

# Welcome Iowa Electricians!

## What Does Iowa Require?

### 18-Hours of Continuing Education Required

- The Iowa electrician must complete no less than 18 Continuing Education Units (CEUs) in each three-year license cycle.
- No less than 6 of those 18 CEUs must focus on the most recent Iowa electrical code.
- JADE Learning's two-hour VILT sessions satisfy ALL of Iowa's requirements for electrical continuing education.
- **9 VILT sessions provides you all 18 hours.**



1

## 2023 NEC Changes

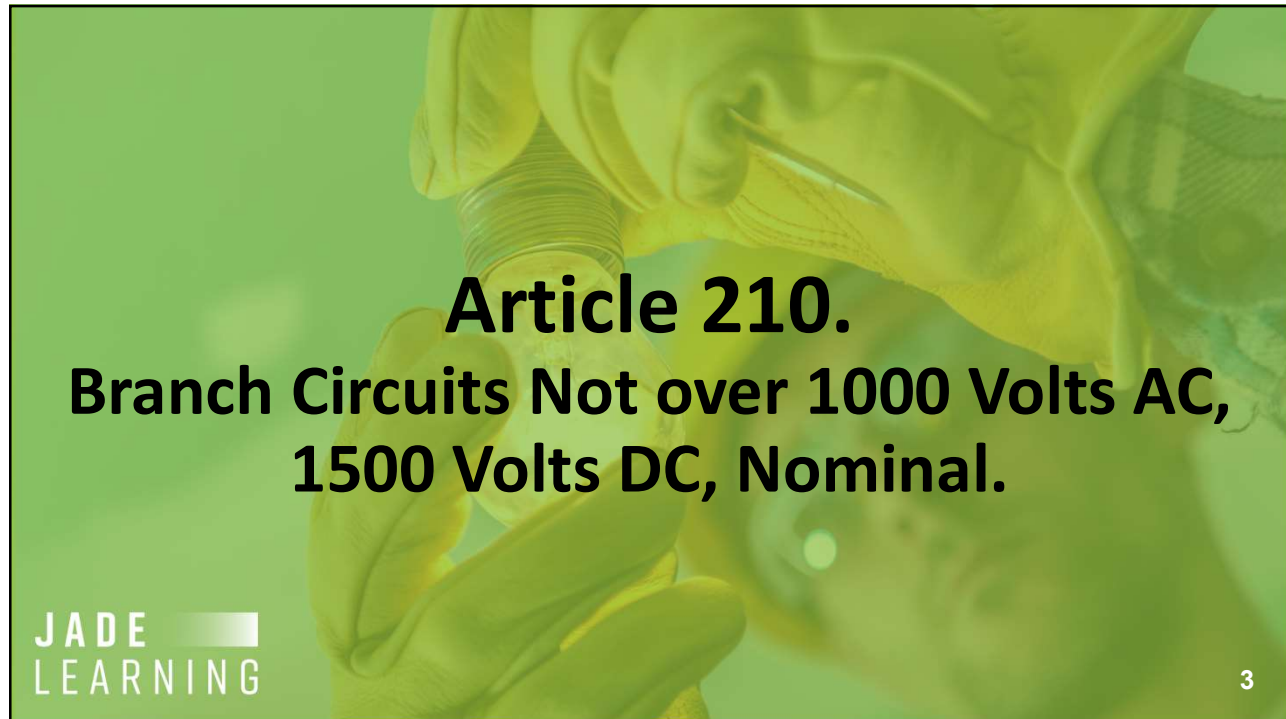
Important Changes from the 2023 NEC

6:00 PM Eastern Time

← 5 PM in Iowa

5:45 PM – 6:00 PM Eastern	Registration / Check In
6:00 PM – 7:00 PM Eastern	NEC Chapter 2 (Part I) <i>with poll questions</i>
7:00 PM – 7:10 PM Eastern	<b>Break</b>
7:10 PM – 8:00 PM Eastern	NEC Chapter 2 (Part I) continued <i>with poll questions</i>
8:00 PM Eastern	Questions for the instructor?

