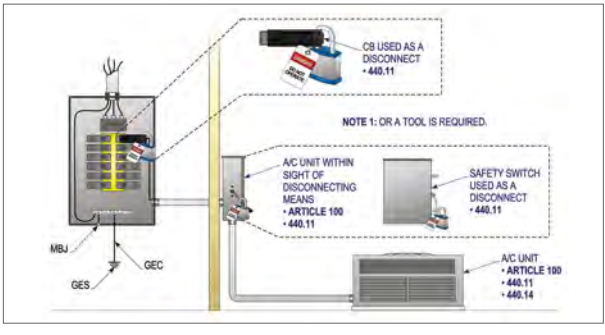
Article 440 – Air-Conditioning and Refrigeration Equipment

NEC® Text

440.11 General. Disconnecting means shall be capable of disconnecting air-conditioning and refrigerating equipment, including motor-compressors and controllers, from the circuit conductors. If the disconnecting means is readily accessible to unqualified persons, any enclosure door or hinged cover of a disconnecting means enclosure that exposes energized parts when open shall require a tool to open or be capable of being locked.

Expert Analysis

A new sentence has been added to address the protection of unqualified persons in the vicinity of this equipment. Section 440.14 already addresses location.



Revision

445.18(A)(B) Generator Disconnect - Parallel Installations and Location

Change Summary

- Revision clarifies the separation of an emergency shutdown and a disconnecting means.

NEC® Text

Article 445 – Generators
445.18 Disconnecting Means.
(A) Disconnecting Means. Generators other than cord-and-plug-connected portable generators shall have one or more disconnecting means. Each disconnecting means shall simultaneously open all associated ungrounded conductors. Each disconnecting means shall be lockable open in accordance with 110.25.
The disconnecting means shall be permitted to be located within the generator behind a hinged cover, door, or enclosure panel. Where the generator disconnecting means

continued on page 86

continued from page 85

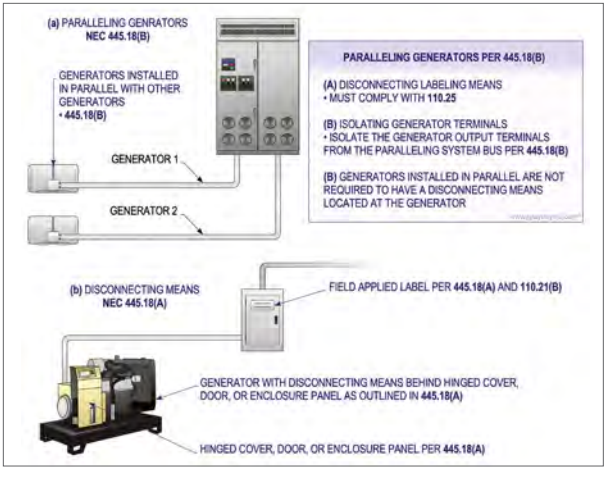
NEC® Text

is located within the generator, a field applied label meeting the requirements of 110.21(B) shall be provided indicating the location of the generator disconnecting means.

(B) Generators Installed in Parallel. Where a generator is installed in parallel with other generators, the provisions of 445.18(A) shall be capable of isolating the generator output terminals from the paralleling system bus. The disconnecting means shall not be required to be located at the generator.

Expert Analysis

Modifications are made to clarify the permitted locations for emergency shutdown devices and marking. Section 445.18(B) is revised from "paralleling equipment" to "paralleling system bus" to clarify the intent of the requirement.



Leviton Solution

Powerswitch® curve top safety disconnect switches with Inform™ technology provides local and remote monitoring

- Curve top design pushes water and debris towards the side of the device and leaves less area for buildup
- *How does Inform work?* Sensors are embedded into Leviton devices to monitor device health. Data from sensors can be viewed locally or remotely via Wi-Fi or Modbus RTU
- Local monitoring — Green LEDs on the cover provide a visual indication that the device is operating under normal conditions, flash red if there is a failure, or flash yellow if there is a buildup of liquid inside of the enclosure that may lead to a potential failure

- Remote monitoring — includes data like liquid accumulation, enclosure temperature and humidity, line- and load-side voltage values, ground continuity, and more. Access this data 24/7 and get notified of any abnormal operating conditions via the Inform™ app (mobile or laptop) or your existing automation system.

Revision

445.19(B)(C) Emergency Shutdown of Generator Prime Mover

Change Summary

- This article separately addresses the emergency generator shutdown in one-and-two family houses and OTHER THAN one-and-two family houses. For other than 1-or-2 family houses a remote emergency stop switch to shut the prime mover shall be located outside the equipment room or enclosure. For 1-or-2 family houses the emergency shutdown shall be located outside the dwelling unit in a readily accessible location, except for cord-and-plug connected generators.

NEC® Text

Article 445 – Generators

445.19 Emergency Shutdown of Prime Mover.

(B) Remote Emergency Shutdown. For other than one- and two-family dwelling units, generators with greater than 15 kW rating shall be provided with a remote emergency stop switch to shut down the prime mover. The remote emergency stop switch shall be located outside the equipment room or generator enclosure at a readily accessible location and shall also meet the requirements of 445.19(A)(1) and (A)(2).

The remote emergency stop switch shall be permitted to be mounted on the exterior of the generator enclosure. The remote emergency stop switch shall be labeled Generator Emergency Shutdown, and the label shall meet the requirements of 110.21(B).

(C) Emergency Shutdown in One- and Two-Family Dwelling Units. For other than cord-and-plug-connected portable generators, an emergency shutdown device shall be located outside the dwelling unit at a readily accessible location and shall also meet the requirements of 445.19(A)(1) and (A)(2).

An emergency shutdown device mounted on the exterior of the generator enclosure shall be permitted to satisfy the requirements of this section. The shutdown device shall be marked as the Generator Emergency Shutdown, and the

continued on page 88

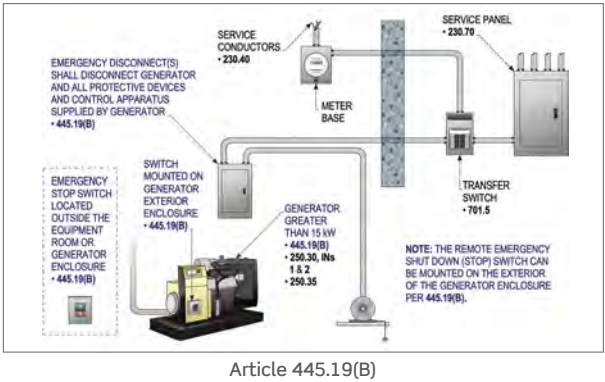
continued from page 87

NEC® Text

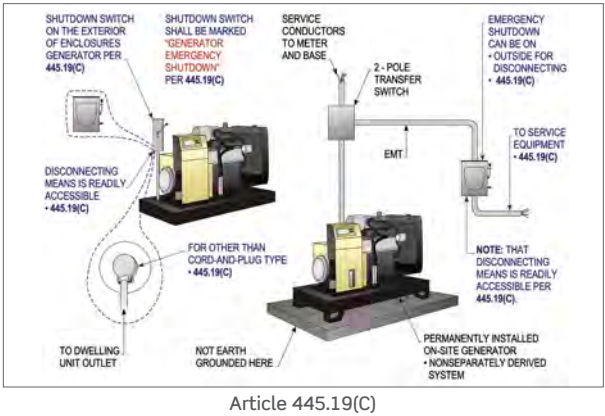
label shall meet the requirements of 110.21(B).

Expert Analysis

A revision has been made to separate the generator emergency shutdown and disconnect requirements for clarity. Additional modifications are made to clarify the permitted locations for emergency shutdown devices and marking.



Article 445.19(B)



Article 445.19(C)

New

495 Equipment Over 1000 Volts ac, 1500 Volts dc

Change Summary

- The NEC has added this new article pertaining to equipment over 1000 volts AC and 1500 volts DC.

Article 495 – Equipment Over 1000 Volts ac, 1500 Volts dc, Nominal
Part I. General.
495.1 Scope.
495.2 Reconditioned Equipment.
495.3 Other Articles.
Part II. Equipment - Specific Provisions.
495.22 Isolating Means.
495.23 Voltage Regulators.
495.24 Minimum Space Separation.
495.25 Backfeed.
Part III. Equipment - Switchgear and Industrial Control Assemblies.
495.30 General.
495.31 Arrangement of Devices in Assemblies.
495.32 Guarding of Energized Parts Within a Compartment.
495.23 Guarding of Energized Parts Operating at 1000 Volts, Nominal, or Less Within Compartments.
495.34 Clearance for Cable Conductors Entering Enclosure.
495.35 Accessibility of Energized Parts.
495.37 Equipment Grounding Connections.
495.38 Door Stops and Cover Plates.
495.39 Gas Discharge from Interrupting Devices.
495.40 Visual Inspection Windows.
495.41 Location of Industrial Control Equipment.
495.42 Interlocks - Interrupting Switches.
495.43 Storage Energy for Opening.
495.44 Fused Interrupter Switches.
495.45 Circuit Breakers - Interlocks.
495.46 Circuit Breaker Locking.
495.47 Switchgear Used as Service Equipment.
495.48 Substation Design, Documentation, and Required Diagram.
495.49 Reconditioned Switchgear.
Part IV. Mobile and Portable Equipment.
495.61 General.
495.62 Overcurrent Protection.
495.63 Enclosures.
495.64 Collector Rings.
495.65 Power Cable Connections to Mobile Machines.
495.66 High Voltage Portable Cable for Main Power Supply.
Part V. Boilers.
495.70 General.
495.71 Electrical Supply System.
495.72 Branch-Circuit Requirements.

continued on page 90

continued from page 89

NEC® Text

495.73 Pressure and Temperature Limit Control
495.74 Bonding.

Expert Analysis

This new article is very broad, lengthy, and specific to equipment over 1000 volts AC and 1500 volts DC. Due to space limitations in this guide, we can't cover this article in its entirety. If you work with equipment with these higher voltages, we recommend that you look at the actual NFPA 70.

New

530 Motion Picture and Television Studios and Remote Locations

Change Summary

- Article 530 had many changes for the 2023 Code Cycle including the addition of Part III. Portable Equipment in Support Areas. Most electrical professionals reading this guide don't often work in this area, so we cover it at a very high level. If you do work in this area, we suggest you review the article from the NFPA70.