2



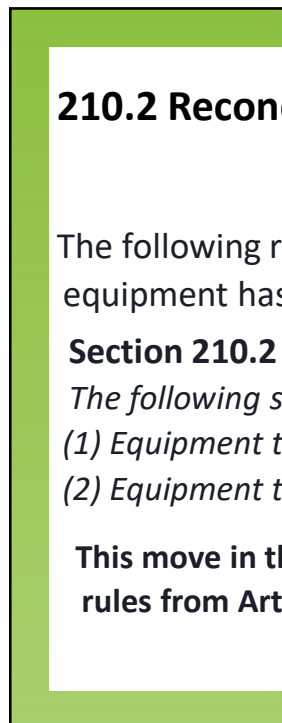
# Article 210.

## Branch Circuits Not over 1000 Volts AC, 1500 Volts DC, Nominal.

**JADE LEARNING**

3

3



**JADE LEARNING**  
A CERTUS COMPANY

### 210.2 Reconditioned Equipment.

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

**Section 210.2 [in 2023 NEC]—**  
*The following shall not be reconditioned:*

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

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

**2023 NEC Changes** [www.iadlearning.com](http://www.iadlearning.com)

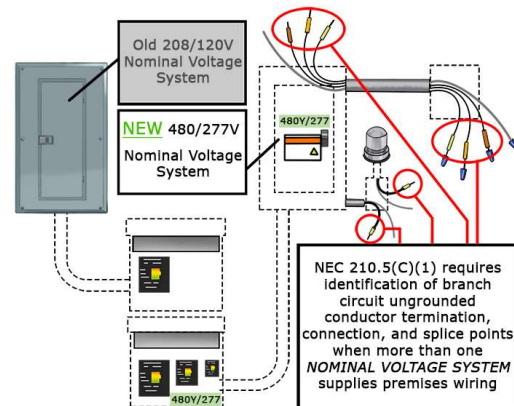
4

## 210.5(C)(1) Branch Circuits Supplied from More than One Nominal Voltage System

A slight verbiage change was made for 2023.

**2020 NEC states:** ... each ungrounded conductor of a branch circuit shall be identified by phase or line and **by system class voltage** at all termination, connection, and splice points ...

**2023 NEC states:** ... each ungrounded conductor of a branch circuit shall be identified by phase or line and **by nominal voltage system** at all termination, connection, and splice points ...



2023 NEC Changes

[www.iadellearning.com](http://www.iadellearning.com)

5

## 210.8(A)(5) Dwelling Units. Basements

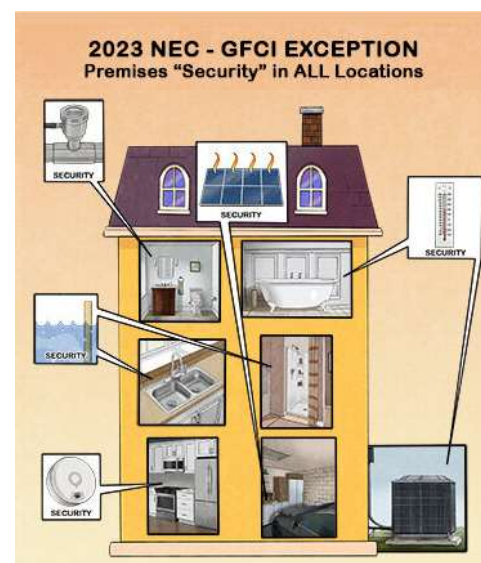
Section 210.8 in the NEC declares receptacles and their locations that require GFCI protection—

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

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

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

2023 NEC Changes



6

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

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

- Installed to serve countertop surfaces

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

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

2023 NEC Changes



7

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

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

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

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



2023 NEC Changes

8

## Part 1 of 2

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

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

2023 NEC Changes

[www.iadlearning.com](http://www.iadlearning.com)

9

## Part 2 of 2

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

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

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



2023 NEC Changes

10

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

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

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

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

2023 NEC Changes

[www.jadelearning.com](http://www.jadelearning.com)