NEC® Text

Article 530 Motion Picture and Television Studios and Remote Locations.
Part III. Portable Equipment in Support Areas.
530.41 Restricted Public Access
530.42 Overcurrent Protection for Portable Cables.
530.43 Portable Generators.
530.44 Ground-Fault Circuit-Interrupter (GFCI) Protection.
530.45 Production Vehicles and Trailers.
530.46 Protection.

Expert Analysis

A new Part III has been added to Article 530 that covers portable equipment in support areas.

Leviton Solution

Leviton makes a full line of Cam Connectors and Portable GFCI devices.

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Revision

551.71(A)(B)(C)(F) Receptacle Requirements at RV Parks

Change Summary

- The NEC now requires the receptacles in RV parks to be weather-resistant.

NEC® Text

Article 551 Recreational Vehicles and Recreational Vehicle Parks

551.71 Type Receptacles Provided.

(A) 20-Ampere. Every recreational vehicle site with electrical supply shall be equipped with recreational vehicle site supply equipment with at least one 20-ampere, 125-volt weather-resistant receptacle. This receptacle, when used in recreational vehicle site electrical equipment shall not be required to be tamper-resistant in accordance with 406.12.

(B) 30-Ampere. A minimum of 70 percent of all recreational vehicle sites with electrical supply shall each be equipped with a 30-ampere, 125-volt weather-resistant receptacle conforming to 551.46(C)(1). The supply shall be permitted to include additional receptacle configurations conforming to 551.81. The remainder of all recreational vehicle sites with electrical supply shall be equipped with one or more of the receptacle configurations conforming to 551.81.

(C) 50-Ampere. A minimum of 20 percent of existing and 40 percent of all new recreational vehicle sites with electrical supply, shall each be equipped with a 50-ampere, 125/250-volt weather-resistant receptacle conforming to the configuration as identified in Figure 551.46(C)(1). Every recreational vehicle site equipped with a 50-ampere receptacle shall be also equipped with a 30-ampere, 125-volt receptacle conforming to Figure 551.46(C)(1).

continued on page 92

continued from page 91

NEC® Text

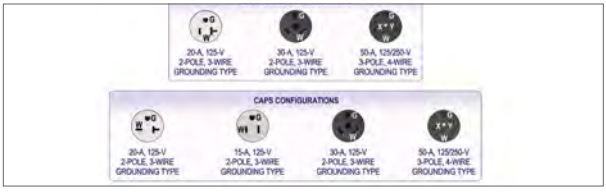
These electrical supplies shall be permitted to include additional receptacles that have configurations in accordance with 551.81. The weather-resistant requirement for 50-ampere, 125/250-volt receptacles shall become effective January 1, 2026.

Informational Note: The percentage of 50-ampere sites required by 551.71 could be inadequate for seasonal recreational vehicle sites serving a higher percentage of recreational vehicles with 50-ampere electrical systems. In that type of recreational vehicle park, the percentage of 50-ampere sites could approach 100 percent.

(F) GFCI Protection

(2) Receptacles Installed in Recreational Vehicle Site Equipment.

Ground-fault circuit-interrupter protection shall only be required for 125-volt, single-phase, 15 and 20-ampere receptacles



Expert Analysis

A revision has been accepted that covers requirements for 30 and 50-ampere receptacles that requires them to be weather-resistant and conform to Figure 551.46(C)(1) in the NEC. The weather-resistant requirement for the 50-ampere receptacles become effective January 1, 2026.

Leviton Note: Looking carefully at the language used in this article it says "shall each be equipped with a XX-amp, YYY volt weather-resistant receptacle" and additional receptacles are permitted as long as they conform to 551.81. However the article doesn't say that these additional receptacles must be WR, nor does 551.81.
In addition, the WR requirement for 50 Amp takes effect Jan. 1, 2026, however no grace period was given for the 30 Amp receptacle.

Leviton Solution

For RV connection, Leviton offers receptacles to comply with requirements of Article 551.71 Weather-Resistant GFCI Receptacles

Receptacles at RV sites can take a beating. Leviton's SmartlockPro® Weather-Resistant (WR) GFCI receptacles are up to the challenge. They are UL Listed weather-resistant to comply with Section 551.71(A) of the National Electrical Code®. Constructed with UV stabilized thermoplastic for high cold impact resistance, the devices feature stainless steel straps and mounting screws. Rain or shine, Leviton offers products to meet all your outdoor needs.

Important: *Covers must be used with WR GFCI receptacles in damp or wet locations per NEC Section 406.9(B)(1).*

Cat. No. GFWR2

20-Amp, 125-Volt, Weather-Resistant. Self-Test Receptacle

Cat. No. W7313

30-Amp, 125-Volt, Industrial Grade Flush Mount Weather-Resistant Receptacle

Cat. No. W0279

50-Amp 125/250-Volt, Industrial Grade Flush Mount Weather-Resistant Receptacle

Revision

555.4 Service Equipment Location for a Floating Structure

Change Summary

- Revision clarifies the distance for the service equipment location and height above the electrical datum plane.

NEC® Text

Article 555 Marinas, Boatyards, Floating Buildings, and Commercial and Noncommercial Docking Facilities

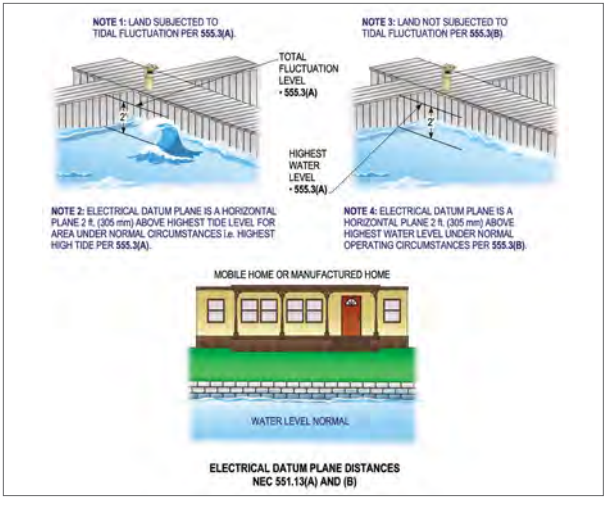
555.4 Location of Service Equipment. The service equipment for a floating building, dock, or marina shall be located on land no closer than 1.5 m (5 ft) horizontally from and adjacent to the structure served, but not on or in the structure itself or any other floating structure. Service equipment shall be elevated a minimum of 300 mm (12 in.) above the electrical datum plane.

Expert Analysis

A revision has been made to clarify the distance for the service location and height above the electrical datum plane to promote electrical safety and enforceability. In addition, the new language will provide consistency between similar requirements in Articles 682 and 555.

continued on page 94

continued from page 93



New

555.14 Equipotential Planes and Bonding of Equipotential Planes in Marinas

Change Summary

- New article defines and explains Equipotential Planes. Please note that it is different than an Electrical Datum Plane.

NEC® Text

Article 555 Marinas, Boatyards, Floating Buildings, and Commercial and Noncommercial Docking Facilities

555.14 Equipotential Planes and Bonding of Equipotential Planes. An equipotential plane shall be installed where required in this section to mitigate step and touch voltages at electrical equipment. The parts specified in this section shall be bonded together and to the electrical grounding system. The bonding conductor shall be solid copper conductors; insulated, covered, or bare; not smaller than 8 AWG.

(A) Areas Requiring Equipotential Planes. Equipotential planes shall be installed adjacent to all outdoor service equipment or disconnecting means that control equipment in or on water where the following conditions exist:

(1) Where the system voltage exceeds 250 volts to ground

(2) Where the equipment is located within 3 m (10 ft) of the body of water

The equipotential plane shall include all metallic enclosures

continued on page 96

Article 555.36

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continued from page 94

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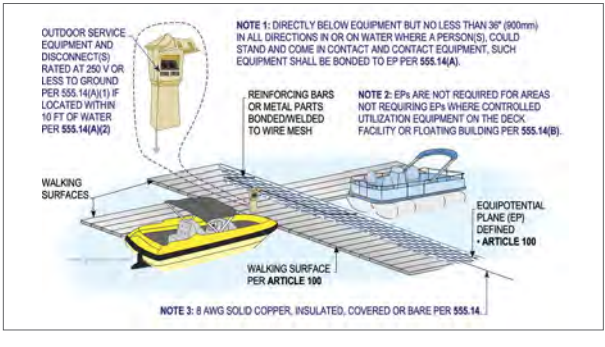
and controls that are likely to become energized and are accessible to personnel. The equipotential plane shall encompass the area around the equipment and shall extend from the area directly below the equipment out not less than 900 mm (36 in.) in all directions from which a person would be able to stand and come in contact with the equipment.

(B) Areas Not Requiring Equipotential Planes. Equipotential planes shall not be required for the controlled utilization equipment on the docking facility or floating building supplied by the service equipment or disconnecting means.

Expert Analysis

A revision has been made to clarify that enhanced safety will be achieved by requiring an equipotential plane to mitigate step and touch voltages for electrical equipment that supply power to equipment located at or on docks. In addition, this section correlates with section 682.33 with the same title.



New

555.15 Replacement of Electrical Equipment at Marinas

Change Summary

- New article addresses requirements for modified or replaced equipment at a docking facility. They need to be Code compliant, and inspection of the circuit is required by a qualified person.

NEC® Text

Article 555 Marinas Boatyards, Floating Buildings, and Commercial and Noncommercial Docking Facilities

555.15 Replacement of Equipment. When modifications

NEC® Text

or replacements of electrical enclosures, devices, or wiring methods are necessary on a docking facility, they shall be required to comply with the requirements of this Code and the installation shall require an inspection of the circuit. Existing equipment that has been damaged shall be identified, documented, and repaired by a qualified person to the minimum requirements of the edition of this Code to which it was originally installed.

Informational Note: NFPA 303-2021, Fire Protection Standard for Marinas and Boatyards, is a resource for guiding the electrical inspection of a marina.

Expert Analysis

A new section has been added to address the requirements for modified or replaced equipment including an inspection of the circuit. Any damage found must be repaired. The goal is to eliminate defects that could contribute to electric shock or drowning. The new language does not require the entire circuit to be brought into compliance with the current code, only the replaced electrical equipment that was originally modified or changed.

New

555.36(C) Emergency Disconnect for Shore Power on Docks

Change Summary

- New subsection requiring emergency disconnect and its location.