11

## 210.8(D) GFCI Protection for Personnel. Specific Appliances

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

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

### Note these **NEW** things in 2023 NEC:

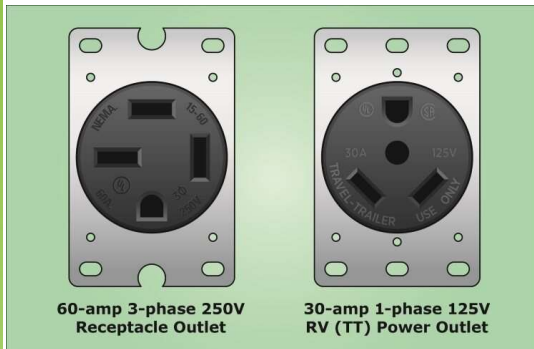
- Many appliances have been added compared to previous Code cycles.
- The expanded list includes, counter mounted cook tops, wall mounted microwaves, electric ranges, and clothes dryers



2023 NEC Changes

12

## 210.8(F) Outdoor Outlets.



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

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

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

2023 NEC Changes

[www.iadelearning.com](http://www.iadelearning.com)

13

## Part 1 of 2

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

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

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

2023 NEC Changes

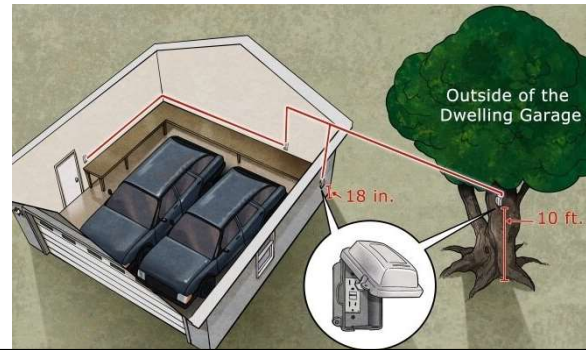
[www.iadelearning.com](http://www.iadelearning.com)

14

## Part 2 of 2

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

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



2023 NEC Changes

15

### 210.12 Arc-Fault Circuit-Interrupter Protection.

The structure of this section has been modified:

- 210.12(A) is now titled **Means of Protection** (compared to Dwelling units in 2020 NEC)
- 210.12(B) is now titled **Dwelling Units** (compared to Dormitory Units)  
*[and AFCI protection is now required for their 10-amp branch circuits]*
- **Exception No. 2** is new and states that arc welder branch circuits will be exempt from AFCI requirements until Jan 1, 2025
- 210.12(C) is now titled **Dormitory units** (compared to Guest rooms, etc.)  
*[and AFCI protection is now required for their 10-amp branch circuits]*
- 210.12(D) is a new section titled **Other occupancies** (compared to Branch Circuit extensions, etc., in 2020 NEC)

2023 NEC Changes

[www.iadlearning.com](http://www.iadlearning.com)

16

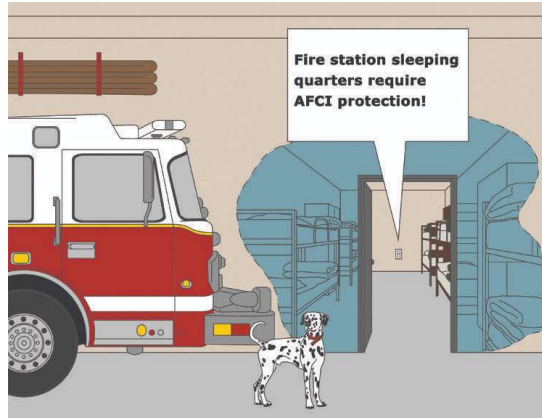


## 210.12 Arc-Fault Circuit-Interrupter Protection.

**JADE**  
**LEARNING**  
A CERTUS COMPANY

Note these **NEW** requirements when it comes to AFCI protection:

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



2023 NEC Changes

[www.iadlearning.com](http://www.iadlearning.com)

17

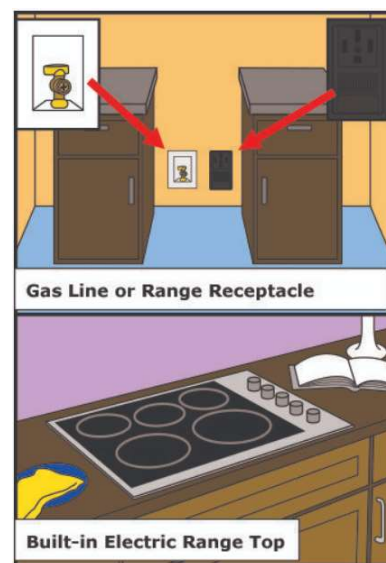
## 210.17 Guest Rooms and Guest Suites

**JADE**  
**LEARNING**  
A CERTUS COMPANY

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

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

- Hotels
- Motels
- Assisted living facilities



2023 NEC Changes

[www.iadlearning.com](http://www.iadlearning.com)