NEC® Text

Article 555 Marinas Boatyards, Floating Buildings, and Commercial and Noncommercial Docking Facilities

555.36 Disconnecting Means for Shore Power Connection(s).

(C) Emergency Electrical Disconnect. Each marina power outlet or enclosure that provides shore power to boats shall be provided with a listed emergency shutoff device or electrical disconnect that is clearly marked "Emergency Shutoff" in accordance with 110.22(A). The emergency shutoff device or electrical disconnect shall be within sight of the marina power outlet or other enclosure that provides shore power to boats, readily accessible, externally operable, manually resettable, and listed for use in wet locations.

continued on page 98

continued from page 97

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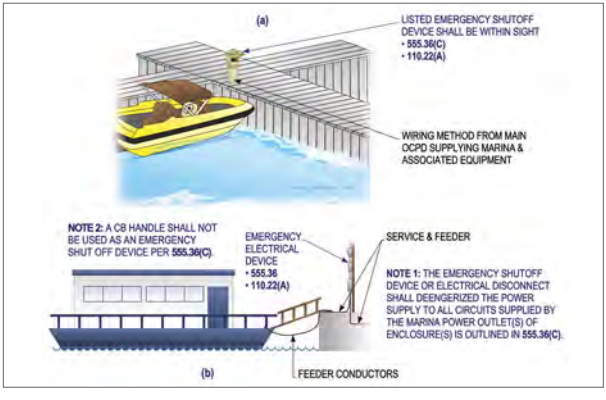
NEC® Text

The emergency shutoff device or electrical disconnect shall de-energize the power supply to all circuits supplied by the marina power outlet(s) or enclosure(s) that provide shore power to boats. A circuit breaker handle shall not be used for this purpose.

Expert Analysis

A new subsection has been added to require an emergency disconnect within sight of the marina power outlet or enclosure providing shore power to a boat. This will allow bystanders to quickly de-energize power to the boat in an emergency.



Revision/New

625.40 Electric Vehicle Branch Circuit
625.42(A)(B) Sizing EVSE Load According to Energy Management System
625.43 EVSE Disconnecting Means

Change Summary

- Electric Vehicle Supply Equipment (EVSE) branch circuit requirements have been modified to allow for more than 1 EVSE as long as an Energy Management System (EMS) is used.

NEC® Text

Article 625 Electric Vehicle Power Transfer System
625.40 Electric Vehicle Branch Circuit. Each outlet installed for the purpose of supplying EVSE greater than 16 amperes or 120 volts shall be supplied by an individual branch circuit.

continued on page 100

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continued from page 98

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Exception: *Branch circuits shall be permitted to feed multiple EVSE's as permitted by 625.42(A) or (B)*

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

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

(B) EVSE with Adjustable Settings. EVSE with restricted access to an ampere adjusting means complying with 750.30(C) shall be permitted. If adjustments have an impact on the rating label, those changes shall be in accordance with manufacturer's instructions, and the adjusted rating shall appear on the rating label with sufficient durability to withstand the environment involved. EVSE as referenced shall be permitted to have ampere ratings that are equal to the adjusted current settings.

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

Leviton Note: WPTE stands for Wireless Power Transfer Equipment

Expert Analysis

One EVSE can consume a large portion of an electric panels amperage, and two or more EVSE's can exceed the panels output. So the solution is either a very expensive service and possibly utility upgrade, or an energy management system that is smart enough to alternate current to each EVSE, or limit current to each EVSE. However the EMS doles out the juice, it does so where it doesn't exceed the amperage the circuit was sized for.

Leviton Solution

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Revision/New

625.49 Bi-Directional EVSE Power – "Island Mode"

Change Summary

- The NEC touched on bi-directional power from Electric Vehicles (EVs) previously in the Code. Now the NEC has coined the term "Island Mode".

NEC® Text

Article 625 Electric Vehicle Power Transfer System

625.49 Island Mode. EVPE and bidirectional EVSE that incorporate a power export function shall be permitted to be part of an interconnected power system operating in island mode.

Expert Analysis

This article addressing bidirectional power from EV's takes us a step closer to the day when electric vehicles can power our homes during a power failure or store solar energy during the day to be used at night.

New

630.8 GFCI Protection for Receptacles Used for Hand Tools in Welding Areas

Change Summary

- New subsection requiring GFCI protection for receptacles powering hand tools and portable lighting in welding areas.

NEC® Text

Article 630 Electric Welders

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

Expert Analysis

A new section has been added to require GFCI protection for personnel for all electric welder applications. Elevated risks exist in areas where welders are used, and this requirement adds the necessary safety.

Revision/New

680.5(A)(B(C) GFCI and SPGFCI for Swimming Pools and Similar Installations

Change Summary

- New subsection requiring Ground Fault protection beyond that required in 210.8. In addition, a new Special Purpose Ground-Fault Circuit-Interrupter (SPGFCI) is being introduced for circuits above 150 volts to ground.

NEC® Text

Article 680 Swimming Pools, Fountains, and Similar Installations

680.5 Ground-Fault Circuit-Interrupter Protection (GFCI) and Special Purpose Ground-Fault Circuit-Interrupter (SPGFCI) Protection.

(A) General. The GFCI and SPGFCI requirements in this article, unless otherwise noted, are in addition to the requirements in 210.8.

(B) 150 Volts or Less to Ground. Where required in this

continued on page 104

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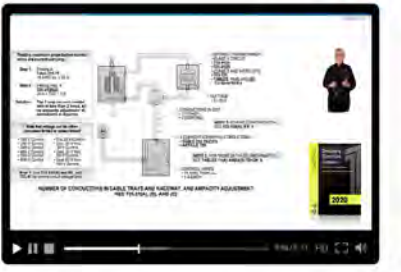

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Illustrated Code Changes explains the major changes in the 2023 National Electrical Code and can be used as a guide for fast and easy reference. These changes are presented in numerical order to correlate with the Articles and Sections as they appear in the 2023 National Electrical Code and are also illustrated to give a more detailed description. Where appropriate, reasons for revisions and new articles are given, along with what kind of impact such changes will have on manufacturers, designers, installers, and inspectors.

continued from page 102

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NEC® Text

article, ground-fault protection of receptacles and outlets on branch circuits rated 150 volts or less to ground and 60 amperes or less, single- or 3-phase, shall be provided with a Class A GFCI.

Exception: *Receptacles and outlets that are part of listed equipment with ratings not exceeding the low-voltage contact limit that are supplied by listed transformers or power supplies that comply with 680.23(A)(2) shall not be required to be provided with ground-fault protection.*

Informational Note: The high leg of a 120/240-volt 4-wire delta-connected system, and the two ungrounded phases of a corner-grounded delta system have a voltage to ground greater than 150 volts, exceeding the limit for a Class A GFCI.

(C) Above 150 Volts to Ground. Where required in this article, ground-fault protection of receptacles and outlets on branch circuits operating at voltages above 150 volts to ground, not exceeding 480 volts phase-to-phase, single- or 3-phase, shall be provided with SPGFCI protection not to exceed 20-mA ground-fault trip current.

Informational Note: See UL 943C, *Outline of Investigation for Special Purpose Ground-Fault Circuit Interrupters,* for information on Classes C, D, and E ground-fault circuit interrupters

Expert Analysis

A revision has been made to clarify the requirements for ground-fault protection to protect personnel from shock hazards. The ground-fault circuit-interrupter protection (GFCI) and special purpose ground-fault circuit-interrupter protection (SPGFCI), unless otherwise noted, are in addition to the requirements in 210.8, which address the requirements for 150 volts or less to ground and above 150 volts to ground.

Revision/New

680.10 Incorporating Heat Pumps into Swimming Pool Circulation Equipment

Change Summary

- New subsection addressing the use of heat pumps and associated apparatus for swimming pool installations.

NEC® Text

Article 680 Swimming Pools, Fountains, and Similar Installations

680.10 Electric Pool Water Heaters Incorporating Resistive Heating Elements and Electrically Powered Swimming Pool Heat Pumps and Chillers.

(B) Electrically Powered Swimming Pool Heat Pumps

continued on page 106

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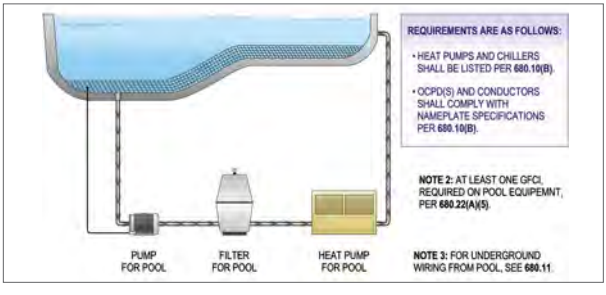
continued from page 104

NEC® Text

and Chillers. Electrically powered swimming pool heat pumps and chillers using the circulating water system and providing heating, cooling, or both, shall be listed and rated for their intended use. The ampacity of the branch-circuit conductors and the rating or setting of overcurrent protective devices shall be sized to comply with the nameplate.

Expert Analysis

A new subpart has been added to clarify the requirements for electrically powered swimming pool heat pumps and chillers.



Revision/New

680.12(B) GFCI Protected Receptacle Required in Pool Equipment Room

Change Summary

- New subpart addresses GFCI protection for receptacles installed in pool equipment rooms, vaults and pits.

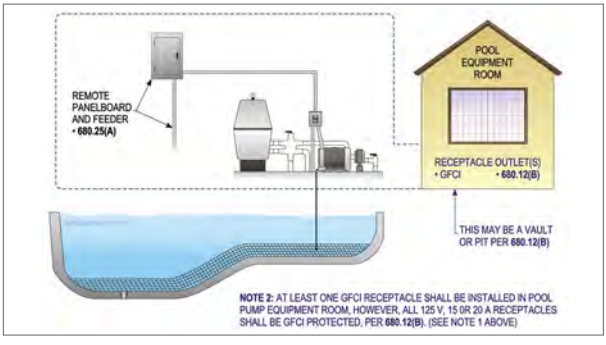
NEC® Text

Article 680 Swimming Pools, Fountains, and Similar Installations
680.12 Equipment Rooms, Vaults, and Pits.
(B) Receptacles. At least one GFCI-protected 125-volt, 15- or 20-ampere receptacle supplied from a general purpose branch circuit shall be located within an equipment room. All other receptacles supplied by branch circuits rated 150 volts or less to ground within an equipment room and any receptacles supplied by a branch circuit rated 150 volts or less to ground in a vault or pit shall be GFCI protected.

Expert Analysis

A new subpart has been relocated from 680.22(A)(5) to clarify that this requirement would only apply to an equipment room for a permanently installed pool.