18

## 210.18 Branch-Circuits Ratings. Rating.

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



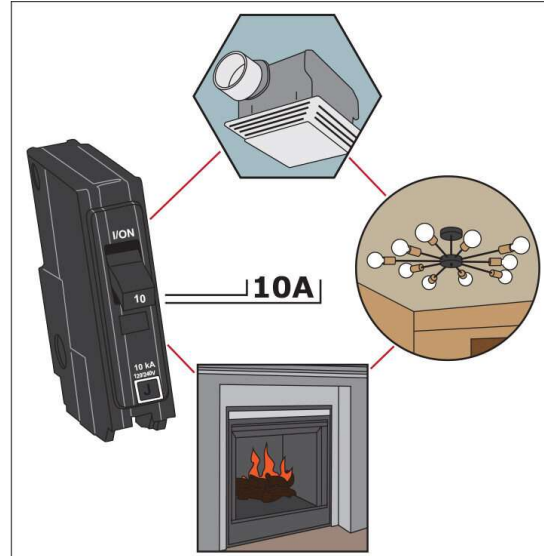
## 210.23 Permissible Loads, Multiple-Outlet Branch Circuits.

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

## 210.23 Permissible Loads, Multiple-Outlet Branch Circuits.

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

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



2023 NEC Changes

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

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

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

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

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

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

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

2023 NEC Changes

www.iadlearning.com

## 210.52(A)(2) Wall Space.

**JADE**  
**LEARNING**  
A CERTUS COMPANY

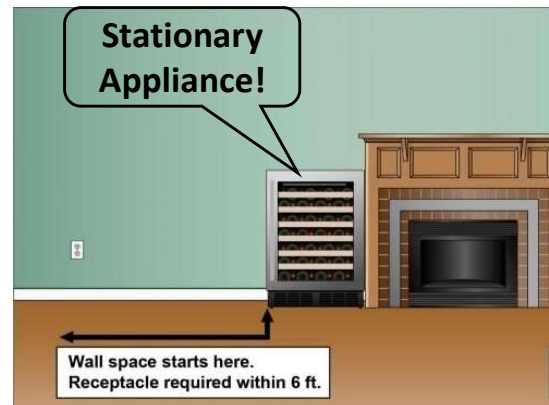
In the 2020 NEC, wall space was considered unbroken if it was unbroken along the floor line passing by doorways or similar openings, fireplaces, and fixed cabinets that do not have countertops or work surfaces.

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

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

### **Stationary—**

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



2023 NEC Changes

23

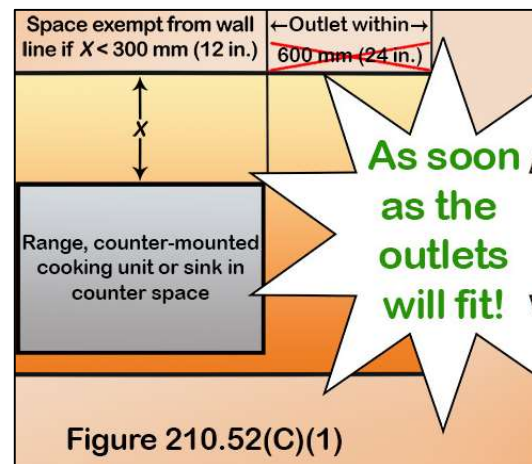
## 210.52(C)(1) Countertops and Work Surfaces. Wall Spaces.

**JADE**  
**LEARNING**  
A CERTUS COMPANY

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

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

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



2023 NEC Changes

24

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

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

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

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



**2023 NEC Changes**

25

## 210.52(C)(3) Receptacle Outlet Locations

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

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

However, the other locations remain the same:

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



**2023 NEC Changes**

26

# THANK YOU FOR ATTENDING!

Questions?

For additional instructor support, please contact  
[instructor@jadelearning.com](mailto:instructor@jadelearning.com)

For questions about your continuing education, please  
contact [registrar@jadelearning.com](mailto:registrar@jadelearning.com)

JADE  
LEARNING

27

27