It would not apply to an equipment room for a spa or hot tub, fountain, etc. An equipment room for fountain pumps, chlorinators, etc. is common at hotels and other installations. This type of equipment room should also have a GFCI protected receptacle.
A GFCI protected receptable is needed for installers and maintainers who service equipment in these rooms.



Leviton Solution

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Important: *Covers must be used with WR GFCI receptacles in damp or wet locations per NEC Section 406.9.*

Cat. No. GFWT2-KW

Revision/New

680.22(A)(4) GFCI Requirements Around Pool and Similar Areas Expanded

Change Summary

- Change expands GFCI requirements around pools to include up to 250 volt receptacles.

NEC® Text

Article 680 Swimming Pools, Fountains, and Similar Installations
680.22 Lighting, Receptacles, and Equipment
(A) Receptacles
(4) Ground-Fault Circuit-Interrupter (GFCI) and

continued on page 108

continued from page 107

LEVITON

NEC® Text

Special Purpose Ground-Fault Circuit-Interrupter (SPGFCI) Protection. All receptacles rated 125 volts through 250 volts, 60 amperes or less, located within 6.0 m (20 ft.) of the inside walls of a pool shall have GFCI protection complying with 680.5(B) or SPGFCI protection complying with 680,5(C), as applicable

Expert Analysis

The NEC wants receptacles over 150V to ground to have GFCI or SPGFCI protection.

Revision

700.3(A) Commissioning of Emergency Systems
706.7(A) Commissioning of Energy Storage Systems

Change Summary

- Previously in the Code the installer had to test Emergency Systems as witnessed by an inspector. Now the NEC has taken it a step further by having the system commissioned. This can be more involved and time consuming for the installer.

NEC® Text

Article 700 – Emergency Systems
700.3 Tests and Maintenance
(A) Commissioning Witness Test. The authority having Jurisdiction shall conduct or witness the commissioning of the complete system upon installation and periodically afterward.
Informational Note: See NECA 90, *Standard for Commissioning Building Electrical Systems.*
Article 706 Energy Storage Systems
706.7 Commissioning and Maintenance
(A) Commissioning. ESSs shall be commissioned upon installation. This shall not apply in one-and-two family dwellings
Informational Note: See NFPA 855-2020, *Standard for the installation of secondary energy storage systems,* for information related to the commissioning of ESSs.

Expert Analysis

In Article 100, commissioning is defined as: "The process, procedures and testing used to set-up and verify the initial performance, operational controls, safety systems and sequence of operation of electrical devices

and equipment, prior to it being placed into active service (CMP-13)". This seems to go beyond installing and testing to ensure the system works. On more complex systems commissioning is often done with a manufacturers rep, the installer and the facility manager. The facility manager typically learns proper use of the system. All this is good practice, but all this hand-holding takes time, and time is money. Installers will need to take this into consideration when bidding these jobs.
Lastly, I can see this requirement expanding into different electrical systems as the electrical industry gets increasingly more technical and complex.

New

700.11(A)(B)(C)(D) Wiring, Class-2 Powered Emergency Lighting Systems

Change Summary

- New section addresses Class 2 powered emergency lighting systems.

NEC® Text

Article 700 – Emergency Systems
700.11 Wiring, Class-2-Powered Emergency Lighting Systems.
(A) General. Line voltage supply wiring and installation of Class 2 emergency lighting control devices shall comply with 700.10. Class 2 emergency circuits shall comply with 700.11(B) through (D).
(B) Identification. Emergency circuits shall be permanently marked so they will be readily identified as a component of an emergency circuit or system by the following methods:
(1) All boxes and enclosures for Class 2 emergency circuits shall be permanently marked as a component of an emergency circuit or system.
(2) Exposed cable, cable tray, or raceways systems shall be permanently marked to be identified as a component of an emergency circuit or system, within 900 mm (3 ft) of each connector and at intervals not to exceed 7.6 m (25 ft).
(C) Separation of Circuits. Class 2 emergency circuits shall be wired in a listed, jacketed cable or with one of the wiring methods of Chapter 3. If installed alongside nonemergency Class 2 circuits that are bundled, Class 2 emergency circuits shall be bundled separately. If installed alongside nonemergency Class 2 circuits that are not bundled, Class 2 emergency circuits shall be separated by a nonconductive sleeve or nonconductive barrier from all

continued on page 110

continued from page 109

NEC® Text

other Class 2 circuits. Separation from other circuits shall comply with 725.136.

(D) Protection. Wiring shall comply with the requirements of 300.4 and be installed in a raceway, armored or metal-clad cable, or cable tray.

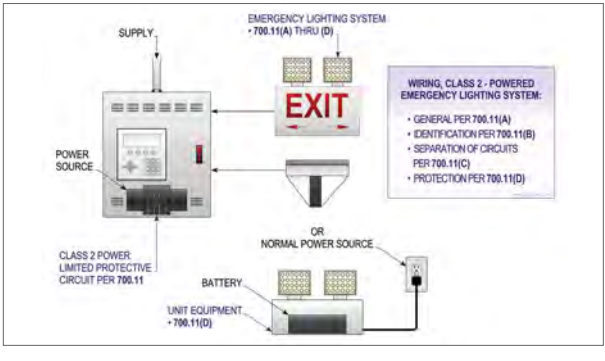
Exception No. 1: *Section 700.11(D) shall not apply to wiring that does not exceed 1.83 m (6 ft) in length and that terminates at an emergency luminaire or an emergency lighting control device.*

Exception No. 2: *Section 700.11(D) shall not apply to locked rooms or locked enclosures that are accessible only to qualified persons.*

Informational Note: Locked rooms accessible only to qualified persons include locked telecommunications rooms, locked electrical equipment rooms, or other access-controlled areas.

Expert Analysis

A new section has been added to address Class 2 powered emergency lighting systems. Due to new technologies, such as power over ethernet and low-power consumption LED luminaires, these systems utilize Class 2 conductors to deliver power, control signals, or both from a central device to one or more emergency luminaires.



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New

722 Cables for Power-Limited Circuits and Fault-Managed Power Circuits
724 Class 1 Power-Limited Circuits and Remote Control & Signaling Circuits
726 Class 4 Fault Managed Power Systems

Change Summary

- Power limited circuits are being utilized more often due to emerging new technologies like Power Over Ethernet (POE) and others. The NEC recognizes this and revised/added new text to ensure best installation practices. Since Articles 722, 724 and 726 are entirely new, they are too lengthy to include in this guide. This guide serves to make you aware of the new articles and their scope. If you work in these areas you are best served to read the complete text in the NFPA70.

NEC® Text

Article 722 Cables for Power-Limited Circuits and Fault-Managed Power Circuit.
Part I. General
722.1 Scope.
722.3 Other Articles.
722.10 Hazardous (Classified) Locations.
722.12 Uses Not Permitted.
722.21 Access to Electrical Equipment Behind Panels Designed to Allow Access.
722.24 Mechanical Execution of Work.
722.25 Abandoned Cables.
722.31 Safety-Control Equipment.
722.135 Installation of Cables.
Part II. Listing Requirements
722.179 Listing and Marking of Cables

Article 724 Class 1 Power-Limited Circuits and Class 1 Power-Limited Remote-Control and Signaling Circuits.
724.1 Scope.
724.3 Other Articles.
724.21 Access to Electrical Equipment Behind Panels Designed to Allow Access.
724.24 Mechanical Execution of Work.
724.30 Class 1 Circuit Identification.
724.31 Safety-Controlled Equipment.
724.40 Class 1 Circuits.
724.43 Class 1 Circuit Overcurrent Protection.

continued on page 114

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continued from page 112

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NEC® Text

724.45 Class 1 Circuit Overcurrent Device Location.

724.46 Class 1 Circuit Wiring Methods.

724.48 Conductors of Different Circuits in the Same Cable, Cable Tray, Enclosure, or Raceway.

724.49 Class 1 Circuit Conductors.

724.52 Circuits Extending Beyond One Building.

Article 726 Class 4 Fault-Managed Power Systems.

Part I. General.

726.1 Scope.

726.3 Other Articles.

726.10 Hazardous (Classified) Locations.

726.12 Uses Not Permitted.

726.24 Mechanical Execution of Work.

Part II. Class 4 Circuits.

726.121 Power Sources for Class 4 Circuits.

726.122 Class 4 Loads.

726.124 Class 4 Marking.

726.130 Terminals and Connectors.

726.136 Separation from Electric Light, Power, Class 1, Non–Power-Limited Fire Alarm Circuit, and Medium-Power Network-Powered Broadband Communications Cables.

726.139 Installation of Conductors of Different Circuits in the Same Cable, Enclosure, Cable Tray, Raceway, or Cable Routing Assembly.

726.144 Ampacity

Part III. Listing Requirements.

726.170 Listing of Equipment for Class 4 Systems.

Expert Analysis

New articles have been added to address:

- Cables for power-limited circuits, fault-managed circuit, Optical Fiber.
- Class 1 power-limited circuits and Class 1 power-limited remote-control and signaling circuits.
- Class 4 fault-managed power systems.

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continued on page 116

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continued from page 114

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LightSpace®


OPT-X™ Unity - Ultra Low Loss


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Revision/New

800.3(H) Grounding of Metal Shields of Communications Cables

Change Summary

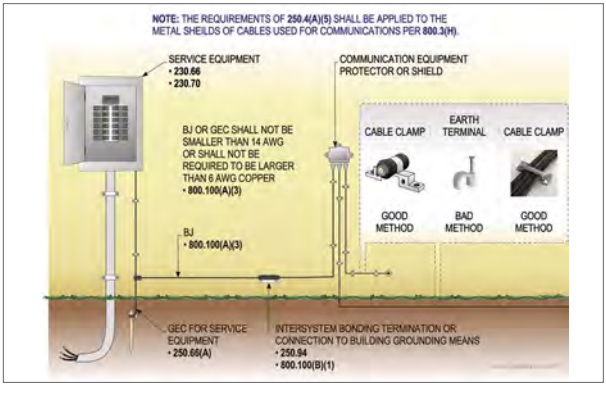
- New subsection addresses requirements of grounding shields in communications systems.

NEC® Text

Article 800 General Requirements for Communications Systems
800.3 Other Articles.
(H) Bonding and Grounding of Cable Shields. The requirements of 250.4(A)(5) shall apply to the metal shields of cables used for communications.

Expert Analysis

A new subsection has been added to address the requirements to ground metal cable shields due to the possibility of the shields becoming energized and thereby pose a fire or shock hazard. In addition, grounding shields is a good practice in efforts to reduce noise and interference.



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